Review Test Submission: Midterm

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Course	18W_CST8288_020 OOP with Design Patterns
Test	Midterm
Started	3/14/18 4:00 PM
Submitted	3/14/18 5:49 PM
Due Date	3/14/18 5:51 PM
Status	Completed
Attempt Score	54 out of 90 points
Time Elapsed	1 hour, 48 minutes out of 1 hour and 50 minutes
Instructions	you must do the test in class. you will receive a zero otherwise. you have 30 questions which it should not take you more than 2 min per question on average to finish. 60 min total. you have 1 programing question with 50 min time. it should only take your about 30 min to finish it. 10 bonus mark if you finish controller and view as well. questions will get easier the further down the list you go. manage your time carefully. there are very easy, easy, normal and hard question (10 each plus 1 hard). in order each question in a specific category is worth 1, 2, 4 and 20. for total of 90.
Results Displayed	All Answers, Submitted Answers, Correct Answers

- **Question 1**

3 out of 20 points

Class Diagram - Midterm.pdf
Sequence Diagram - Midterm - Student.pdf
open the two files above and write the program for Student class.

you are to create this model with one thread using ExecutorService.

this thread is called every time updateName is called.

in updateName you are to check if fName and lName are not null or empty. if they are throw an exception.
then you are to submit a lambda to ExecutorService which will call setChanged and notifyObservers.
notifyObservers will send a list of String with fName, lName and ID in it. ID is an int must be converted to string first. you can use Arrays.asList(T...t).
create getters for everything.

in constructor you must update names, assign ID and create ExecutorService.
read the sequence diagram carefully all you need is in there.
when done, upload Student-[student number].java

Selected Answer: Student 040883167.zip

- **Question 2**

1 out of 5 points (Extra Credit)

Sequence Diagram - Midterm - View.pdf
BONUS: write the code for view.

view runs on one thread using ExecutorService.

submit a lambda to ExecutorService in start method which will updateName through controller for 10 times. simply using i index as new fName and lName.
everytime the update is called. cast the object to list of string and print the data on console.

Selected Answer: [None Given]

- **Question 3**

0 out of 5 points (Extra Credit)

Sequence Diagram - Midterm - Controller.pdf
BONUS: write the code for controller.

main creates all classes and establishes connections between them,

methods in controller call method of student, except for set student.

Selected Answer: [None Given]

- **Question 4**

4 out of 4 points

what is true about Observer design Pattern?

Selected Answer: c.
a broadcast system allowing distribution of information to all interested patries.

Answers:
a.
observer notifies observables when changes occur.

b.
that shifty programmer you saw once made it to observe everyone.

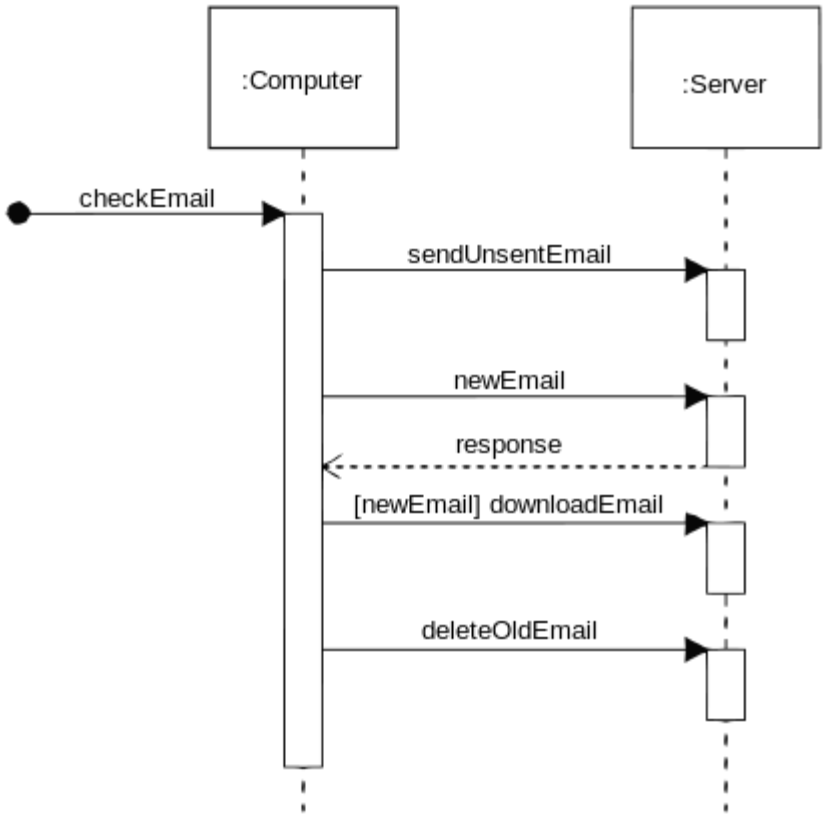
c.
a broadcast system allowing distribution of information to all interested patries.

d.
it must always be used with MVC, it does not work otherwise

- **Question 5**

4 out of 4 points

What is this UML Diagram?



Selected Answer: a.
Sequence Diagram

Answers: a.
Sequence Diagram

b.
Class Diagram

c.
Use Case

d.
State Diagram

- **Question 6**

4 out of 4 points

Match definition of each thread condition to its name

Question	Correct Match	Selected Match
Deadlock	A. two threads gain sync lock while waiting for other one to release the lock. One way to	A. two threads gain sync lock while waiting for other one to release the lock. One way to

	prevent is from all threads to take their locks in the same order.	prevent is from all threads to take their locks in the same order.
Race condition	B. multiple threads try and access the same code and create a buggy outcome	B. multiple threads try and access the same code and create a buggy outcome
Starvation	C. when one or more thread must wait for access because other threads have higher priorit	C. when one or more thread must wait for access because other threads have higher priorit

All Answer Choices

A.
two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.

B.
multiple threads try and access the same code and create a buggy outcome

C.
when one or more thread must wait for access because other threads have higher priorit

D.
i did not listen in class or labs, so i am just going to play a game of chance here

- **Question 7**

4 out of 4 points

Given the code below (making no other changes), which access modifiers (public, protected, or private) can legally be placed before print() in ?

Selected Answer: c.
public

Answers: a.
protected

b.
private

c.
public

d.
friend

- **Question 8**

0 out of 4 points

The code below adds what color your Scene object?

Selected Answer: c.
Red (FF0000)

Answers: a.
Blue (0000FF)

b.
White (FFFFFF)

c.
Red (FF0000)

d.
Green (00FF00)

- **Question 9**

0 out of 4 points

which statement is not true?

Selected Answer: d.
this singleton has lazy initialization. object is created when calling instance()

Answers: a.
this singleton has eager initialization. object is created at class loading time.

b.
singleton object can never have an instance, it is by design only static

c.
there was not enough hints in this question, i will complain about it after midterm.

d.
this singleton has lazy initialization. object is created when calling instance()

- **Question 10**

4 out of 4 points

match Java properties to correct UML Class Diagram notation.

Question	Correct Match	Selected Match
public	G. +	G. +
private	C. -	C. -
protected	F. #	F. #
package	D. ~	D. ~
constant (final)	A. CAPITALIZE	A. CAPITALIZE
abstract	E. *italic*	E. *italic*
static	H. underline	H. underline

All Answer Choices

A.
CAPITALIZE

B.
bold

C.
-

D.
~

E.
italic

F.
#

G.
+

H.
underline

- **Question 11**

4 out of 4 points

Match JavaFX layout to its description?

Question	Correct Match	Selected Match
BorderLayout	A.	A.

	This layout pane provides five regions in which to place nodes: top, bottom, left, right, and center	This layout pane provides five regions in which to place nodes: top, bottom, left, right, and center
HBox	B. This layout pane provides an easy way for arranging a series of nodes in a single row	B. This layout pane provides an easy way for arranging a series of nodes in a single row
VBox	C. This layout pane is similar to the another layout pane, except that the nodes are arranged in a single column	C. This layout pane is similar to the another layout pane, except that the nodes are arranged in a single column
GridPane	D. This layout pane enables you to create a flexible grid of rows and columns in which to lay out nodes	D. This layout pane enables you to create a flexible grid of rows and columns in which to lay out nodes
FlowLayout	E. The nodes within a this layout pane are laid out consecutively and wrap at the boundary set for the pane. Nodes can flow vertically (in columns) or horizontally (in rows)	E. The nodes within a this layout pane are laid out consecutively and wrap at the boundary set for the pane. Nodes can flow vertically (in columns) or horizontally (in rows)

All Answer Choices

A.
This layout pane provides five regions in which to place nodes: top, bottom, left, right, and center

B.
This layout pane provides an easy way for arranging a series of nodes in a single row

C.
This layout pane is similar to the another layout pane, except that the nodes are arranged in a single column

D.
This layout pane enables you to create a flexible grid of rows and columns in which to lay out nodes

E.
The nodes within a this layout pane are laid out consecutively and wrap at the boundary set for the pane. Nodes can flow vertically (in columns) or horizontally (in rows)

- **Question 12**

4 out of 4 points

Match each sorting algorithm to its correct image.

Question	Correct Match	Selected Match

Bubble	A. compare pairs of cells at a time, swap if needed. right side is sorted.	A. compare pairs of cells at a time, swap if needed. right side is sorted.
Insertion	B. move elements to the left side one at a time till sorted, left side is sorted.	B. move elements to the left side one at a time till sorted, left side is sorted.

Selection	C. find the smallest element and move it to the correct spot, repeat till done.	C. find the smallest element and move it to the correct spot, repeat till done.

Quick	D. choose a pivot element, move elements so all element's on the left of it are smaller and the right of it are bigger. then recursively do the same to each side of the pivot.	D. choose a pivot element, move elements so all element's on the left of it are smaller and the right of it are bigger. then recursively do the same to each side of the pivot.

Merge	E. divide the array in half and recursively half each half in again. after reaching the smallest size sort and merge again.	E. divide the array in half and recursively half each half in again. after reaching the smallest size sort and merge again.

All Answer Choices

A.
compare pairs of cells at a time, swap if needed. right side is sorted.

B.
move elements to the left side one at a time till sorted, left side is sorted.

C.
find the smallest element and move it to the correct spot, repeat till done.

D.
choose a pivot element, move elements so all element's on the left of it are smaller and the right of it are bigger. then recursively do the same to each side of the pivot.

E.
divide the array in half and recursively half each half in again. after reaching the smallest size sort and merge again.

- **Question 13**

2 out of 4 points

select **all** the correct statements regarding Runnable and Callable interfaces:

Answers:
- c. Callable can only work with ExectutorService.
- d. Callable<T> has one method called call which takes no arguments and returns a generic type T
- a. Runnable has one method called run which takes and returns nothing.
- b. Runnable can be used with Thread and ExecutorService.
- c. Callable can only work with ExectutorService.
- d. Callable<T> has one method called call which takes no arguments and returns a generic type T

- **Question 14**

0 out of 2 points

A protected method may be overridden by a public method.

Selected Answer: False
Answers: True
False

- **Question 15**

2 out of 2 points

An overridden method can be in the same class as the original method.

Selected Answer: False
Answers: True
False

- **Question 16**

0 out of 2 points

In the code fragment below, after execution of first line, sbuf references an instance of the StringBuilder class. After execution of next line, sbuf still references the same instance. correct?

Selected Answer: False
Answers: True
False

- **Question 17**

0 out of 2 points

Consider the following classes, declared in separate source files, What output results when the main method of the class Sub is run?

Selected Answer: b.
Base is 6

Answers: a.
Base is 6

Sub is 5
Base is 6

b.
Base is 6
Base is 6

c.
Sub is 6
Base is 5

d.
Sub is 5 Base is 6

- **Question 18**

2 out of 2 points

What is the nature of data typing in the Java programming language?

Selected Answer: b.
Strongly typed

Answers:
a.
Typed like C++

b.
Strongly typed

c.
Weakly typed

d.
Untyped

e.
Typed Like JavaScript

- **Question 19**

2 out of 2 points

When using JUnit 4 what annotation is used to mark a test method?

Selected Answer: a.
@Test

Answers:
a.
@Test

b.
i don't do old code, i only program in JUnit 5

c.
@CheckCode

d.
@Testing

- **Question 20**

0 out of 2 points

Which of the following JavaFX components is typically only used to display text to a user?

Selected Answer: c.
TextField

Answers: a.
Label

b.
Button

c.
TextField

- **Question 21**

2 out of 2 points

When a class (not abstract) implements an interface, it must provide behavior for...

Selected Answer: c.
All methods defined in that interface.

Answers: a.
Only certain methods in an interface.

b.
Two methods defined in that interface.

c.
All methods defined in that interface.

d.
Any methods in a class.

- **Question 22**

2 out of 2 points

will the JavaFX display properly?

Selected Answer: d.
No, primaryStage.show() is missing

Answers: a.
Yes, JavaFX will display

b.
No, setScene must be the last line called

c.
No, Scene is not added to the root

d.
No, primaryStage.show() is missing

- **Question 23**

2 out of 2 points

A protected method may be overridden by a private method.

Selected Answer: False

Answers: True
False

- **Question 24**

1 out of 1 points

Objects communicate by sending messages between each other, this is implemented using _____.

Selected Answer: b.
Methods

Answers: a.

Variables

b.
Methods

c.
Post Office

d.
Reflection

- **Question 25**

1 out of 1 points

Java applications are platform independent because?

Selected Answer: b.
Java Byte Code (complied Java) runs on JVM

Answers:
a.
The CPU's have a built-in JVM.

b.
Java Byte Code (complied Java) runs on JVM

c.
Java don't need a JVM.

d.
The server has a built-in JVM.

- **Question 26**

1 out of 1 points

Given the following declaration, what is Runnable?

Selected Answer:
an interface.

Answers:
a package.

an object.

an interface.

a class.

- **Question 27**

1 out of 1 points

What results from running the following code?

Selected Answer: c.
value is Hello 1

Answers: a.
value is Hello

b.
nothing prints

c.
value is Hello 1

d.
value is Hello 12

- **Question 28**

1 out of 1 points

Which of the following is not one of Java's access modifiers?

Selected Answer: d.
internal

Answers: a.
protected

b.
static

c.
public

d.
internal

- **Question 29**

0 out of 1 points

Which of the following signatures are valid for the main( ) method entry point of an application?

Selected Answer: a.
private static void main(String [ ] arg)

Answers: a.
private static void main(String [ ] arg)

b.
i dont know ask eclipse, it does it for me all the time

c.
public static void main(String gotStuff [ ])

d.
public void static main( )

e.
static void main (String [ ])

- **Question 30**

1 out of 1 points

What is wrong with the Java class declaration below, with regard to coding conventions?

public class tuna_fish{}

Selected Answer: c.
Both of other options

Answers: a.
Class identifiers in Java should start with an upper case letter.

b.
Class identifiers in Java should use mixed case instead of underscores.

c.
Both of other options

- **Question 31**

1 out of 1 points

In an Object Oriented programming language data and related functions are combined into a single unit called a(n) _____.

Selected Answer: b.
Object

Answers: a.
Token

b.
Object

c.
Procedure

d.
i did not attend the lecturers

- **Question 32**

1 out of 1 points

What is the purpose of the main method?

Selected Answer: c.
To act as the entry point for the program.

Answers:
a.
To hold the APIs of the application.

b.
To create buttons and scrollbars.

c.
To act as the entry point for the program.

d.
To build a user interface.

- **Question 33**

0 out of 1 points

What one statement is true about the code fragment below?

Selected Answer: b.
first line throws exception, because the String constructor must be called explicitly

Answers:
a.
first if condition throws exception, because str and strb have different types

b.
first line throws exception, because the String constructor must be called explicitly

c.
program print String

d.
program prints nothing

e.
program print StringBuilder

Tuesday, September 11, 2018 3:44:10 PM EDT


OK

Save and Submit

Question 1

1. What pattern does the Java event model resemble.

- Model-View-Controller
- Simple Factory
- Observer
- None of the above

1 points

Question 2

1. Which of the following statements about adapters is false.

- An adapter class implements an interface.
- An adapter class provides a default (empty) implementation of every method in the interface.
- Programmers override selected adapter methods.
- A ComponentListener is a ComponentAdaptor.

1 points

Question 3

1. Consider the following application:

```
1. class Q6 {
2.   public static void main(String args[]) {
3.     Holder h = new Holder();
4.     h.held = 100;
5.     h.bump(h);
6.     System.out.println(h.held);
7.   }
8. }
9.
10. class Holder {
11.   public int held;
12.   public void bump(Holder theHolder) { theHolder.held++; }
```

13. }

What value is printed out at line 6?

- 0
- 1
- 101
- 100

1 points

Question 4

1. Which of the following does not generate GUI events.

- Typing in a text field.
- Selecting an item from a menu.
- Viewing the text in a label.
- Moving the mouse.

1 points

Question 5

1. Assume that the class AcLis implements the ActionListener interface. The code fragment below constructs a button and gives it four action listeners. When the button is pressed, which action listener is the first to get its actionPerformed() method invoked?

```
1. Button btn = new Button("Hello");
2. AcLis a1 = new AcLis();
3. AcLis a2 = new AcLis();
4. AcLis a3 = new AcLis();
5. AcLis a4 = new AcLis();
6. btn.addActionListener(a1);
7. btn.addActionListener(a2);
8. btn.addActionListener(a3);
9. btn.addActionListener(a4);
10. btn.removeActionListener(a2);
```

```
11. btn.removeActionListener(a3);
12. btn.addActionListener(a3);
13.   btn.addActionListener(a2);
```

- a1 gets its actionPerformed() method invoked first.
- a2 gets its actionPerformed() method invoked first.
- a3 gets its actionPerformed() method invoked first.
- a4 gets its actionPerformed() method invoked first.
- It is impossible to know which listener will be first.

1 points

Question 6

1. You cannot access a database using a servlet.

- True
- False

1 points

Question 7

1. A typical servlet would output ____.

- XML.
- XSL.
- HTML.
- none of these.

1 points

Question 8

1. When you want to listen for an event, you can implement an appropriate _____ for your class.

- handler.

- [x] listener.
- [ ] abstract class.
- [ ] superclass.

1 points

Question 9

1. The catch block that begins catch (Exception ex) can catch Exceptions of type.

- [ ] IOException
- [ ] ArithmeticException
- [x] both of these
- [ ] neither of these

1 points

Question 10

1. Which of the following statements about JPanels is false.

- [ ] A JPanel is a JComponent.
- [ ] A JPanel is a Container.
- [ ] A JPanel does not have a content pane.
- [x] A JPanel has a fixed size.

1 points

Question 11

1. We can derive many of the operations of each class by examining the key _____ and _____ in the requirements documents.

- [x] verbs, verb phrases.

- nouns, noun phrases.
- objectives, objective phrases.
- Both a and b.

1 points

Question 12

1. Java data types are the same as the data types used in the database.

- True
- False

1 points

Question 13

1. Using the protected keyword gives a member.

- public access.
- package access.
- private access.
- block scope.

1 points

Question 14

1. SQL statements that are stored in a database can be invoked using an object that implements interface _____.

- Callable.
- StoredStatement.
- CallableStatement.
- Connection.

1 points

Question 15

1. Which JFrame constant indicates that the program should terminate when the window is closed by the user.

- TERMINATE_ON_CLOSE.
- IMMEDIATELY_CLOSE.
- EXIT_ON_CLOSE.
- All of the above.

1 points

Question 16

1. You have been given a design document for a veterinary registration system for implementation in Java technology. It states: "A pet has an owner, a registration date, and a vaccination-due date. A cat is a pet that has a flag indicating if it has been neutered, and a textual description of its markings." Given that the Pet class has already been defined, which of the following fields would be appropriate for inclusion in the Cat class as members.

- Pet thePet;
- Date registered;
- Date vaccinationDue;
- Cat theCat;
- boolean neutered;

1 points

Question 17

1. Which of the following statements about anonymous inner classes is false?

- They are declared without a name.
- They typically appear inside a method declaration.
- They are declared with the anonymous keyword.
- They can access their top-level class's members.

1 points

Question 18

1. Declaring a method final means.

- it will prepare the object for garbage collection.
- it cannot be accessed from outside its class.
- it cannot be overloaded.
- it cannot be overridden.

1 points

Question 19

1. Which statement is false.

- A generic class can be derived from a non-generic class.
- A non-generic class cannot be derived from a generic class.
- A generic class can be derived from another generic class.
- A generic method in a subclass can override a generic method in a superclass if both methods have the same signatures.

1 points

Question 20

1. In java, String concatenation is done using _____.

- String1.concat(String2).
- String1 + (String2) .

- String1 & (String2) .
- Either a or b will perform String concatenation.
- Any of the above will perform String concatenation.

1 points

Question 21

1. In the UML, public visibility is indicated by placing a _____ before an operation or an attribute, whereas a _____ indicates private visibility.

- letter p, letter n.
- letter n, letter p.
- plus sign (+), minus sign (-).
- minus sign (-), plus sign (+).

1 points

Question 22

1. String literals in java, such as, "John Q. Doe".

- Are also known as anonymous String objects.
- Are not stored, but replaced at compile time.
- Are not String objects. They are only data.
- None of the above are true.

1 points

Question 23

1. The BorderLayout manager will divide the screen into a maximum of _____.

- 2 components
- 4 components

- 6 components
- none of the above

1 points

Question 24

1. All of the following methods are implicitly final except.

- a method in an abstract class.
- a private method.
- a method declared in a final class.
- static method.

1 points

Question 25

1. How many bytes does the following code write to file destfile?

```
1. try {
2.    FileOutputStream fos = new
FileOutputStream("destfile");
3.    DataOutputStream dos = new
DataOutputStream(fos);
4.    dos.writeInt(3);
5.    dos.writeDouble(0.0001);
6.    dos.close();
7.    fos.close();
8. }
9. catch (IOException e) { }
```

- 2
- 8
- 12
- 16

1 points

Question 26

1. You can get a list of the methods through which an Exception has traveled by using the method.

- getHistory().
- callStack().
- getPath().
- printStackTrace().

1 points

Question 27

1. Which statement is false?

- A generic method may be overloaded.
- A class can provide two or more generic methods that specify the same method name but different method parameters.
- A generic method cannot be overloaded by nongeneric methods.
- When the compiler encounters a method call, it searches for the method declaration that most precisely matches the method name and the argument types specified in the call.

1 points

Question 28

1. The Data Access Object pattern (DAO) _____.

- helps with the design of GUI programs.
- abstracts the database access logic out of a domain class.
- is a Gang of Four pattern.
- is a simple way of creating a data access component.

1 points

Question 29

1. A JSlider does not use a model.

- True
- False

1 points

Question 30

1. When a superclass variable refers to a subclass object and a method is called on that object, the proper implementation is determined at execution time. What is the process of determining the correct method to call?

- early binding.
- non-binding.
- on-time binding.
- late binding.

1 points

Question 31

1. The UML represents operations by listing the operation name, followed by a _____-separated list of parameters in parentheses, a _____ and the return type.

- colon, semicolon.
- colon, colon.
- comma, colon.
- comma, semicolon.

1 points

Question 32

1. Consider the classes below, declared in the same file:

```
class A   {
  int a;
  public A()   {
    a = 7;
```

```
    }
}

class B extends A   {
    int b;
    public B()   {
        b = 8;
}
}
```

- Both variables a and b are instance variables.
- After the constructor for class B executes, the variable a will have the value 7.
- After the constructor for class B executes, the variable b will have the value 8.
- A reference of type A can be treated as a reference of type B.

1 points

Question 33

1. The two key tasks required to process an event are.

- Add ActionListener and ActionEvent to the program.
- Register an event listener and implement an event handler.
- Create an inheritance hierarchy and implement polymorphism.
- Create two different ButtonHandler classes.
- None of the above.

1 points

Question 34

1. You can simulate atomicity by ensuring that _____.

- at least one thread carries out its operations on an object at a time.
- two threads carry out their operations on an object in parallel.

- only one thread carries out its operations on an object at a time.
- None of the above.

1 points

Question 35

1. Overriding a method differs from overloading a method because.

- Overloaded methods have the same signature.
- (•) Overridden methods have the same signature.
- Both of the above.
- Neither of the above.

1 points

Question 36

1. Assigning a subclass reference to a superclass variable is safe.

- because the subclass object has an object of its superclass.
- (•) because the subclass object is an object of its superclass.
- only when the superclass is abstract.
- only when the superclass is concrete.

1 points

Question 37

1. An advantage of inheritance is that:

- All methods can be inherited.
- All instance variables can be uniformly accessed by subclasses and superclasses.
- (•) Objects of a subclass can be treated like objects of their superclass.

- None of the above.

1 points

Question 38

1. Which of the following statements about interfaces is false.

- An interface describes a set of methods that can be called on an object, providing a default implementation for the methods.
- An interface describes a set of methods that can be called on an object, not providing concrete implementation for the methods.
- Interfaces are useful when attempting to assign common functionality to possibly unrelated classes.
- Once a class implements an interface, all objects of that class have an is-a relationship with the interface type.

1 points

Question 39

1. Which statement is false.

- A ListIterator accesses the elements of a List.
- Class ArrayList is a fixed-size array.
- A LinkedList is a linked list implementation of a List.
- ArrayLists execute faster than Vectors because they are not thread safe.

1 points

Question 40

1. The classes and interfaces which comprise the collections framework are members of package _____.

- java.util.
- javax.swing.
- java.collections.
- java.collection.

1 points

Question 41

1. Java applications and Java applets are similar because both _____.

- [x] are compiled using the javac command
- [ ] are executed using the java command
- [ ] are executed from within an HTML document
- [ ] have a main() method

1 points

Question 42

1. Which of the following statements for a JTextField is false.

- [ ] Can be used to display uneditable text.
- [ ] Can be used to display editable text.
- [ ] Enables users to enter data from the keyboard.
- [x] Displays a list of fields.

1 points

Question 43

1. In a PreparedStatement, parameters are counted from position _____.

- [ ] 0.
- [x] 1.
- [ ] 2.
- [ ] 3.

1 points

Question 44

1. From which object do you ask for MetaData describing columns after you execute a prepared statement.

- Connection.
- ResultSet.
- DriverManager.
- Driver.

1 points

Question 45

1. Consider the `abstract` superclass below:

```
public abstract class Foo { private int a; public int b; public Foo( int aVal, int bVal ) { a = aVal; b = bVal; } // end Foo constructor public abstract int calculate(); } // end class Foo
```

Any *concrete* subclass that *extends* class `Foo`:

- Must implement a method called calculate.
- Will not be able to access the instance variable a.
- Both (a) and (b).
- Neither (a) nor (b).

1 points

Question 46

1. PreparedStatement method _____ returns a ResultSet.

- executeUpdate.
- executeQuery.
- execute.
- None of the above.

1 points

Question 47

1. Which one statement below most accurately describes the following code listing?

```
1. class CustomException extends EOFException { }
 2.
 3. class Parent {
 4.     void doSomething() throws CustomException {
 5.         throw new CustomException ();
 6.     }
 7. }
 8.
 9. class Kid extends Parent {
10.     void doSomething() throws EOFException {
11.         throw new EOFException ();
12.     }
13. }
```

- Compiler error at line 4.
- Compiler error at line 5.
- Compiler error at line 10.
- Compiles without error.

1 points

Question 48

1. Accessing a superclass method through a subclass reference is

- A syntax error.
- Straightforward
- Inheritance.
- Polymorphism.

1 points

Question 49

1. ActionEvent is an interface in java.awt.event

- True.
- False.

1 points

Question 50

1. In UML diagrams, abstract methods are _____.

- displayed in italics.
- displayed in bold.
- not shown, as they have yet to be implemented.
- displayed, but without the parentheses following the method name.

1 points

Question 51

1. Which of the following is the superclass constructor call syntax?

- keyword super, followed by a dot (.) .
- keyword super, followed by a set of parentheses containing the superclass constructor arguments.
- keyword super, followed by a dot and the superclass constructor name.
- None of the above.

1 points

Question 52

1. Which of the following declarations are illegal.

- transient int i = 41;
- public final static native int w();
- final static double d;

1 points

Question 53

1. What is the base case for the recursive merge sort algorithm.

- Any array that is already sorted.
- A two-element array.
- A one-element array.
- A zero-element array.

1 points

Question 54

1. For which of the following would polymorphism not provide a clean solution.

- A billing program where there is a variety of client types that are billed with different fee structures.
- A maintenance log program where data for a variety of types of machines is collected and maintenance schedules are produced for each machine based on the data collected.
- A program to compute a 5% savings account interest for a variety of clients.
- An IRS program that maintains information on a variety of taxpayers and determines who to audit based on criteria for classes of taxpayers.

1 points

Question 55

1. Which statement is false.

- When declaring a generic method, the type parameter section is placed before the return type of the method.
- Each type parameter section contains only one type parameter.
- A type parameter is an identifier that specifies a generic type name.
- Type parameters can represent only reference types.

1 points

Question 56

1. Refactoring refers to _____.

- the separation of presentation logic from domain logic.
- a process of refining a design to make it more flexible, expandable, and reusable
- adding functionality to a design
- the use of the Java ™ Reflection API

1 points

Question 57

1. A typical Servlet follows the _____, _____ model when communicating with a client.

- Request, Response.
- Model, View.
- HTML, HTTP.
- Request, dispatch.
- None of the above.

1 points

Question 58

1. The == operator with the String class returns a true value if _____.

- lengths are unequal or the characters do not match if lengths are equal
- lengths are equal and the characters match exactly
- lengths are equal and the characters match except for case
- lengths are equal and the characters do not match
- none of the above

1 points

Question 59

1. Java performs automatic _____ of objects that are no longer referenced in a program.

- memory distribution.
- garbage collection.
- storage compression.
- trash aggregation.

1 points

Question 60

1. A catch block is executed.

- after all of the statements in a try block have been executed
- if a method executed in the try block throws any exception
- if a method executed in the try block throws the exception that is specified (in brackets) after the catch keyword
- both a and c are true

1 points

Question 61

1. A(n) _____ allows a program to walk through the collection and remove elements from the collection.

- Set.
- Queue.
- Iterator.
- List.

1 points

Question 62

1. In lab 4 you implemented what design pattern with the queue implmenetation.

- Model-view-controller.
- Singleton.
- Builder.
- Adapter.

1 points

Question 63

1. Classes and methods are declared final for all but the following reasons.

- final methods allow inlining the code.
- final methods and classes prevent further inheritance.
- final methods are static.
- final methods can improve performance.

1 points

Question 64

1. The code below draws a line. What color is the line?

```
1. g.setColor(Color.red.green.yellow.red.black);
2. g.drawLine(0, 0, 100, 100);
```

- Red
- Black
- Green
- Yellow

1 points

Question 65

1. Which statement best describes the relationship between superclass and subclass types.

- A subclass reference cannot be assigned to a superclass variable and a superclass reference cannot be assigned to a subclass variable.
- A subclass reference can be assigned to a superclass variable and a superclass reference can be assigned to a subclass variable.
- A superclass reference can be assigned to a subclass variable, but a subclass reference cannot be assigned to a superclass variable.
- A subclass reference can be assigned to a superclass variable, but a superclass reference cannot be assigned to a subclass variable.

1 points

Question 66

1. It is a UML convention to denote the name of an abstract class in _____.

- bold.
- italics.
- a diamond.
- there is no convention of the UML to denote abstract classes—they are listed just as any other class.

1 points

Question 67

1. Suppose Stack is a generic class that has one type parameter. The following assignment Stack< Integer > integerStack = new Stack(10); is _____.

- illegal.
- permitted and safe.
- permitted but unsafe, the compiler issues a warning message.
- permitted but unsafe, the runtime environment issues a warning message.

1 points

Question 68

1. Which method changes the text the label displays.

- changeText.
- setText.
- changeLabel.
- setLabel.

1 points

Question 69

1. Recursion can be less efficient than iteration because.

- it can cause an explosion of method calls.
- it is not as intuitive.
- recursive methods are harder to debug.
- recursive methods take longer to program.

1 points

Question 70

1. Servlet get input from a client (browser) using an HTML form. The servlet accesses the form fields using _____.

- the ServletResponse object method getParameter().
- the ServletRequest object method getParameter().
- the ServeltRequest object method getFormField().
- None of the above.

1 points

Question 71

1. Which of the following statements about abstract superclasses is true.

- abstract superclasses may contain data.

- Abstract superclasses may not contain implementations of methods.
- abstract superclasses must declare all methods as abstract.
- abstract superclasses must declare all data members not given values as abstract.

1 points

Question 72

1. The UML specifies a relationship called a(n) to model inheritance.

- inheritization.
- specialization.
- generalization.
- All of the above.

1 points

Question 73

1. One generic Stack class could be the basis for creating many Stack classes, e.g., Stack, Stack and Stack. These classes are known as _____.

- subclasses.
- generic subclasses.
- concrete classes.
- parameterized classes.

1 points

Question 74

1. An interface may contain.

- private static data and public abstract methods.
- only public abstract methods.

- [x] public static final data and public abstract methods.
- [ ] private static data and public final methods.

1 points

Question 75

1. Using layout managers _____.

- [x] provides the greatest level of control over a GUI's appearance.
- [ ] can be faster than creating a GUI with absolute positioning.
- [ ] allows the programmer to specify the exact location of each GUI component with respect to the upperleft corner of the Container.
- [ ] allows the programmer to specify the exact location of each GUI component with respect to the lowerleft corner of the Container.

1 points

Question 76

1. True or False: A protected method may not be overridden by a public method.

- [ ] True
- [x] False

1 points

Question 77

1. Which of the following sorting algorithms is the fastest.

- [ ] Selection sort.
- [ ] Insertion sort.
- [x] Merge sort.
- [ ] They all run at roughly the same speed.

1 points

Question 78

1. Which of the following is not possible.

- A class that implements two interfaces.
- A class that inherits from two classes.
- A class that inherits from one class, and implements an interface.
- All of the above are possible.

1 points

Question 79

1. Consider classes A, B and C, where A is an abstract superclass, B is a concrete class that inherits from A and C is a concrete class that inherits from B. Class A declares abstract method originalMethod, implemented in class B. Which of the following statements is true of class C.

- Method originalMethod cannot be overridden in class C—once it has been implemented in concrete class B, it is implicitly final.
- Method originalMethod must be overridden in class C, or a syntax error will occur.
- If method originalMethod is not overridden in class C but is called by an object of class C, an error occurs.
- None of the above.

1 points

Question 80

1. Which one of the following will not get the data from the first column of ResultSet rs, returned from executing the following SQL statement: SELECT name, rank, serialNo FROM employee.

- rs.getString(0);
- rs.getString("name");
- rs.getString(1);
- None of the above

1 points

Question 81

1. Consider the following class definition:

```
1. public class Test extends Base {
2.    public Test(int j) {
3.    }
4.    public Test(int j, int k) {
5.      super(j, k);
6.    }
7. }
```

Which of the following forms of constructor must exist explicitly in the definition of the Base class?

- Base() { }
- Base(int j) { }
- (•) Base(int j, int k) { }
- Base(int j, int k, int l) { }
- None of the above

1 points

Question 82

1. Which of the following could be used to declare abstract method method1 in abstract class Class1 (method1 returns an int and takes no arguments).

- public int method1();.
- public int abstract method1();.
- (•) public abstract int method1();.
- public int nonfinal method1();.

1 points

Question 83

1. The code within a finally block executes when a try block.

- identifies one or more Exceptions
- does not identify any Exceptions
- either a or b
- neither a nor b

1 points

Question 84

1. Which one of the following is not a region constant for the BorderLayout manager.

- CENTER.
- EAST.
- RIGHT.
- NORTH.

1 points

Question 85

1. From which object do you ask for DatabaseMetaData.

- Connection.
- ResultSet.
- DriverManager.
- Driver.

1 points

Question 86

1. The default implementation of method clone of Object performs a _____.

- empty copy.
- deep copy.
- full copy.
- shallow copy.

1 points

Question 87

1. Java programs communicate with databases using what API.

- DBMS.
- JDBC.
- RDBMS.
- Database.

1 points

Question 88

1. Write the code to implement a thread safe Singleton design pattern. Then name of you class should be SafeSingleton.

Press Tab to enter the content editor. For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

Mashups

Path: p

Words:21

10 points

Question 89

1. To place an element on a queue you call the _____ method of the Queue ADT.

- dequeue().

- push().
- setElement().
- None of the above.

1 points

Question 90

1. The equals() method in the String class returns a true value if _____.

- lengths are unequal or the characters do not match if lengths are equal
- lengths are equal and the characters match exactly
- lengths are equal and the characters match except for case
- lengths are equal and the characters do not match
- none of the above

1 points

Question 91

1. What is the minimal modification that will make the code below compile correctly?

```
1.  final class Aaa
2.  {
3.      int xxx;
4.      void yyy() { xxx = 1; }
5.  }
6.
7.
8.  class Bbb extends Aaa
9.  {
10.     final Aaa finalref = new Aaa();
11.
12.     final void yyy()
13.     {
14.         System.out.println("In method yyy()");
15.         finalref.xxx = 12345;
```

16. }
17. }

- [x] On line 1, remove the final modifier
- [ ] On line 10, remove the final modifier
- [ ] Remove line 15
- [ ] On lines 1 and 10, remove the final modifier
- [ ] The code will compile as is. no modification is needed

1 points

Question 92

1. Servlets run under the control of a(n) .

- [ ] applet.
- [ ] owner class
- [ ] web browser
- [x] web server or servlet engine

1 points

Question 93

1. Which of the following keywords allows a subclass to access a superclass method even when the subclasshas overridden the superclass method?

- [ ] protected
- [ ] this
- [ ] public
- [x] super

1 points

Question 94

1. In Lab 03, the implementation of Shannon's Theorem in a GUI program used the pattern.

- Value Object.
- Dependent Object.
- Model-View-Controller.
- Simple Factory.

1 points

Question 95

1. Design patterns _____.

- are proven ways for implementing behavior that help increase cohesion and reduce coupling.
- are elegant ways for writing code.
- cannot be implemented in Java.
- only apply to C++.

1 points

Question 96

1. What exception is thrown if the class loader cannot locate the driver class.

- NoSuchClassException.
- ClassCastException.
- ClassNotFoundException.
- IllegalClassException.

1 points

Question 97

1. When a subclass constructor calls its superclass constructor, what happens if the superclass's constructor does not assign a value to an instance variable.

- A syntax error occurs.
- A compile-time error occurs.
- A run-time error occurs.
- The program compiles and runs because the instance variables are initialized to their default values.

1 points

Question 98

1. Which of the following statements about recursion are true.

- Recursion can occur infinitely.
- Recursion uses a termination test.
- Both a and b.
- Neither a nor b.

1 points

Question 99

1. Use AWT components for a greater level of portability and flexibility.

- True
- False

1 points

Question 100

1. Which layout manager is the default for JFrame.

- FlowLayout.
- BorderLayout.
- GridLayout.

- None of the above.

1 points

Question 101

1. Generics provide _____ that allows programmers to catch invalid types at compile time.

- compile-time type safety.
- compile-time exception handling.
- compile-time error checking.
- run-time type safety.

1 points

Save and Submit

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save and Submit

CST8288 (15F) Midterm Test: Student Name _____

Test Version A

Instructions (Read These):

- **Starting the test before permission has been given will result in an immediate zero. Everyone starts at the same time once everyone is seated.**
- **Turn mobile phones / mobile devices off**
- **Remove all papers, books, laptops etc. from the desks**
- **Using any electronic device – laptop, mobile phone, PDA, calculator during the test will result in immediate zero**
- **Strictly no talking for any reason during the test or you get zero, unless to ask the professor a question If you complete your test early, do not talk to friends who are still taking the test.**
- **Write your name at the top of the test document on page 1 and at the end for part 2, as well as on the Multiple Choice Answer Sheet.**
- **Assume code samples shown will run / compile as part of a larger code listing, unless there is an option provided "does not compile" or similar for a possible answer**
- **All questions are within the context of Java, and computer programming**
- **If you see what you think may be a mistake raise your hand and ask quietly when I reach you**
- **Please do not leave the room during the first 30 minutes of the test.**
- **All test materials must be returned at the end of the test**

Additional Notes:
(**No Calculators allowed)**

The test is in two parts:

Part 1 is multiple-choice questions

- Place your answers for Part 1 onto the provided answer sheet, only the answer sheet will be used for grading Part 1
- Note: Make sure your handwriting is readable; I suggest using upper case letters ensuring that D looks different from B.

Part 2 is short answer

- Place your answers for Part 2 into the spaces provided. If you need more room clearly note that your answer is continued on extra paper, and on the extra paper clearly indicate what question you are continuing.

- There is an extra blank page at the end of the test you can detach to use as scrap paper, remember to return all sheets at the end of the test, including scrap paper.

Ensure that your name is on all parts of the test:

- Multiple Choice answer sheet
- The test (this document)
- Any extra sheets you detach

Total Test Time will be 1 hour 50 minutes

Part 1: Multiple Choice Questions 60 points [2 points each]

1. Which of the following is a benefit of the OOP approach to programming?
   a) Code maintainability
   b) Code reusability
   c) Code reliability
   d) All of the above

2. In an Object Oriented programming language data and related functions are combined into a single unit called a(n) _____.
   a) Token
   b) Object
   c) Procedure

3. Objects communicate by sending messages between each other, this is implemented using _____.
   a) Variables
   b) Methods
   c) Reflection

4. Which of the following is not one of Java's access modifiers?
   a) public
   b) protected
   c) internal

5. Which sentence describes Principle of Least Privilege best?
   Each component should have:
   a) full rights and privileges so it can do its task
   b) minimal rights and privileges or full rights and privileges so it can do its task
   c) minimal rights and privileges to accomplish its task, but no additional rights or privileges

6. Which of the items below is often described as a blueprint?
   a) Class
   b) Object
   c) Enum

7. Given the classes below what prints from the program when it is run?

```
public class Counting{
    public static int count;
    public Counting(){ count++; }
}
```

```
public class CountingDemo{
    public static void main(String[] args){
        System.out.print( (new Counting() ).count );
        System.out.print( (new Counting() ).count );
}}
```

   a) 00
   b) 11
   c) 12

8. Which of the following terms is used to categorize design patterns related to object instantiation?
   a) Behavioural
   b) Structural
   c) Creational

9. Which design pattern from the list below is concerned with separating construction of a complex object from it's implementation?
   a) Singleton
   b) Builder
   c) Delegate

10. The code sample below is for a Singleton design pattern. What one thing is wrong?

```
public class SingleThing {
    private static final SingleThing thing = new SingleThing();
    public SingleThing(){} // private constructor
    public static SingleThing instance(){return thing;}
}
```

   a) The method named instance() should not be public
   b) The constructor was marked public, it needs to be private
   c) You cannot assign a new SingleThing reference to variable thing because it was marked final

11. This code, taken from Assignment 2 suggests a(n) _____ design pattern

```
public void setBandwidth(double bandwidth){
    model.setBandwidth(bandwidth);
}
```

   a) Singleton
   b) Delegate
   c) Builder

12. The code sample below is taken from delegate design pattern demonstration, item AccountBehaviour is a(n) _____.

```
public class Account {
    private double balance;
    private AccountBehaviour accountBehaviour;
```

   a) Superclass
   b) Interface
   c) Enum

13. When using JUnit 4 what annotation is used to mark a test method?
   a) @Test
   b) @CheckCode
   c) @Testing

14. Which one of the JUnit methods below is best used for comparing two double values?
   a) assertEquals(String message, double expected, double actual)
   b) assertEquals(String message, double expected, double actual, double delta)
   c) assertTrue(String message, (expected == actual))

15. Which of the following is not one of the typical workflow steps when creating a JUnit test?
    a) Check results for the one task tested using an appropriate assert method.
    b) Prepare objects and variables (use meaningful variable names).
    c) Perform many tasks to be tested all at once inside one test method.

16. Which of the classes below represent an immutable (non-changeable) sequence of characters in a Java program?
    a) String
    b) StringBuilder
    c) StringBuffer

17. Which one of the methods of class StringBuilder is used to concatenate text into the StringBuilder?
    a) builder.append("text");
    b) builder.toString("text");
    c) builder.add("text");

18. What is wrong with the Java class declaration below, with regard to coding conventions?

    public class tuna_fish{}

    a) Class identifiers in Java should start with an upper case letter.
    b) Class identifiers in Java should use mixed case instead of underscores.
    c) Both of the above

19. Given the recursive example below what is printed to the console?

```
public class B{
    public static void main(String[ ] args){
        recurse(2);
    }
    public static void recurse(int n){
        if (n >= 0) {
            System.out.print(n + " ");
            recurse(n - 1);
            System.out.print(n + " ");
        }
    }
}
```

    a) 3 2 1 1 2 3
    b) 2 1 0 0 1 2
    c) 0 1 2 2 0 1

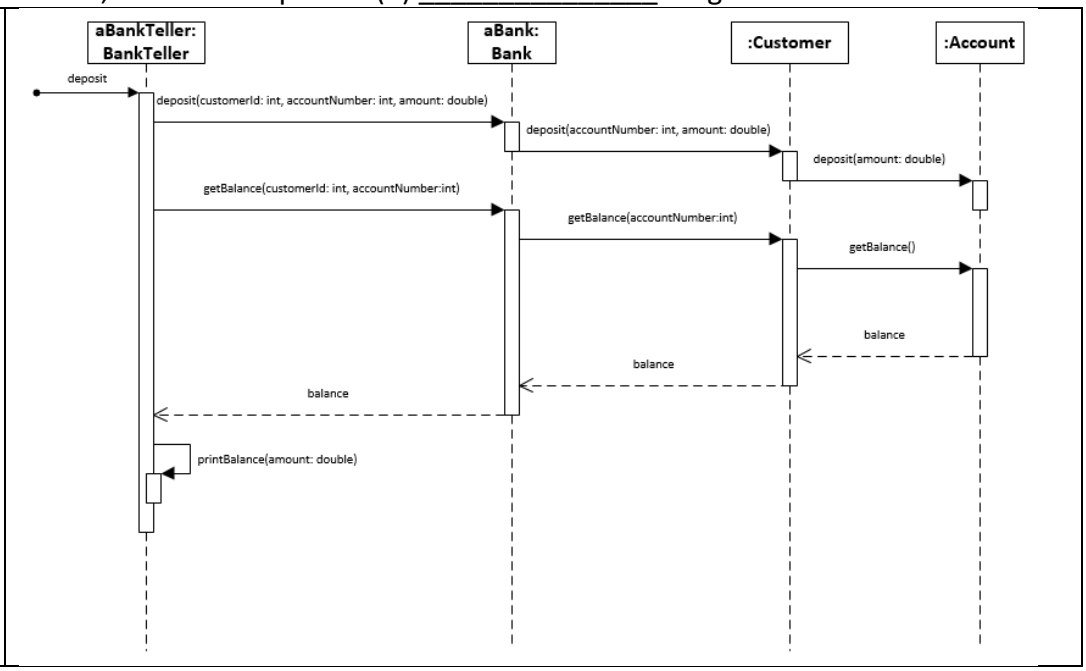
20. Which of the following lines below list Big-O in order from best to worse?
    a) O(1), O(log n), O(n), O(n log n), $O(n^2)$
    b) O(n), O(n log n), O(1), O(log n), $O(n^2)$
    c) $O(n^2)$, O(n log n), O(n), O(log n), O(1)

21. Which Abstract Data Type would you use for simulating people waiting in a line?
    a) Stack
    b) !n7t6d
    c) Vector

22. Which of the following array sorting algorithms has Big-O(n log n)?
    a) Selection Sort
    b) Bubble Sort
    c) Merge Sort

23. Examine the figure below, it is an example of a(n) _____ Diagram.

a) UML Sequence
b) UML Class
c) Use Case



24. The following code is an example of the _____ design pattern.

```
Comparator comp = new ComparatorAdapter(){
    @Override
    public boolean compare(double a, double b){
        return (a < b);
    }
};
```

    a) Singleton
    b) Builder
    c) Adapter

25. Which of the following swing GUI components allows a user to enter text?
    a) JLabel
    b) JTextField
    c) JButton

26. Swing components are _____.
    a) Lightweight
    b) Heavyweight
    c) Medium-weight

27. Which of the following is not a layout used with Java Swing?
    a) FlowLayout
    b) BorderLayout
    c) LinearLayout

28. In the Java coordinate system _____.
    a) x increases towards the right, y increases as you move down.
    b) x decreases towards the right, y decreases as you move down.
    c) x increases towards the right, y increases as you move up.

29. When using the Observer Design Pattern with Java's built in support your Subject subclasses _____.
    a) java.util.Observer
    b) java.util.Observable
    c) java.util.Subject

30. In the Model View Controller Design Pattern what component typically takes on the role of interacting with the user?
    a) Model
    b) View
    c) Controller

Part 2: Short Answer Questions 40 points [points vary per question, spend time wisely]

1. Given the code samples from classes Person and PersonBuilder write the constructor inside Person needed to complete the builder design pattern. [7 points]

```
public class PersonBuilder{
    private int personId;
    private String firstName;
    private String email;
    public int getPersonID(){ return personId; }
    public String getFirstName(){ return firstName; }
    public String getEmail(){ return email; }
    private PersonBuilder() { }
    public static PersonBuilder create() { return new PersonBuilder(); }
    public PersonBuilder personId (int personId)     { this.personId = personId;   return this; }
    public PersonBuilder firstName(String firstName) { this.firstName = firstName; return this; }
    public PersonBuilder email    (String email)     { this.email = email;         return this; }

    public Person build() { return new Person(this); } // Call to the constructor
}
public class Person{
    private int personId;
    private String firstName;
    private String email;

    public int getPersonID(){ return personId; }
    public void setPersonID(int personID){this.personId = personID; }

    public String getFirstName(){ return firstName; }
    public void setLirstName(String firstName){this.firstName = firstName;}

    public String getEmail(){ return email; }
    public void setEmail(String email){this.email = email;}

// TO DO: Write Constructor to complete Builder Design Pattern
```

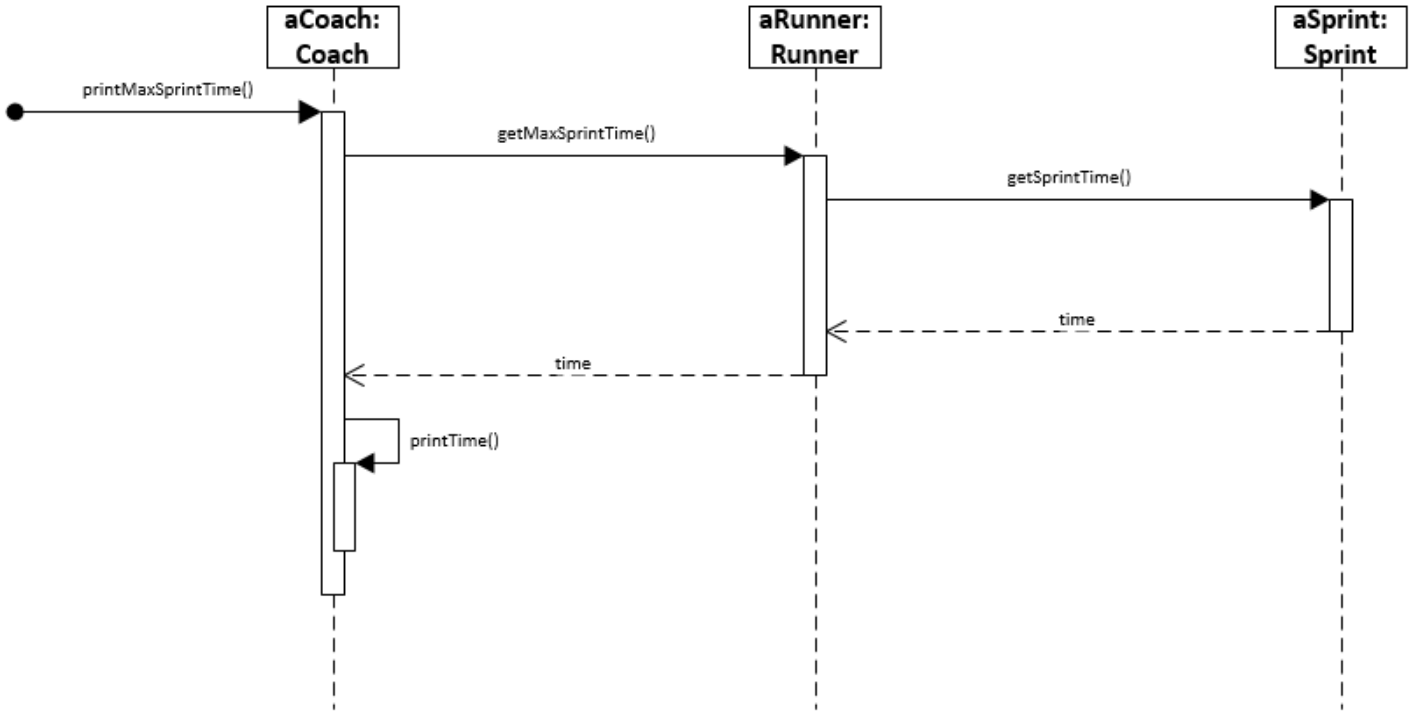
// Answer:

```
    public Person(PersonBuilder builder)
    {
        personId = builder.getPersonID();
        firstName = builder.getFirstName();
        email = builder.getEmail();
    }
```

2. Create a UML Sequence Diagram based on the following class names, you may select method names that make sense to complete the diagram. [7 points]

Classes: Coach, Runner, Sprint

Scenario: The three objects interacting in the scenario have all been instantiated. The coach needs to retrieve the maximum sprint time, in seconds, from runner and then print this value to the console.



3. Matching: Examine the code samples below, what is the Big-O for each? [6 points]

Possible Big-O: O(1) O(n) O(n^2) O(log n)

Each Big-O is only used once, only 3 are needed

i)
```
for(int i = 1; i < n; i++){}
```

Big-O is (answer here) _____**O(n)**

ii)
```
for(int i = 1; i < n; i = i * 2){}
```

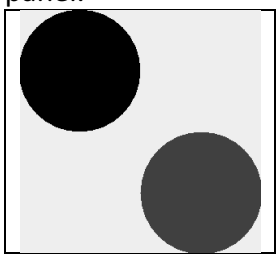
Big-O is (answer here) _____**O(log n)**

iii)
```
for(int i = 1; i < n; i++){
    for(int k = 1; k < n; k++){}
}
```

Big-O is (answer here) _____ **O(n^2)**

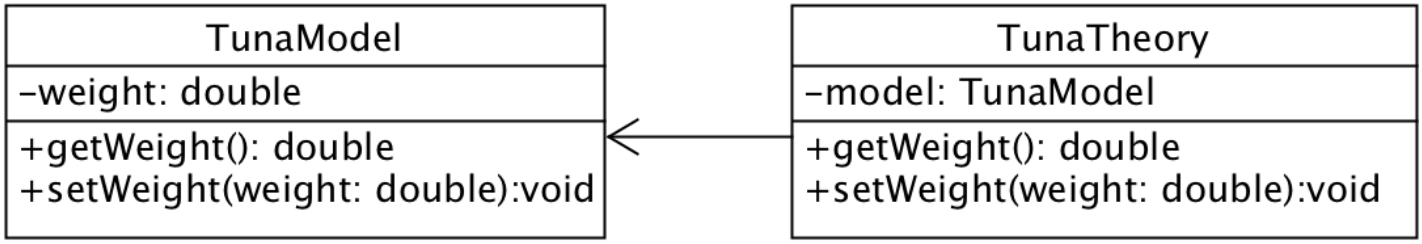
4. Given the screen shot and starter code, write the needed Java 2D code to complete the image. [10 points]

- The Panel is 300 pixels wide and 300 pixels tall.
- The upper circle in Black is drawn from the upper left corner of the panel and has a diameter ½ the width of the panel
- The lower circle in DarkGray is drawn from the middle of the panel and has a diameter ½ the width of the panel.



```
import javax.swing.JPanel;
import java.awt.Color;
import java.awt.Graphics;
import java.awt.Dimension;
public class A extends JPanel {
    public A(){
        super();
        setPreferredSize(new Dimension(300,300));
    }
    @Override
    public void paintComponent(Graphics g){
      // Calculate the needed values
      // (w is width, h is height, x is x-coordinate, y is y-coordinate)

        int wUpper = 300 / 2; // one half width of panel

        int hUpper = 300 / 2; // one half height of panel

        int xUpper = 0; // 0,0 is for upper top-left corner

        int yUpper = 0;


        int wLower = 300 / 2;

        int hLower = 300 / 2;

        int xLower = 300 / 2; // calculate x as one half of width

        int yLower = 300 / 2; // calculate y as one half of height

        g.setColor(Color.black);
        g.fillOval(xUpper, yUpper, wUpper, hUpper);
        g.setColor(Color.darkGray);
        g.fillOval(xLower, yLower, wLower, hLower);
    }
}
```

5. Use the UML below to write the code for a simple delegate design pattern (both classes) [10 points]




```
public class TunaModel{
    private double weight;
    public double getWeight(){ return weight; }
    public void setWeight(double weight){ this. weight = weight; }
}

public class TunaTheory{
    private TunaModel model = new TunaModel();
    public double getWeight(){ return model.getWeight(); }
    public void setWeight(double weight){ model.setWeight(weight); }
}
```

Scrap Paper, Name: _____

Scrap Paper, Name: _____

Full Name: _____

CST8288 15F Multiple Choice Question Answer Sheet: Term Test A

Note: Question numbers are vertical down the page

Question Number	Letter Answer
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Question Number	Letter Answer
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Question Number	Letter Answer
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30	

Name: _____

Term Test 1 A (15W)

Instructions (Read These):

- **Starting the test before permission has been given will result in an immediate zero. Everyone starts at the same time once everyone is seated.**
- **Turn mobile phones / mobile devices off**
- **Remove all papers, books, laptops etc. from the desks**
- **Using any electronic device – laptop, mobile phone, PDA, calculator during the test will result in immediate zero**
- **Strictly no talking for any reason during the test or you get zero, unless to ask the professor a question If you complete your test early, do not talk to friends who are still taking the test.**
- **Write your name at the top of the test document on page 1 and at the end for part 2, as well as on the Multiple Choice Answer Sheet.**
- **Assume code samples shown will run / compile as part of a larger code listing, unless there is an option provided "does not compile" or similar for a possible answer**
- **All questions are within the context of Java, and computer programming**
- **If you see what you think may be a mistake raise your hand and ask quietly when I reach you**
- **Please do not leave the room during the first 30 minutes of the test.**
- **All test materials must be returned at the end of the test**

Additional Notes:

(**No Calculators allowed)**

The test is in two parts, Part 1 is multiple-choice questions, and Part 2 is short answer.

Place your answers for Part 1 onto the provided answer sheet, only the answer sheet will be used for grading Part 1

Note: Make sure your handwriting is readable; I suggest using upper case letters ensuring that D looks different from B.

Place your answers for Part 2 into the spaces provided. If you need more room clearly note that your answer is continued on extra paper, and on the extra paper clearly indicate what question you are continuing.

There is an extra blank page at the end of the test you can detach to use as scrap paper, remember to return all sheets at the end of the test, including scrap paper.

Ensure that your name is on all parts of the test:

- Multiple Choice answer sheet
- The test (this document)
- Any extra sheets you detach

Total Test Time will be 1hour

Part 1 Multiple Choice: Each question is worth 3 points; there is only one correct answer per question.

1. Which programming language combines data and functions that operate on the data into a single unit?
   a) Object Oriented Programming
   b) Procedural Programming
   c) Functional Programming

2. The _____ states: Each component of a system should have sufficient rights and privileges to accomplish its designated task, but no additional rights or privileges.
   a) Principle of Least Privilege
   b) Open/Closed Principle
   c) Principle of Least Astonishment

3. Given the code sample below, what command line command will compile the class and create the needed folders on the hard drive as well?

```
package network;
public class ShannonsTheorem{ }
```

   a) javac ShannonsTheorem.java
   b) javac -package ShannonsTheorem.java
   c) javac -d . ShannonsTheorem.java

4. _____ are core solutions to common problems.
   a) Design patterns
   b) Inheritance
   c) Principles

5. Which of the following design patterns ensures that only one instance of a class is made?
   a) Builder Design Pattern
   b) Delegate Design Pattern
   c) Singleton Design Pattern

6. Which of the following is not one of the 3 steps used in implementing a Singleton Design Pattern?
   a) public static final field variable to refer to one instance of the object
   b) private constructor
   c) public static read-only property to grant access to the one instance of the object

7. You are designing a banking application and need different behaviours for the accounts, e.g. change from Savings to Chequing behaviour. One solution is to use the _____ design pattern to solve this problem.
   a) Composite (A)
   a) Delegate (B)
   b) Singleton (C)

8. Professional Java programmers follow _____ to help ensure their code is readable.
   a) Coding Conventions
   b) Compiler Requirements
   c) Proprietary Principle Practices (i.e. PPP)

9. A _____ method calls itself either directly or indirectly through another method. Termination of the method calls is controlled when a base case is reached.
   a) Overloaded
   b) Overridden
   c) Recursive

10. Given the code sample below, what is the program output?

```
public static int recurse(int n){
        if(n > 1){
                return n - recurse(n / 2);
        }
        else{
                return n;
        }
}
public static void main(String[] args){
        System.out.println(recurse(6));
}
```

   a) 3
   b) 4
   c) 5

11. Given the following code, what will be the output from the program from System.out.println(s1 == s2);

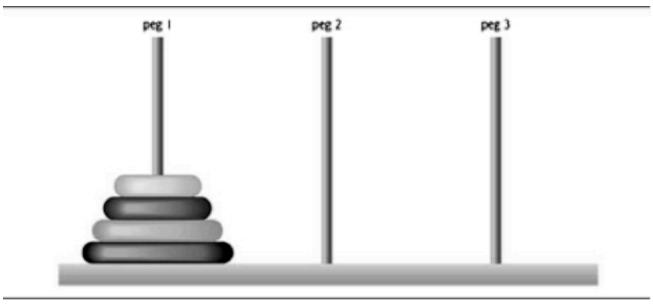
```
public static void main(String[] args){
        java.util.Scanner input = new java.util.Scanner(System.in);
        String s1 = "abc";
        System.out.print("Enter: abc");
        String s2 = input.nextLine(); // assume user will enter abc
        s2 = s2.intern();
        System.out.println(s1 == s2); // what is output from this line?
}
```

   a) false
   b) true
   c) "abc == abc"

12. The following figure came from your textbook; it depicts a classic recursion problem computer scientists struggle with to understand. What is the name of this classic puzzle?

   a) Disks and Sticks
   b) Towers of Hanoi
   c) Slides and Ladders

Reference: Deitel, Paul, Harvey Deitel. *CST8110 Java How to Program (early objects) 9e, 9th Edition*. Pearson Learning Solutions, 02/2011. VitalBook file.



13. Select the sequence of Big-O's from best case to worse case moving from left (best) to worse (right).
   a) O(1), O(log n), O(n), O(n log n), O(n^2)
   b) O(log n), O(1), O(n log n), O(n), O(n^2)
   c) O(n^2), O(n log n), O(n), O(log n), O(1)

14. What is the Big-O for a typical merge sort algorithm?
    a) O(1)
    b) $O(n^2)$
    c) O(n log n)

15. Which Java Collections API class, from the three below, has a lookup Big-O of O(1)?
    a) ArrayList
    b) TreeSet
    c) HashSet

16. Which of the following is not a Container class in Java Swing?
    a) JFrame
    b) JPanel
    c) JLabel

17. What is the default layout manager of a JFrame?
    a) BorderLayout
    b) GridLayout
    c) FlowLayout

18. When a Java class implements the interface java.util.Observer what is the one method that needs to be overridden?
    a) acceptNotification(Observable o, Object args)
    b) update(Observable o, Object args)
    c) actionUpdateListener(Observable wasUpdated)

19. When inheriting code from java.lang.Observable before calling method notifyObservers() it is important to call method _____ first.
    a) hasChanged()
    b) setChanged()
    c) clearChanged()

20. In the MVC design pattern what part stores and manipulates the data?
    a) View
    b) Controller
    c) Model

21. Part 2 Short Answer Questions (40%): Complete all questions. Each question is 8 points.

Question 1: [8 Points]

- Given the starter code below, refactor it so the class implements a Singleton Design Pattern. (i.e. add two things and make something private)

```
import javax.swing.*;
import java.awt.*;
public class PersonDetails extends JFrame{
	private JLabel personJLabel = new JLabel();

	private static final PersonDetails instance = new PersonDetails();


	private
	~~public~~ PersonDetails(){
		this.setDefaultCloseOperation(JFrame.HIDE_ON_CLOSE);
		this.add(personJLabel, BorderLayout.CENTER);
		this.setSize(300, 200);
		this.setVisible(true);
	}

	public static PersonDetails getInstance(){ return instance; }



}
```

Question 2: [8 Points]

- You are working on a class Person that has three fields: firstName, lastName, and age. (String, String, int)
- Write an overridden toString() method that uses a StringBuilder to generate and return a String similar to: [firstTest, lastTest, 39] where "firstTest", "lastTest", and 39 were values contained in the respective fields.

```
public class Person {
	private String firstName;
	private String lastName;
	private int age;
	public Person(){
		firstName = "firstTest";
		lastName = "lastTest";
		age = 39;
	}
	public String getFirstName(){ return firstName; }
	public void setFirstName(String firstName){
		this.firstName = firstName;
	}
	public String getLastName(){ return lastName; }
	public void setLastName(String lastName){
		this.lastName = lastName;
	}
	public int getAge(){ return age; }
	public void setAge(int age){
		this.age = age;
	}
	/* Your toString() goes here: */

	@Override
	public String toString(){
		StringBuilder builder = new StringBuilder();
		builder.append("[").append(firstName).append(", ")
			.append(lastName).append(", ")
			.append(age).append("]");
		return builder.toString();
	}
```

}

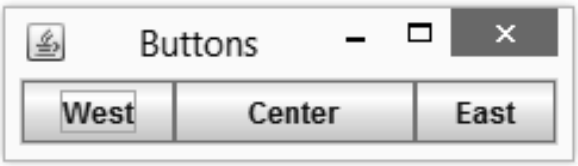
Question 3: [8 Points]

- Given the JUnit4 starter code below complete the code needed to test the Accessor and Mutator for Bandwidth in class ShannonsModel (both in the same test method).
- Use a Phone line bandwidth of 3000.0D hertz as well as a Delta of 0.01 for the test.

```
package networktest;
import network.ShannonsModel;
import static org.junit.Assert.*;
import org.junit.After;
import org.junit.AfterClass;
import org.junit.Before;
import org.junit.BeforeClass;
import org.junit.Test;
public class ShannonsModelTest {
	private ShannonsModel model;
	@Before
	public void setUp() throws Exception {
		model = new ShannonsModel();
	}
	@After
	public void tearDown() throws Exception {
		model = null;
	}
	@Test
	public void testThatBandwidthAccessorAndMutatorWorks(){
		/* Your code here */
		double bandwidth = 3000.0D
		double delta = 0.01D
		model.setBandwidth(bandwidth);
		assertEquals(
			"get or set Bandwidth test failed",
			bandwidth,
			model.getBandwidth(),
			delta);
	}



}
```

Question 4: [8 points]

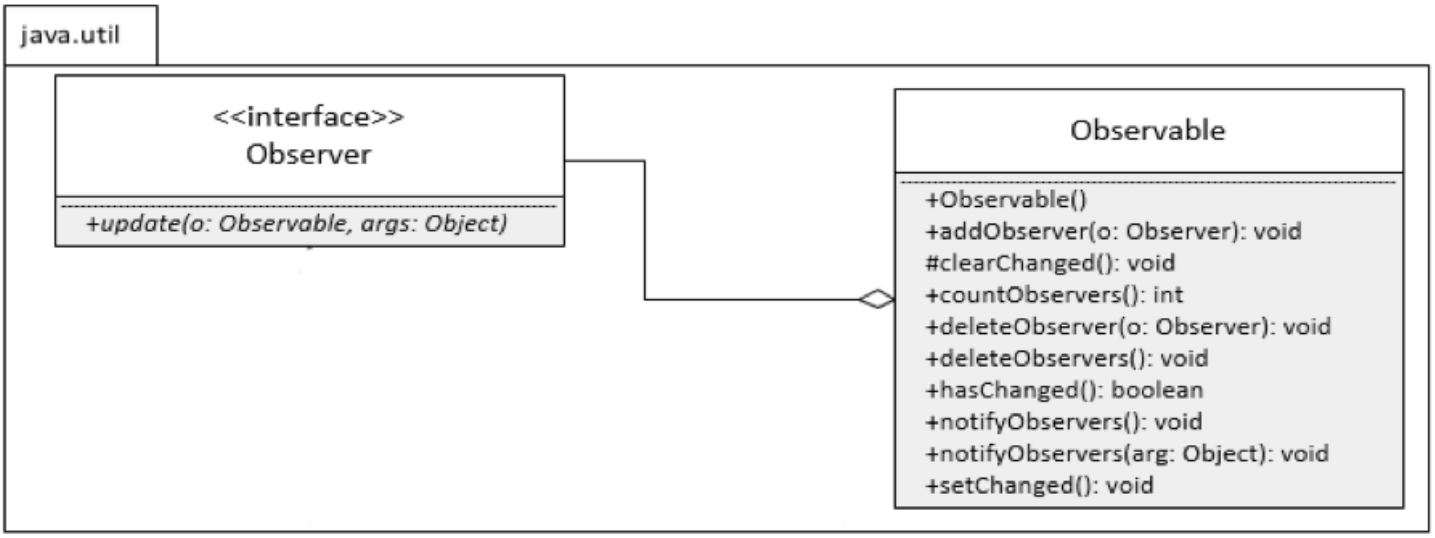
- Using the starter code below add three JButtons to the JFrame to get a similar layout as shown in the screen shot.
- Use the default layout manager for JFrame.




```
import java.awt.BorderLayout;
import javax.swing.JButton;
import javax.swing.JFrame;
public class ButtonsJFrame extends JFrame {
	private JButton oneJButton;
	private JButton twoJButton;
	private JButton threeJButton;
	public ButtonsJFrame(){
		super("Buttons");
		this.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

		configureButtons();

		this.pack();
		this.setVisible(true);
	}

	private void configureButtons(){
		/* Your Code Here */
		oneJButton = new JButton("West");
		twoJButton = new JButton("Center");
		threeJButton = new JButton("East");
		this.add(oneJButton, BorderLayout.WEST);
		this.add(twoJButton, BorderLayout.CENTER);
		this.add(threeJButton, BorderLayout.EAST);
	}









}
```

Question 5: [8 points] in two parts 4 points each

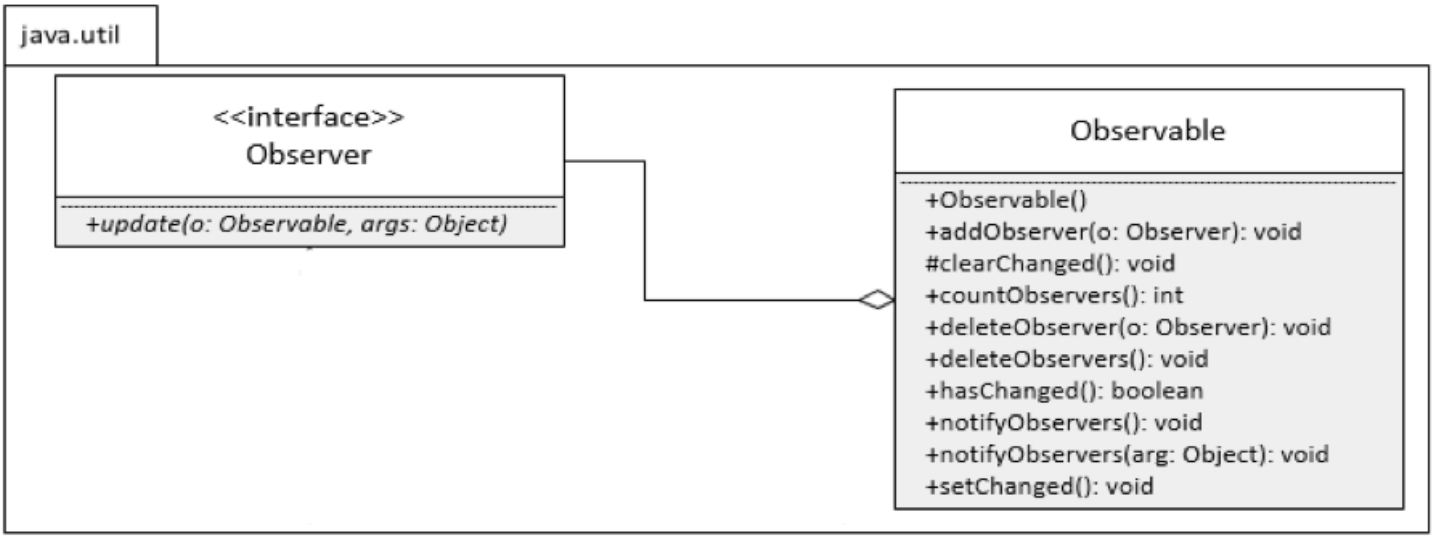
- Part 1:
- Using the UML Diagram provided as a reference Write the code for:
- a class named PersonSubject (extends java.util.Observable)
    - add one field firstName with a get and set method and notify any observers that the firstName changed when setFirstName(String firstName) is called.
    - Tip: There is no need to write a constructor for this class in the test.




```
import java.util.Observable;
public class PersonSubject extends Observable {
	private String firstName;
	public String getFirstName(){return firstName;}
	public void setFirstName(String firstName){
		this.firstName = firstName;
		setChanged();
		notifyObservers();
	}
}
```

Question 5: [8 points] in two parts 4 points each

- Part 2:
- Using the UML Diagram provided as a reference Write the code for:
- a class named PersonObserver (implements java.util.Observer)
- Override method update and print out the first name from the PersonSubject (System.out…)




```
import java.util.Observable;
import java.util.Observer;
public class PersonObserver implements Observer {
	@Override
	public void update(Observable o, Object arg) {
		if(o instanceof PersonSubject){
			PersonSubject person = (PersonSubject)o;
			System.out.println(person.getFirstName());
		}
	}
}
```

Scrap Paper: Name _____

CST8288 15W Multiple Choice Question Answer Sheet: Term Test 1 A

Note: Question numbers are vertical down the page

Full Name: _____

Question Number	Letter Answer
1	
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Question Number	Letter Answer
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Parts 1 & 2 , Version 1 CST8288 - Quiz 1 W13

1 Assume that the following code snippet exists in a java program that is otherwise valid . (2 points)

```
int thisArray[ ] [ ] = {    {1,  2,  3,  4,  5},
                            {2,  4,  6,  8, 10},
                            {3,  6,  9, 12, 15},
                            {4,  8, 12, 16, 20},
                            {5, 10, 15, 20, 25}};
nextRow:
    for (int row = 1; row <= 5; row ++){
        for ( int column = 1; column <= 5; column++ ) {
            if (column > row)
                continue nextRow ;
            System.out.print(thisArray[row-1][column-1] + "\n" );
        }
        System.out.println( " " );
    }
    System.out.println( "\n*** " );
```

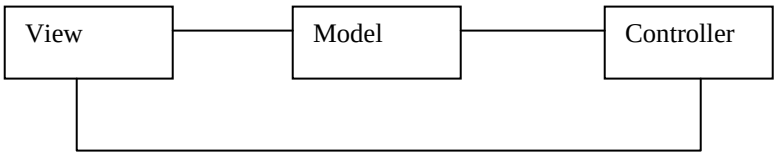
Neatly, Hand print the output from this snippet.

1
2
4
3
6
9
4
8
12
16
5
10
15
20
25

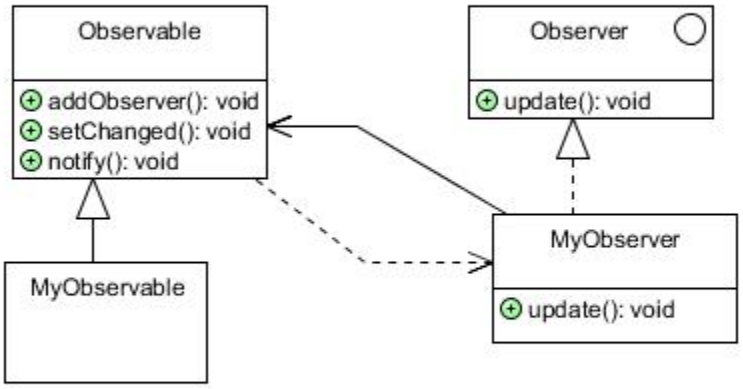
***

2 Provide a full description of the get/set pattern. (4 marks)
The get/set pattern provides the functionality for retrieving and updating attribute values. Get returns an instance of the value object, or a collection of values, set changes the value or a collection of values. No other functionality should be included unless required by a specific design pattern implementation.

3 Draw and label the UML diagram for model-view-controller architecture. (4 marks) (arrows should be included in this diagram)



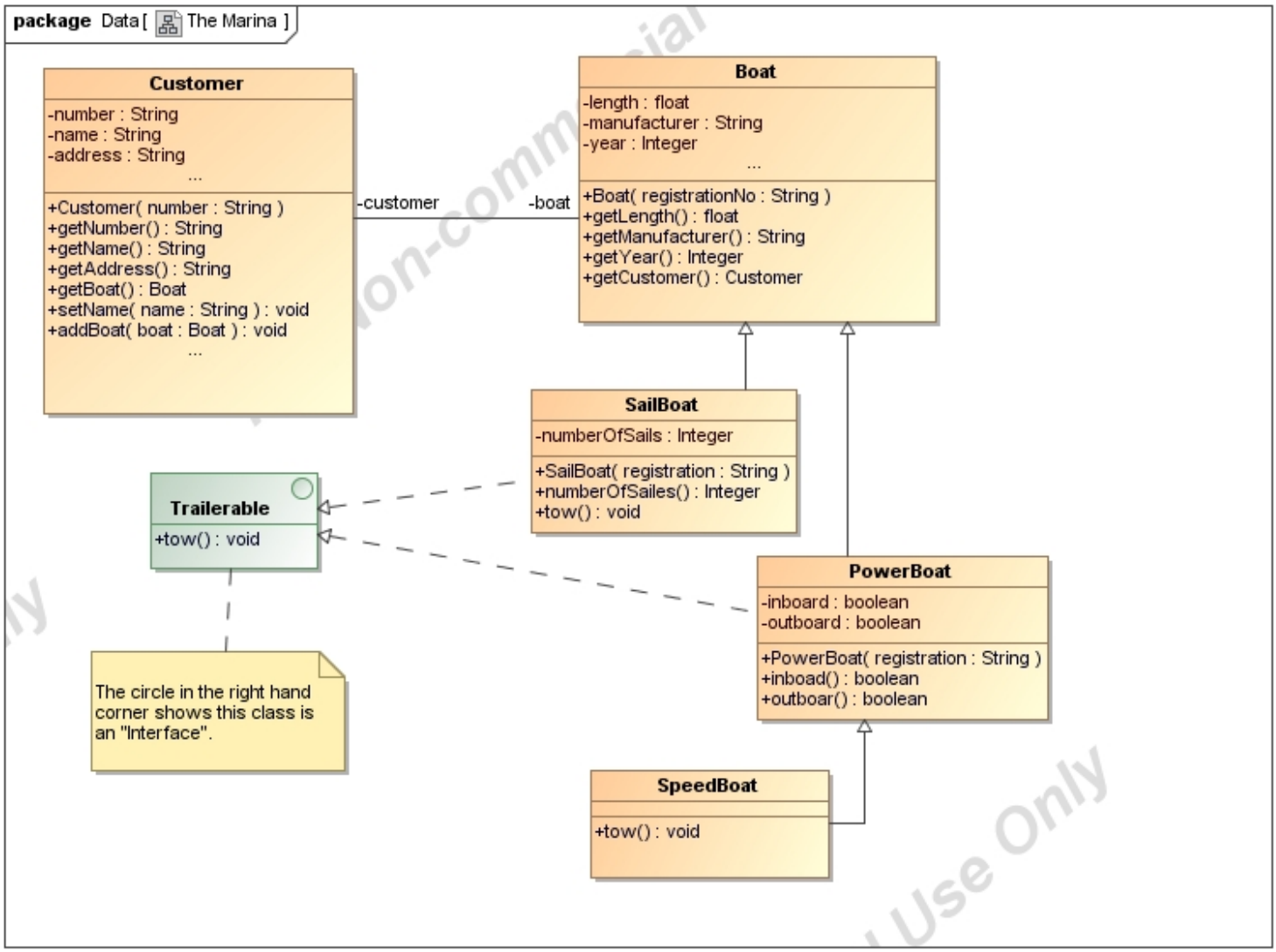
4 Explain the Observer pattern (including it's purpose , include a UML diagram) (4 marks)
The observer pattern provides a way for implementing an interrupt driven architecture between classes, or quite simply it allows one object to "observe" another object. The pattern implements the model-view paradigm. The Observer pattern allows the subject (observable object) to send events to registered observer objects normally indicating that a change has occurred in the subject object. This pattern decouples the observer from the observable object (subject). The observable object doesn't need to know anything about its observers other than their ability to respond to an update() message.



5 The Java API contains a number of implementations of the "Adapter" design pattern. Explain one of the implementations and where/why you might use it in your code. (6 marks)

Any …Adapter class from the API would do. Include not only the adaption aspect but the ability to extend the class and override method implementation (saves writing code)

6 Write the code that implements the UML Class Diagram below (comments may be omitted) (35 marks)




```
public class Customer     {
        public Customer(String number) { this.number = number; }
        public String getNumber()               { return number;        }
        public String getName()         { return name;   }
        public String getAddress()              { return address;       }
        public Boat getBoat()           { return boat;     }
        public void setName(String name)        { this.name = name;     }
        public void addBoat(Boat boat)  { this.boat = boat;       }
        private String number;
        private String name;
        private String address;
        private Boat boat;
}

public class Boat{
        public Boat()     {}
        public Boat(String registrationNo)        {}
        public float getLength()        { return length;  }
        public String getManufacturer()  { return manufacturer;   }
        public Integer getYear()        { return year;     }
```

```
        public Customer getCustomer()   { return customer;}
        private float length;
        private String manufacturer;
        private Integer year;
        private Customer customer;
}

public interface Trailerable        {
        public void tow();
}

public abstract class PowerBoat extends Boat implements Trailerable {
        public PowerBoat(String registrationNo)  { super(registrationNo);  }
        public boolean inBoard()                 { return inboard;         }
        public boolean outBoar()                 { return outboard;        }
        private boolean inboard;
        private boolean outboard;
}

public class SailBoat extends Boat implements Trailerable {
        public SailBoat(String registrationNo)   { super(registrationNo);  }
        public Integer numberOfSailes()          { return numberOfSails; }
        public void tow()           {}
        private Integer numberOfSails;
}

public class SpeedBoat extends PowerBoat          {
    public void tow()      {}
}
```

BONUS QUESTION: Earn up to 4 bonus marks for a COMPLETE answer (test score cannot exceed 100%).

From the following code, describe where the memory leak(s) occur(s) and explain why.

```
/**
 *    Stack implementation using an array.
 */
public class Stack<ELE> {

   public Stack( ) {     this( 10 );     }

   public Stack(int initialCapacity ) {
      this.elements = new ELE[ initialCapacity ];
            }

            public void push(ELE e) {
               ensureCapacity( );
               elements[ size++ ] = e;
            }

            public ELE pop( ) throws Exception {
               if (size == 0) throw new Exception("Empty queue");
               return elements[--size];       /* THIS IS THE LEAK, OBJECT REFERENCES MUST BE SET
                                                 *    TO A NULL FOR THE GARBAGE COLLECTOR TO RELEASE
                                                 *    THE MEMORY.  Here we decrement the index into the array,
                                                 *    however, we leave the object reference in the array.  The
                                                 *    reference would not be set to null until we quit the program or
                                                 *    over-write the reference at this element position.
                                                */
            }
           }

            public void ensureCapacity( ) {
               if (elements.length == size) {
                  ELE[ ] oldElements = elements;
                  elements = new ELE[2 * elements.length+1];
                  System.arraycopy( oldElements, 0, elements, 0, size );
               }
            }


            private ELE[ ] elements;
            private int size = 0;

         }       /* End of Class: stack.java */
```

Cst8288

- **Question 1**

1 out of 1 points

Which of the following is not a valid comment in the Java programming language?

Answer

Selected Answer: b.
<!-- A comment -->
int x;

Correct Answer: b.
<!-- A comment -->
int x;

- **Question 2**

0 out of 1 points

What is the nature of data typing in the Java programming language?

Answer

Selected Answer: c.
Untyped

Correct Answer: a.
Strongly typed

- **Question 3**

1 out of 1 points

What is the value of days.length for the following array?

```
String[] days = {"Monday", "Tuesday","Wednesday",
                 "Thursday","Friday", “Saturday”};
```

Answer

Selected Answer: c.
6

Correct Answer: c.
6

- **Question 4**

1 out of 1 points

An overridden method can be in the same class.

Answer

Selected Answer: False

Correct Answer: False

- **Question 5**

1 out of 1 points

What's printed when the following program is executed:

```
class WhatsPrinted  {
   public void doIt(int achar) {
      System.out.println(achar+achar);
   }
      public static void main (String args[]) {
       new WhatsPrinted().doIt('B');
   }
}
```

Answer

Selected Answer: a.
132 (The ASCII value of B is 42hex)

Correct Answer: a.
132 (The ASCII value of B is 42hex)

- **Question 6**

1 out of 1 points

When a concrete class implements an interface, it must provide behavior for...
Answer

Selected Answer: d.
All methods defined in that interface.

Correct Answer: d.
All methods defined in that interface.

- **Question 7**

1 out of 1 points

What results from running the following code?

```
1. public class Short {
2.   public static void main(String args[]) {
3.     StringBuilder s = new StringBuilder("Hello");
4.     if((s.length() >= 5) && (s.append(" There").equals("False")))
5.       ; // do nothing
6.     System.out.println("value is " + s);
7.   }
8. }
```

Answer

Selected Answer: a.
The output: value is Hello There

Correct Answer: a.
The output: value is Hello There

- **Question 8**

1 out of 1 points

Consider the following code:

```
1. Object ob = new Object();
2. String stringarr[] = new String[50];
```

3. Float floater = new Float(3.14f);
4.
5. ob = stringarr;
6. ob = stringarr[5];
7. floater = ob;
8. ob = floater;

Which line(s) above will not compile?

Answer

Selected Answer: c. 7

Correct Answer: c. 7

- **Question 9**

1 out of 1 points

Your application constructs a frame by calling JFrame f = new JFrame(); but when you run the code, the frame does not appear on the screen. What code will make the frame appear? (Choose one.)

Answer

Selected Answer: d. f.setVisible(true);

Correct Answer: d. f.setVisible(true);

- **Question 10**

1 out of 1 points

A protected method may be overridden by a public method.

Answer

Selected Answer: True

Correct Answer: True

- **Question 11**

0 out of 1 points

A protected method may be overridden by a private method.

Answer

Selected Answer: True

Correct Answer: False

- **Question 12**

0 out of 1 points

Which of the following statements is correct? (Choose one)

Answer

Selected Answer: a.
Only primitives are converted automatically; to change the type of an object reference, you have to do a cast.

Correct Answer: c.
Both primitives and object references can be both converted and cast.

- **Question 13**

1 out of 1 points

In the code fragment below, after execution of line 1, sbuf references an instance of the StringBuilder class. After execution of line 2, sbuf still references the same instance.

```
1. StringBuilder sbuf = new StringBuilder("abcde");
2. sbuf.append("xyz");
```

Answer

Selected Answer: True

Correct Answer: True

- **Question 14**

0 out of 1 points

How many bytes does the following code write to file destfile?

```
1. try {
2.   FileOutputStream fos = new FileOutputStream("destfile");
3.   DataOutputStream dos = new DataOutputStream(fos);
4.   dos.writeInt(3);
5.   dos.writeDouble(0.0001);
6.   dos.close();
7.   fos.close();
8. }
9. catch (IOException e) { }
```

Answer

Selected Answer: b. 8

Correct Answer: c. 12

- **Question 15**

0 out of 1 points

Given the code below (making no other changes), which access modifiers (public, protected, or private) can legally be placed before aMethod() on line 2?

```
1.  class SomeClass
2.  {  void methodA() { }
3.  }
4.
5.  class AnotherClass extends SomeClass
6.  {   void methodA() { }
7.  }
```

Answer

Selected Answer: b. protected

Correct Answer: c. private

- **Question 16**

1 out of 1 points

Which one statement is true about the code below?

```
1.  class HasStatic
2.  {
3.     private static int x = 100;
4.
5.     public static void main(String args[])
6.     {
7.        HasStatic hs1 = new HasStatic();
8.        hs1.x++;
9.        HasStatic hs2 = new HasStatic();
10.       hs2.x++;
11.       hs1 = new HasStatic();
12.       hs1.x++;
13.       HasStatic.x++;
14.       System.out.println("x = " + x+1);
15.    }
16. }
```

Answer

Selected Answer: d. The program compiles, and the output is x = 1041

Correct Answer: d. The program compiles, and the output is x = 1041

- **Question 17**

1 out of 1 points

Given the following declaration:

```
public class AddMult
      extends Applet
   implements ActionListener
```

In the phrase 'implements ActionListener ', ActionListener refers to

Answer

Selected Answer: an interface.

Correct Answer: an interface.

- **Question 18**

1 out of 1 points

An applet will run in almost any browser because...

Answer

Selected Answer: b.
The browser has a built-in JVM.

Correct Answer: b.
The browser has a built-in JVM.

- **Question 19**

1 out of 1 points

What is the purpose of the main method?

Answer

Selected Answer: d.

To act as the entry point for the program.

Correct Answer: d.
To act as the entry point for the program.

- **Question 20**

1 out of 1 points

Which of the following expressions are legal? (Choose one)
Answer

Selected Answer: d.
int x = 6; x = -+ ~x;

Correct Answer: d.
int x = 6; x = -+ ~x;

- **Question 21**

1 out of 1 points

What one statement is true about the code fragment below?

```
1. String s = "abcde";
2. StringBuilder s1 = new StringBuilder("abcde");
3. if (s.equals(s1))
4.   s1 = null;
5. if (s1.equals(s))
6.   s = null;
```

Answer

Selected Answer: d.
Compilation and Execution succeeds.

Correct Answer: d.
Compilation and Execution succeeds.

- **Question 22**

1 out of 1 points

Consider the following classes, declared in separate source files:

```
1. public class Base {
2.   public void method(int i) {
3.     System.out.println("Value is " + i);
4.   }
5. }
```

```
1. public class Sub extends Base {
2.   public void method(int j) {
3.     System.out.println("This value is " + j);
4.   }
5.   public void method(String s) {
6.     System.out.println("I was passed " + s);
7.   }
8.   public static void main(String args[]) {
9.     Base b1 = new Base();
10.    Base b2 = new Sub();
11.    b1.method(5);
12.    b2.method(6);
13.  }
14. }
```

What output results when the main method of the class Sub is run?

Answer

Selected Answer:

Value is 5
This value is 6

Correct Answer:

Value is 5
This value is 6

- **Question 23**

1 out of 1 points

The code below draws a line. What color is the line?

```
1. g.setColor(Color.red.green.yellow.red.cyan);

2. g.drawLine(0, 0, 100, 100);
```

Answer

Selected Answer: d. Cyan

Correct Answer: d. Cyan

- **Question 24**

0 out of 1 points

Which of the following signatures are valid for the main( ) method entry point of an application?

Answer

Selected Answer: e. None of the answers are correct.

Correct Answer: d. public static void main(String gotStuff [ ])

- **Question 25**

1 out of 1 points

Design patterns _____.

Answer

Selected Answer: c.
are proven ways for implementing behavior that help increase cohesion and reduce coupling

Correct Answer: c.
are proven ways for implementing behavior that help increase cohesion and reduce coupling

- **Question 26**

1 out of 1 points

Refactoring refers to _____.

Answer

Selected Answer: a.
a process of refining a design to make it more flexible, expandable, and reusable

Correct Answer: a.
a process of refining a design to make it more flexible, expandable, and reusable

- **Question 27**

0 out of 1 points

The portion of a program within which you can reference a variable is the variable's _____.

Answer

Selected Answer: d.
Domain

Correct Answer: c.
Scope

Question 28

Assume that the following code snippet exists in a java program that is otherwise valid .

```
int thisArray[ ] [ ] = { {1, 2, 3, 4, 5},

{2, 4, 6, 8, 10},

{3, 6, 9, 12, 15},

{4, 8, 12, 16, 20},

{5, 10, 15, 20, 25}};

nextRow:

for (int row = 1; row <= 5; row ++){

for ( int column = 1; column <= 5; column++ ) {

if (column > row)

continue nextRow ;

System.out.print(thisArray[row-1][column-1] + "\n" );

}

System.out.println( " " );

}

System.out.println( "\n*** " );
```

Print the exact output from this snippet.

Answer

		H	essay-ans-_35232

On Mon, Nov 25, 2013 at 4:42 PM, wrote:

- **Question 1**

10 out of 10 points

Which of these is not true about recursion

Selected Answer: Recursive methods are more efficient than iterative methods

Answers:
some recursive programs cannot be optimized and use more memory than the equivalent iterative program.

A recursive method must have a base case

Some problems can only be solved through recursion

Recursive methods are more efficient than iterative methods

- **Question 2**

10 out of 10 points

If a class has at least one abstract method, then the class is abstract

Selected Answer: True

Answers:
True

False

- **Question 3**

10 out of 10 points

When a thread's task has completed, the state is

Selected Answer: terminated

Answers:
terminated

blocked

finished

completed

- **Question 4**

10 out of 10 points

Binary Search requires the list or array to be sorted

Selected Answer: True

Answers:
True

False

- **Question 5**

10 out of 10 points

Mergesort is recursive

Selected Answer: True

Answers: True
False

- **Question 6**

0 out of 10 points

Binary Search has a complexity of O(log n) while Linear Search has a complexity of O(n), therefore you should always search using Binary Search

Selected Answer: True
Answers: True
False

- **Question 7**

10 out of 10 points

The principles of design patterns are

Selected Answer: program to an interface, not an implementation and favor object composition over inheritance.

Answers: program to an interface, not an implementation and favor object composition over inheritance.

program to an interface, not an implementation and favor inheritance over object composition

program to an implementation, not an interface and favor inheritance over object composition

program to an implementation, not an interface and favor object compostion over inheritance

- **Question 8**

10 out of 10 points

When the operating system suspends a thread because it is waiting for a resource to be free, the state becomes

Selected Answer: blocked

Answers: blocked

waiting

timed waiting

synchronized

- **Question 9**

10 out of 10 points

(img 3)

What is the value of foo2(5)

Selected Answer: 8

Answers:
3
5
8
12

- **Question 10**

10 out of 10 points

1..*, in a UML diagram, means

Selected Answer: one to many relationship

Answers:
one to one relationship
one to many relationship
Many to one relationship
Many to Many relationship

- **Question 11**

10 out of 10 points

(img 9) What design pattern is this?

Selected Answer: singleton

Answers: builder

singleton

MVC

Observor

- **Question 12**

10 out of 10 points

Binary Search will always be faster than Linear Search

Selected Answer: False

Answers: True

False

- **Question 13**

10 out of 10 points

Which of these is a valid set of state sequences for a thread (according the thread state diagram in textbook)

Selected Answer: new, runnable, timed waiting, runnable, terminated

Answers: new, runnable, timed waiting, terminated

new, runnable, waiting, blocked

new, runnable, timed waiting, runnable, terminated

new, runnable, waiting, terminated

- **Question 14**

10 out of 10 points

If you want to make sure a particular method can only be accessed by one thread at a time, you should use the _____ keyword

Selected Answer: synchronized

Answers: runnable

synchronized

thread

notifyAll

- **Question 15**

10 out of 10 points

Web Applications which need to separate internal representations of information from the way information is presented to and accepted from the user generally use this design pattern

Selected Answer: MVC

Answers: MVC

Observor

Singleton

Strategy

- **Question 16**

10 out of 10 points

(img 2)

this method is recursive

Selected Answer: False
Answers: True
False

- **Question 17**

10 out of 10 points

What design pattern is this (img 10)

Selected Answer: Observor

Answers: MVC

Observor

Singleton

Strategy

- **Question 18**

10 out of 10 points

When, a thread's timeslice is up, it goes into this state

Selected Answer: waiting

Answers: timed waiting

waiting

blocked

synchronized

- **Question 19**

10 out of 10 points

Which of these are not true about threads

Selected Answer: multi-threaded programs are easier to debug

Answers: the Java Virtual Machine, gives each thread its own private JVM stack

when the main class runs, a thread is created

multi-threaded programs are easier to debug

Java supports threads primarily through its java.lang.Thread class and java.lang.Runnable interface.

- **Question 20**

10 out of 10 points

(img 8) This program will print 5

Selected Answer: True
Answers: True
False

- **Question 21**

10 out of 10 points

(img 6) This arrow (plain arrow), in a UML diagram can mean an association, composition or aggregation

Selected Answer: True
Answers: True
False

- **Question 22**

10 out of 10 points

(img 1)

The code in the red rectangle is the

Selected Answer: base case

Answers: recursive call

base case

iterative call

- **Question 23**

10 out of 10 points

(img 7) what is the complexity of this algorithm

Selected Answer: $O(n^2)$

Answers:
- $O(n*m)$
- $O(n^2+ 2)$
- $O(n^2)$
- $O(n)$

- **Question 24**

10 out of 10 points

(img 5) This arrow (empty diamond), in a UML diagram means

Selected Answer: aggregation

Answers:
- composition
- dependency
- association
- aggregation

- **Question 25**

10 out of 10 points

Which of these is not true about JAR files

Selected Answer: A JAR is still able to execute even if the MANIFEST.MF file is missing or blank

Answers:
You can run a JAR file from the command line by typing a command like `java -jar app.jar`

not all JARs are executable

You can create a JAR from the command line with a command like `jar cf jar-file input-file(s)`

A JAR is still able to execute even if the MANIFEST.MF file is missing or blank

- **Question 26**

10 out of 10 points

JAR files are compressed using the ZIP format

Selected Answer: True

Answers:
True

False

- **Question 27**

10 out of 10 points

You have a list of numbers 5 4 6 5 3 1
The sorting algorithm goes through these iterations

4 5 6 5 3 1

4 5 6 5 3 1

4 5 5 6 3 1

4 5 5 3 6 1

4 5 5 3 1 6

4 5 5 3 1 6

4 5 5 1 3 6....
what algorithm is being used?

Selected Answer: bubblesort

Answers:
mergesort

bubblesort

insertion sort

radix sort

- **Question 28**

10 out of 10 points (Extra Credit)

Write code to implement this class (img 11)

https://padlet.com/seawarl/jkp23g2qv0yq

Selected Answer: [None Given]
Correct Answer: [None]
Response Feedback: [None Given]

- **Question 29**

10 out of 10 points

Which of these is a valid Big-O Notation

Selected Answer: O(nlogn)

Answers: O(2n)

O(nlogn)

O(logn + n)

$O(n + n^2)$

- **Question 30**

10 out of 10 points

A method which calls itself is known as a _____ method

Selected Answer: recursive

Answers:
recursive
inherited
abstract
synchronized

- **Question 31**

10 out of 10 points

(img 4)

the arrow (solid black diamond) in a UML diagram means

Selected Answer: composition

Answers:
aggregation
dependency
association
composition

- **Question 32**

10 out of 10 points

Threading only occurs on computers with a single processor

Selected Answer: False

Answers:
True
False

- **Question 33**

10 out of 10 points

Which of these is not true about threads

Selected Answer: priorities guarantee the order in which threads execute

Answers:
threads have priorities
a thread inherits the priority of the thread which creates it
priorities guarantee the order in which threads execute
threads can become deadlocked

Tuesday, September 11, 2018 4:00:57 PM EDT

- **Question 4**

0 out of 4 points

When using the Observer Design Pattern with Java's built in support your observers implement interface:

Selected Answer: c.

java.util.Observable

Answers: a.

java.util.Observer

b.

you just need an update method, no interface needed

c.

java.util.Observable

d.

java.util.Subject

- **Question 5**

4 out of 4 points

The following code is an example of using the _____ design pattern.

```
Person p = PersonBuilder.create().firstName( "First").lastName( "Last
        .personId( 1).phone( "123 123 1234").email( "a@b.com").build(
```

Selected Answer: a.

Fluent (Builder)

Answers: a.

Fluent (Builder)

b.

Delegate

c.

Singleton

d.

MVC

- **Question 6**

4 out of 4 points

Which one of the JUnit methods below is best used for comparing two double values?

Selected Answer: b.

assertEquals(String message, double expected, double actual, double delta)

Answers: a.

assertTrue(String message, (expected == actual))

b.

assertEquals(String message, double expected, double actual, double delta)

c.

assertEquals(String message, double expected, double actual)

- **Question 7**

0 out of 4 points

Whats is MVC?

Selected Answer: c.

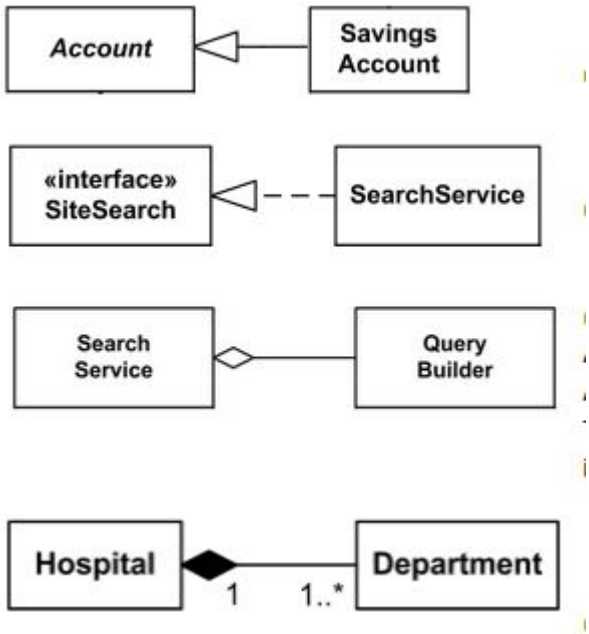
this pattern divides all the code in 3 exact portions to be run from different java files. instead of one big file.

Answers:	a. programmers did not have anything better to do so they made up yet another pattern b. Decouples logic from data and presentation by separating logic types into individual classes c. this pattern divides all the code in 3 exact portions to be run from different java files. instead of one big file.
Answer Feedback:	this pattern tightly connect all logics together to prevent unnecessary upgrades

- **Question 8**

4 out of 4 points

match UML class digram arrows to their description



Question	Correct Match	Selected Match

✅a. Generalization: B Inherits from A ✅d. Interface: A Implements B ✅c. Aggregation: An A is made up of B This is a part-to-whole relationship, where A is the whole and B is the part. In code, this essentially implies A has fields of type B. ✅b. Composition: An A is made up of B with lifetime dependency That is, A aggregates B, and if the A is destroyed, its B are destroyed as well.	✅a. Generalization: B Inherits from A ✅d. Interface: A Implements B ✅c. Aggregation: An A is made up of B This is a part-to-whole relationship, where A is the whole and B is the part. In code, this essentially implies A has fields of type B. ✅b. Composition: An A is made up of B with lifetime dependency That is, A aggregates B, and if the A is destroyed, its B are destroyed as well.

-

All Answer Choices

a.

Generalization:
B Inherits from A

b.

Composition:
An A is made up of B with lifetime dependency
That is, A aggregates B, and if the A is destroyed, its B are destroyed as well.

c.

Aggregation:
An A is made up of B
This is a part-to-whole relationship, where A is the whole and B is the part. In code, this essentially implies A has fields of type B.

d.

Interface:
A Implements B

- **Question 9**

4 out of 4 points

Match definition of each thread condition to its name

Question	Correct Match	Selected Match
Deadlock	A. two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.	A. two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.
Race condition	B.	B.

	multiple threads try and access the same code and create a buggy outcome	multiple threads try and access the same code and create a buggy outcome
Starvation	C.	C.
	when one or more thread must wait for access because other threads have higher priorit	when one or more thread must wait for access because other threads have higher priorit

- **All Answer Choices**

  A.

  two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.

  B.

  multiple threads try and access the same code and create a buggy outcome

  C.

  when one or more thread must wait for access because other threads have higher priorit

  D.

- i did not listen in class or labs, so i am just going to play a game of chance here

• Question 10

0 out of 4 points

what is true about Observer design Pattern?

Selected Answer:	a.
	observer notifies observables when changes occur.
Answers:	a.
	observer notifies observables when changes occur.
	b.

that shifty programmer you saw once made it to observe everyone.

c.

it must always be used with MVC, it does not work otherwise

✅d.

a broadcast system allowing distribution of information to all interested patries.

- **Question 11**

4 out of 4 points

Match each function in Executors to their correct definition:

-

Question	Correct Match	Selected Match
newCachedThreadPool	✅A. create a pool of threads that automatically creates threads when need, with size of min 0 and max Integer.MAX_VALUE. inactive threads are killed after 60 seconds.	✅A. create a pool of threads that automatically creates threads when need, with size of min 0 and max Integer.MAX_VALUE. inactive threads are killed after 60 seconds.
newFixedThreadPool	✅B. create a pool of threads with given fixed number of threads	✅B. create a pool of threads with given fixed number of threads
newSingleThreadExecutor	✅C. create a pool of threads with one thread only	✅C. create a pool of threads with one thread only

-

All Answer Choices

A.

create a pool of threads that automatically creates threads when need, with size of min 0 and max Integer.MAX_VALUE. inactive threads are killed after 60 seconds.

B.

create a pool of threads with given fixed number of threads

C.

- create a pool of threads with one thread only

- **Question 12**

4 out of 4 points

which statement is true?

```
public class SingleThing{

    private static final SingleThing thing = new SingleThing()

    private SingleThing(){}

    public static SingleThing instance(){
        return thing;
    }
}
```

Selected Answer: ✅c.

this singleton has eager initialization. object is created at class loading time.

Answers: a.

singleton object can never have an instance, it is by design only static

b.

this singleton has lazy initialization. object is created when calling instance()

✅c.

this singleton has eager initialization. object is created at class loading time.

d.

there was not enough hints in this question, i will complain about it after midterm.

- **Question 13**

4 out of 4 points

Given the code below (making no other changes), which access modifiers (public, protected, or private) can legally be placed before print() in BaseClass?

```
class BaseClass{

    void print(){
        System.out.println( "Base");
    }
}

class SubClass extends BaseClass{

    void print(){
        System.out.println( "Sub");
    }
}
```

Selected Answer: ✗ d.

protected

Answers: a.

public

b.

friend

✓ c.

private

d.

protected

- **Question 14**

2 out of 2 points

What is the nature of data typing in the Java programming language?

Selected Answer: c.

Strongly typed

Answers: a.

Typed Like JavaScript

b.

Weakly typed

c.

Strongly typed

d.

Untyped

e.

Typed like C++

- **Question 15**

2 out of 2 points

Refactoring refers to _____.

Selected Answer: d.

a process of refining a design to make it more flexible, expandable, and reusable

Answers:

a.

the use of the Java Reflection API

b.

adding funcationality to a design

c.

the separation of presentation logic from domain logic.

✅d.

a process of refining a design to make it more flexible, expandable, and reusable

- **Question 16**

2 out of 2 points

Match data structures with their definitions.

Question	Correct Match	Selected Match
Stack	✅A. First In Last Out policy. can be used to solve tower of hanoi.	✅A. First In Last Out policy. can be used to solve tower of hanoi.
Queue	✅B. First In First Out policy. used for problems like buffering data to be rendered.	✅B. First In First Out policy. used for problems like buffering data to be rendered.
ArrayList	✅C. can add or remove from both ends and it is based on array implementation.	✅C. can add or remove from both ends and it is based on array implementation.
LinkedList	✅D.	✅D.

can add and remove from both ends. it is based on connecting object together, called Nodes.	can add and remove from both ends. it is based on connecting object together, called Nodes.

- **All Answer Choices**

  A.

  First In Last Out policy. can be used to solve tower of hanoi.

  B.

  First In First Out policy. used for problems like buffering data to be rendered.

  C.

  can add or remove from both ends and it is based on array implementation.

  D.

  can add and remove from both ends. it is based on connecting object together, called Nodes.

  E.

- who needs data structures, just store everything in single variables.

• Question 17

2 out of 2 points

A protected method may be overridden by a public method.

Selected Answer: ✔True

Answers: ✔True

False

• Question 18

2 out of 2 points

Which line will not compile?

```
10 Object ob = new Object();
11
12 String stringarr[] = new String[50]
13
14 Float floater = new Float( 3.14f);
15
16 ob = stringarr;
17
18 ob = stringarr[5];
19
20 floater =  ob;
21
22 ob = floater;
```

Selected Answer: b.

floater = ob;

Answers: a.

ob = floater;

b.

floater = ob;

c.

ob = stringarr[5];

d.

ob = stringarr;

e.

All lines will compile

- **Question 19**

2 out of 2 points

Which of the following is not one of the typical workflow steps when creating a JUnit test?

Selected Answer: c.

Perform many tasks to be tested all at once inside one test method.

Answers: a.

none of the above

b.

Check results for the one task tested using an appropriate assert method.

c.

Perform many tasks to be tested all at once inside one test method.

d.

Prepare objects and variables (use meaningful variable names).

- **Question 20**

2 out of 2 points

A protected method may be overridden by a private method.

Selected Answer: False

Answers: True

False

- **Question 21**

2 out of 2 points

process of one function calling itself is called?

Selected Answer: d.

recursion

Answers: a.

polymorphisms

b.

none of the above

c.

iteration

d.

recursion

- **Question 22**

2 out of 2 points

Design patterns _____.

Selected Answer: b.

are proven ways for implementing behavior that helps increase cohesion and reduce coupling

Answers: a.

are proven ways for implementing behavior that helps increase cohesion or reduce coupling but not both

b.

are proven ways for implementing behavior that helps increase cohesion and reduce coupling

c.

are fun and sophisticated way of coding

d.

cannot be implemented in Java, Oracle really did not think it through well

- **Question 23**

0 out of 2 points

_____ refers to the visibility of variables. In other words, which parts of your program can see or use it.

Selected Answer: a.

Answers:

Range

a.

Range

b.

Space

c.

Scope

d.

Domain

- **Question 24**

1 out of 1 points

In an Object Oriented programming language data and related functions are combined into a single unit called a(n) _____.

Selected Answer: a.

Answers:

Object

a.

Object

b.

i did not attend the lecturers

c.

Token

d.

Procedure

- **Question 25**

1 out of 1 points

Objects communicate by sending messages between each other, this is implemented using _____.

Selected Answer: b. Methods

Answers:
a. Reflection
b. Methods
c. Post Office
d. Variables

- **Question 26**

1 out of 1 points

Which of the following is not a valid comment in the Java programming language?

Selected Answer: d.

```
<!--   A comment  -->
int x;
```

Answers:
a.

```
int x;    // a comment
```

b.

```
/*    A comment    */
int x;
```

c.

```
/**  A comment    */
int x;
```

d.

```
<!--   A comment  -->
int x;
```

- **Question 27**

0 out of 1 points

What is the value of days.length for the following array?

```
String[] days = {"Monday", "Tuesday","Wednesday", "Thursday","Friday", "Saturday"
```

Selected Answer: b. 5

Answers:
a. 3
b. 5
c. 7
d. 6

- **Question 28**

0 out of 1 points

What is wrong with the Java class declaration below, with regard to coding conventions?

public class tuna_fish{}

Selected Answer: a.

Class identifiers in Java should start with an upper case letter.

Answers: a.

Class identifiers in Java should start with an upper case letter.

b.

Class identifiers in Java should use mixed case instead of underscores.

c.

Both of other options

- **Question 29**

1 out of 1 points

Given the following declaration, what is Runnable?

```
public class BasicApplication extends Application implements Runnabl
```

Selected Answer:

an interface.

Answers: a class.

an interface.

a package.

an object.

- **Question 30**

1 out of 1 points

Which of the following signatures are valid for the main( ) method entry point of an application?

Selected Answer: d.

public static void main(String gotStuff [ ])

Answers: a.

static void main (String [ ])

b.

public void static main( )

c.

private static void main(String [ ] arg)

d.

public static void main(String gotStuff [ ])

e.

i dont know ask eclipse, it does it for me all the time

- **Question 31**

1 out of 1 points

Which of the following is not one of Java's access modifiers?

Selected Answer: b.

friend

Answers: a.

public

b.

friend

c.

protected

d.

default

- **Question 32**

1 out of 1 points

What is the purpose of the main method?

Selected Answer: c.

To act as the entry point for the program.

Answers: a.

To hold the APIs of the application.

b.

To create buttons and scrollbars.

c.

To act as the entry point for the program.

d.

To build a user interface.

- **Question 33**

1 out of 1 points

Java applications are platform independent because?

Selected Answer: c.

Java Byte Code (complied Java) runs on JVM

Answers: a.

The CPU's have a built-in JVM.

b.

Java don't need a JVM.

c.

Java Byte Code (complied Java) runs on JVM

d.

The server has a built-in JVM.

- **4**

0 out of 4 points

which statement is not true?

```
public class SingleThing{

    private static final SingleThing thing = new SingleThing();

    private SingleThing(){}

    public static SingleThing instance(){
        return thing;
    }
}
```

Selected Answer: [None Given]

Selected Answer: [None Given]

Answers: a.

singleton object can never have an instance, it is by design only static

b.

this singleton has lazy initialization. object is created when calling instance()

c.

there was not enough hints in this question, i will complain about it after midterm.

d.

this singleton has eager initialization. object is created at class loading time.

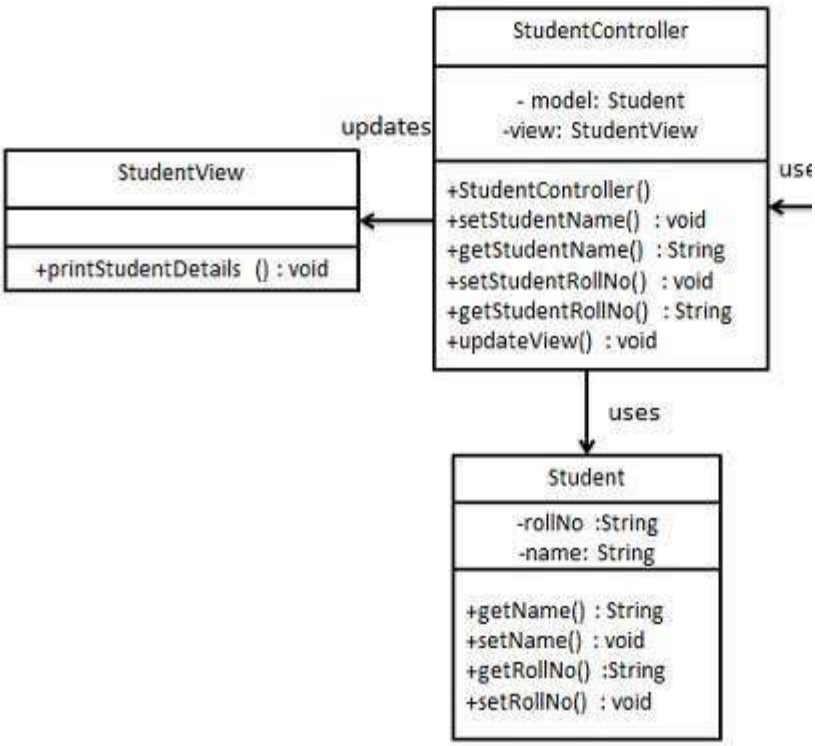
- **Question 5**

4 out of 4 points

Match UML Class diagrams to their design pattern.

-

Question	Correct Match	Selected Match

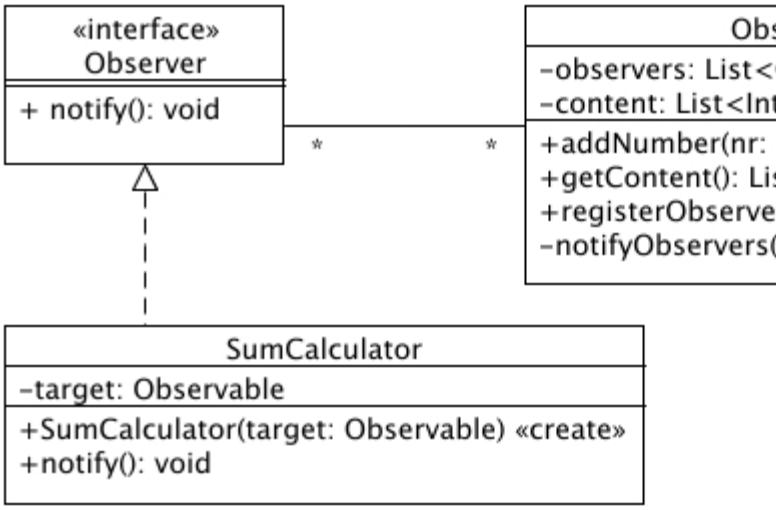


✅B.

Model-View-Controller: at the heart of every MVC architecture lies Separated Presentation which declares a clear division between domain objects that model our perception of the real world (model objects), and presentation objects that are the GUI elements we see on the screen (view objects)

✅B.

Model-View-Controller: at the heart of every MVC architecture lies Separated Presentation which declares a clear division between domain objects that model our perception of the real world (model objects), and presentation objects that are the GUI elements we see on the screen (view objects)

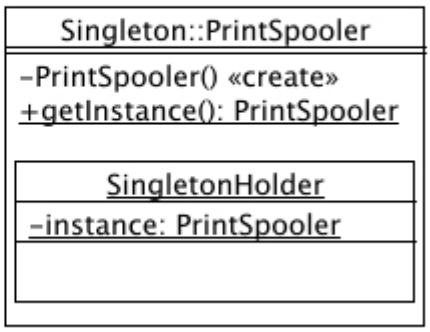


✅C.

Observer - Observable Pattern: a broad cast system to notify observers of change in observable

✅C.

Observer - Observable Pattern: a broad cast system to notify observers of change in observable



✅D.

Singleton:a single class which is responsible to create an object while making sure that only single object gets created.

✅D.

Singleton:a single class which is responsible to create an object while making sure that only single object gets created.

-

All Answer Choices

A.

Set/Get Pattern

B.

Model-View-Controller: at the heart of every MVC architecture lies Separated Presentation which declares a clear division between domain objects that model our perception of the real world (model objects), and presentation objects that are the GUI elements we see on the screen (view objects)

C.

Observer-Observable Pattern: a broad cast system to notify observers of change in observable

D.

Singleton:a single class which is responsible to create an object while making sure that only single object gets created.

- **Question 6**

4 out of 4 points

What's printed when the following program is executed:

```
public class WhatsPrinted{

    public void doIt( int achar){
        System.out.println( achar + achar);
    }

    public static void main( String args[]){
        new WhatsPrinted().doIt( 'B');
    }
}
```

Selected Answer: ✅d.

132 (The ASCII value of B is 42hex)

Answers: a.

B

b.

BB

c.

Does not compile

d.

132 (The ASCII value of B is 42hex)

- **Question 7**

4 out of 4 points

The code below adds what color your Scene object?

```
Scene scene = new Scene( root, 800, 600, Color.RED.GREEN.BLUE
```

Selected Answer: c.

Blue (0000FF)

Answers: a.

White (FFFFFF)

b.

Green (00FF00)

c.

Blue (0000FF)

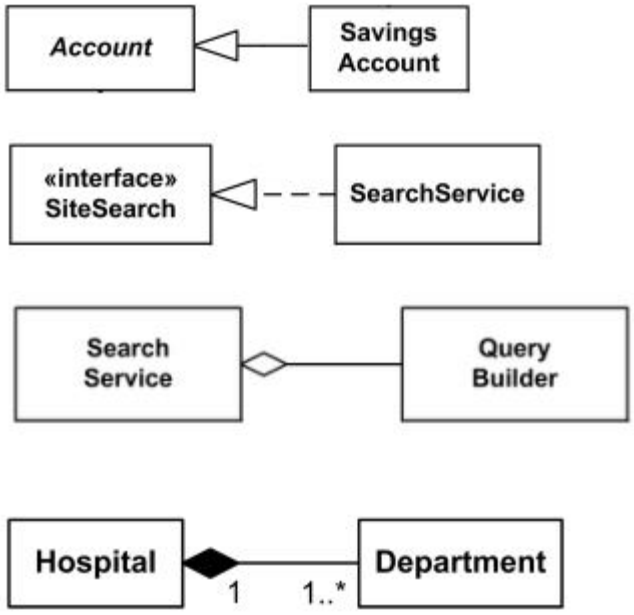
d.

Red (FF0000)

- **Question 8**

4 out of 4 points

match UML class digram arrows to their description



-

Question	Correct Match	Selected Match
	✅b. Generalization : B Inherits from A ✅a. Interface: A Implements B ✅d. Aggregation: An A is made up of B This is a part-to-whole relationship, where A is the whole and B is the part. In code, this	✅b. Generalization : B Inherits from A ✅a. Interface: A Implements B ✅d. Aggregation: An A is made up of B This is a part-to-whole relationship, where A is the whole and B is the part. In code, this

essentially implies A has fields of type B.	essentially implies A has fields of type B.
c.	c.
Composition: An A is made up of B with lifetime dependency That is, A aggregates B, and if the A is destroyed, its B are destroyed as well.	Composition: An A is made up of B with lifetime dependency That is, A aggregates B, and if the A is destroyed, its B are destroyed as well.

- **All Answer Choices**

  a.

  Interface:
  A Implements B

  b.

  Generalization:
  B Inherits from A

  c.

  Composition:
  An A is made up of B with lifetime dependency
  That is, A aggregates B, and if the A is destroyed, its B are destroyed as well.

  d.

  Aggregation:
  An A is made up of B
  This is a part-to-whole relationship, where A is the whole and B is the part. In code, this essentially implies A has fields of type B.

- **Question 9**

0 out of 4 points

what is true about get/set pattern?

Selected Answer: b.

when using this pattern all methods must start with set or get with no exceptions

Answers: a.

this pattern is only used in conjunction with MVC

b.

when using this pattern all methods must start with set or get with no exceptions

c.

provides the functionality for retrieving and updating attribute values with no other functionality

d.

provides a beautiful and fashionable design which programmers cannot live without

- **Question 10**

4 out of 4 points

Match definition of each thread condition to its name

Question	Correct Match	Selected Match
Deadlock	A. two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.	A. two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.

Race condition	B. multiple threads try and access the same code and create a buggy outcome	B. multiple threads try and access the same code and create a buggy outcome
Starvation	C. when one or more thread must wait for access because other threads have higher priorit	C. when one or more thread must wait for access because other threads have higher priorit

- **All Answer Choices**

  A.

  two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.

  B.

  multiple threads try and access the same code and create a buggy outcome

  C.

  when one or more thread must wait for access because other threads have higher priorit

  D.

- i did not listen in class or labs, so i am just going to play a game of chance here

• Question 11

4 out of 4 points

When using the Observer Design Pattern with Java's built in support your observers implement interface:

Selected Answer: c. java.util.Observer

Answers: a. java.util.Subject

b.

you just need an update method, no interface needed

c.

java.util.Observer

d.

java.util.Observable

- **Question 12**

0 out of 4 points

In the Model View Controller Design Pattern what component typically takes on the role of storing the data?

Selected Answer: a.

never in MVC, in a XML file, DataBase and/or appropriate data structure

Answers: a.

never in MVC, in a XML file, DataBase and/or appropriate data structure

b.

Controller

c.

Model

d.

View

- **Question 13**

4 out of 4 points

Match the definition for each of the following JUnit components

-

Question	Correct Match	Selected Match
assertTrue	✅A. used for checking true conditions, meaning the condition must result true	✅A. used for checking true conditions, meaning the condition must result true
assertFalse	✅B. used for checking false conditions, meaning the condition must result false	✅B. used for checking false conditions, meaning the condition must result false
assertEqual	✅C. compare to objects using equals, can also take delta value for comparing double values	✅C. compare to objects using equals, can also take delta value for comparing double values
assertSame	✅D. compare to objects suing ==, refrence	✅D. compare to objects suing ==, refrence
fail	✅E. force a fail assert	✅E. force a fail assert
@Before	✅F. run this method before each run of any @Test methods	✅F. run this method before each run of any @Test methods
@After	✅G. run this method every time after each @Test methods	✅G. run this method every time after each @Test methods
@Test	✅H. used when method is for running a test	✅H. used when method is for running a test
@BeforeClass	✅I.	✅I.

	runs once at the very beginning of a test class	runs once at the very beginning of a test class
@AfterClass	✅J.	✅J.
	runs once at the very end of a test class	runs once at the very end of a test class

-

All Answer Choices

A.

used for checking true conditions, meaning the condition must result true

B.

used for checking false conditions, meaning the condition must result false

C.

compare to objects using equals, can also take delta value for comparing double values

D.

compare to objects suing ==, refrence

E.

force a fail assert

F.

run this method before each run of any @Test methods

G.

run this method every time after each @Test methods

H.

used when method is for running a test

I.

runs once at the very beginning of a test class

J.

runs once at the very end of a test class

K.

used for checking false conditions, meaning the condition must result true

L.

- compare to objects using equals

• Question 14

2 out of 2 points

Which of the following statements is correct? (Choose one)

Selected Answer: c.

Both primitives and object references can be both converted and cast.

Answers: a.

Only primitives are converted automatically; to change the type of an object reference, you have to do a cast.

b.

Only object references are converted automatically; to change the type of a primitive, you have to do a cast.

c.

Both primitives and object references can be both converted and cast.

d.

Casting of numeric types may require a run-time check.

• Question 15

2 out of 2 points

_____ refers to the visibility of variables. In other words, which parts of your program can see or use it.

Selected Answer: ✅a.

Scope

Answers: ✅a.

Scope

b.

Range

c.

Domain

d.

Space

- **Question 16**

2 out of 2 points

When using JUnit 4 what annotation is used to mark a test method?

Selected Answer: ✅b.

@Test

Answers: a.

i don't do old code, i only program in JUnit 5

✅b.

@Test

c.

@CheckCode

d.

@Testing

- **Question 17**

2 out of 2 points

Consider the following classes, declared in separate source files, What output results when the main method of the class Sub is run?

```
class Sub extends Base{

    public void method( int j){

        System.out.println( "Sub is " + j);
    }

    public static void main( String args[]){

        Base b1 = new Sub();
        Base b2 = new Base();

        b1.method( 5);
        b2.method( 6);
    }
}

class Base{

    public void method( int i){

        System.out.println( "Base is " + i);
    }
}
```

Selected Answer: a.

Sub is 5
Base is 6

Answers: a.

Sub is 5
Base is 6

b.

Sub is 5 Base is 6

c.

Sub is 6
Base is 5

d.

Base is 6
Base is 6

- **Question 18**

2 out of 2 points

Which of the following is not one of the typical workflow steps when creating a JUnit test?

Selected Answer: ✓b.

Perform many tasks to be tested all at once inside one test method.

Answers: a.

none of the above

✓b.

Perform many tasks to be tested all at once inside one test method.

c.

Check results for the one task tested using an appropriate assert method.

d.

Prepare objects and variables (use meaningful variable names).

- **Question 19**

2 out of 2 points

Order the big O notations in ascending order.

Answers	**Selected Answer**
✓a.	✓a.

O(1)	O(1)
b.	b.
O(log n)	O(log n)
c.	c.
O(n)	O(n)
d.	d.
O(n log n)	O(n log n)
e.	e.
O(n2)	O(n2)
f.	f.
O(2n)	O(2n)
g.	g.
O(n!)	O(n!)

- **Question 20**

2 out of 2 points

Which sentence describes Principle of Least Privilege the best?

Selected Answer:	a. minimal rights and privileges to accomplish its task, but no additional rights or privileges
Answers:	a. minimal rights and privileges to accomplish its task, but no additional rights or privileges
	b. full rights and privileges so it can do its task
	c.

minimal rights and privileges or full rights and privileges so it can do its task

- **Question 21**

0 out of 2 points

Which of the following JavaFX components is typically only used to display text to a user?

Selected Answer: b. TextField

Answers:
a. Button
b. TextField
c. Label

- **Question 22**

2 out of 2 points

A protected method may be overridden by a public method.

Selected Answer: True

Answers: True
False

- **Question 23**

2 out of 2 points

When a class (not abstract) implements an interface, it must provide behavior for...

Selected Answer: d. All methods defined in that interface.

Answers: a.

Only certain methods in an interface.

b.

Two methods defined in that interface.

c.

Any methods in a class.

✓d.

All methods defined in that interface.

- **Question 24**

1 out of 1 points

Objects communicate by sending messages between each other, this is implemented using _____.

Selected Answer: ✓c.

Methods

Answers: a.

Reflection

b.

Variables

✓c.

Methods

d.

Post Office

- **Question 25**

1 out of 1 points

In an Object Oriented programming language data and related functions are combined into a single unit called a(n) _____.

Selected Answer: c.

Object

Answers: a.

i did not attend the lecturers

b.

Procedure

c.

Object

d.

Token

- **Question 26**

1 out of 1 points

Given the following declaration, what is Runnable?

```
public class BasicApplication extends Application implements Runnabl
```

Selected Answer:

an interface.

Answers: an object.

an interface.

a class.

a package.

- **Question 27**

1 out of 1 points

What one statement is true about the code fragment below?

```
String str = "abcde";
StringBuilder strb = new StringBuilder( "abcde")

if( str.equals( strb))
    System.out.println( "String");

if( strb.equals(str))
    System.out.println( "StringBuilder");
```

Selected Answer: ✅b.

program prints nothing

Answers: a.

program print StringBuilder

✅b.

program prints nothing

c.

first if condition throws exception, because str and strb have different types

d.

first line throws exception, because the String constructor must be called explicitly

e.

program print String

- **Question 28**

1 out of 1 points

Which of the following is not one of Java's access modifiers?

Selected Answer: ✅c.

internal

Answers: a.

static

b.

public

c.

internal

d.

protected

- **Question 29**

1 out of 1 points

Java applications are platform independent because?

Selected Answer: a.

Java Byte Code (complied Java) runs on JVM

Answers: a.

Java Byte Code (complied Java) runs on JVM

b.

Java don't need a JVM.

c.

The server has a built-in JVM.

d.

The CPU's have a built-in JVM.

- **Question 30**

1 out of 1 points

What is the value of days.length for the following array?

```
String[] days = {"Monday", "Tuesday","Wednesday", "Thursday","Friday", "Saturday"
```

Selected Answer: c.

6

Answers: a.

3

b.

5

c.

6

d.

7

- **Question 31**

1 out of 1 points

What is the purpose of the main method?

Selected Answer: a.

To act as the entry point for the program.

Answers: a.

To act as the entry point for the program.

b.

To create buttons and scrollbars.

c.

To build a user interface.

d.

To hold the APIs of the application.

- **Question 32**

0 out of 1 points

What results from running the following code?

```
public static void main( String args[]){
    StringBuilder s = new StringBuilder( "Hello");
    if( s.append( " 1").equals( "False") && s.append( "2").equals( "Hello 12")
        System.out.println( "value is " + s);
    }else {
        System.out.println( "value is " + s);
    }
}
```

Selected Answer: ✗ c.

nothing prints

Answers: a.

value is Hello 12

b.

value is Hello

c.

nothing prints

✓ d.

value is Hello 1

- **Question 33**

0 out of 1 points

What is wrong with the Java class declaration below, with regard to coding conventions?

public class tuna_fish{}

Selected Answer: ✗ c.

Class identifiers in Java should start with an upper case letter.

Answers: a.

Class identifiers in Java should use mixed case instead of underscores.

b.

Both of other options

c.

Class identifiers in Java should start with an upper case letter.

-

- **Question 5**

4 out of 4 points

What's printed when the following program is executed:

```
public class WhatsPrinted{

    public void doIt( int achar){
        System.out.println( achar + achar);
    }

    public static void main( String args[]){
        new WhatsPrinted().doIt( 'B');
    }
}
```

Selected Answer: ✔c.

132 (The ASCII value of B is 42hex)

Answers: a.

B

b.

BB

✔c.

132 (The ASCII value of B is 42hex)

d.

Does not compile

- **Question 6**

4 out of 4 points

Whats is MVC?

Selected Answer: ✔c.

Decouples logic from data and presentation by separating logic types into individual classes

Answers: a.

programmers did not have anything better to do so they made up yet another pattern

b.

this pattern divides all the code in 3 exact portions to be run from different java files. instead of one big file.

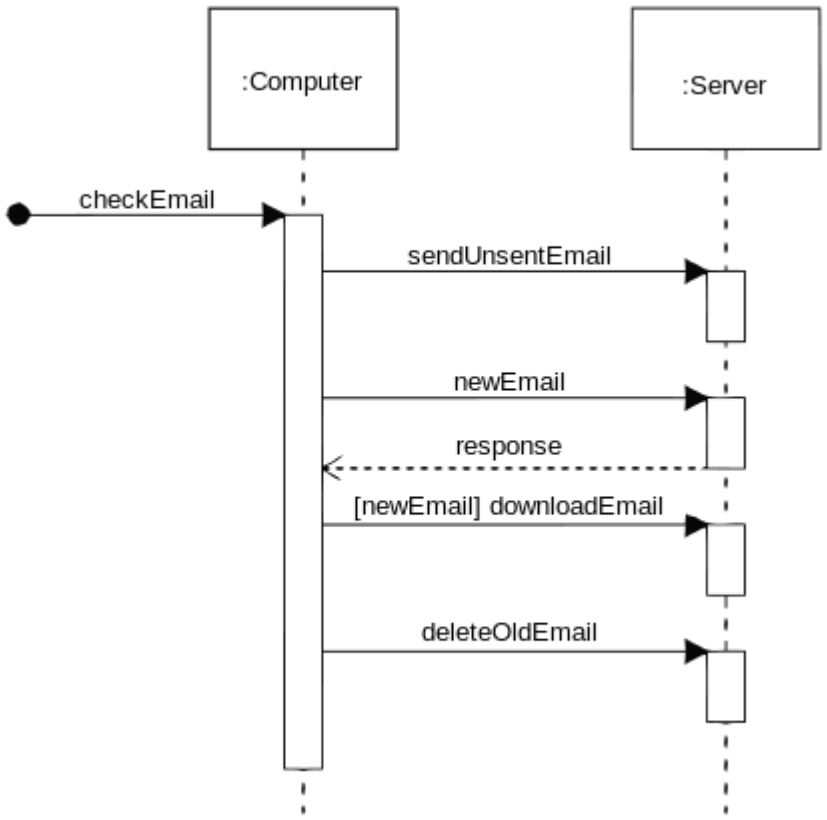
✅c.

Decouples logic from data and presentation by separating logic types into individual classes

- **Question 7**

4 out of 4 points

What is this UML Diagram?



Selected Answer: ✅b.

Sequence Diagram

Answers: a.

State Diagram

b.

Sequence Diagram

c.

Use Case

d.

Class Diagram

- **Question 8**

0 out of 4 points

Which one of the JUnit methods below is best used for comparing two double values?

Selected Answer: a.

assertEquals(String message, double expected, double actual)

Answers: a.

assertEquals(String message, double expected, double actual)

b.

assertTrue(String message, (expected == actual))

c.

assertEquals(String message, double expected, double actual, double delta)

- **Question 9**

4 out of 4 points

Match JavaFX layout to its description?

Question	Correct Match	Selected Match
BorderLayout	✅A. This layout pane provides five regions in which to place nodes: top, bottom, left, right, and center	✅A. This layout pane provides five regions in which to place nodes: top, bottom, left, right, and center
HBox	✅B. This layout pane provides an easy way for arranging a series of nodes in a single row	✅B. This layout pane provides an easy way for arranging a series of nodes in a single row
VBox	✅C. This layout pane is similar to the another layout pane, except that the nodes are arranged in a single column	✅C. This layout pane is similar to the another layout pane, except that the nodes are arranged in a single column
GridPane	✅D. This layout pane enables you to create a flexible grid of rows and columns in which to lay out nodes	✅D. This layout pane enables you to create a flexible grid of rows and columns in which to lay out nodes
FlowLayout	✅E. The nodes within a this layout pane are laid out consecutively and wrap at the boundary set for the pane. Nodes can flow vertically (in columns) or horizontally (in rows)	✅E. The nodes within a this layout pane are laid out consecutively and wrap at the boundary set for the pane. Nodes can flow vertically (in columns) or horizontally (in rows)

- **All Answer Choices**

  A.

This layout pane provides five regions in which to place nodes: top, bottom, left, right, and center

B.

This layout pane provides an easy way for arranging a series of nodes in a single row

C.

This layout pane is similar to the another layout pane, except that the nodes are arranged in a single column

D.

This layout pane enables you to create a flexible grid of rows and columns in which to lay out nodes

E.

- The nodes within a this layout pane are laid out consecutively and wrap at the boundary set for the pane. Nodes can flow vertically (in columns) or horizontally (in rows)

- **Question 10**

4 out of 4 points

What is the output of this code? be exact.

```
private static final int ARRAY[][] = {
        { 1, 2, 3, 4 },
        { 2, 4, 6, 8 },
        { 3, 6, 9, 12 },
        { 4, 8, 12, 16 }};

public static void print( int row){
    if( row > ARRAY.length){
        System.out.print( "***");
        return;
    }
    print( row+1);
    innerPrint( row, 1);
}

private static void innerPrint( final int ROW, int col)
    if( col > ROW)
        return;

    innerPrint( ROW, col+1);
    System.out.printf("%d.", ARRAY[ROW - 1][col - 1]);
}

public static void main( String[] args){
    print( 2);
}
```

Selected Answer: ***16.12.8.4.9.6.3.4.2.

Correct Answer:

Evaluation Method	Correct Answer	Case Sensitivity
Exact Match	***16.12.8.4.9.6.3.4.2.	

- **Question 11**

4 out of 4 points

Given the code below (making no other changes), which access modifiers (public, protected, or private) can legally be placed before print() in BaseClass?

```
class BaseClass{

    void print(){
        System.out.println( "Base");
    }
}

class SubClass extends BaseClass{

    void print(){
        System.out.println( "Sub");
    }
}
```

Selected Answer: ✗ c.

protected

Answers: ✓ a.

private

b.

public

c.

protected

d.

friend

- **Question 12**

0 out of 4 points

Using quick sort write the sorted version of the array bellow when. only sort with pivot 3 (index) no need to sort further. final answer should be just numbers and commas. Do NOT include anything else.

Low: 0, High: 7, Pivot: 3

8,4,2,6,9,7,1,3

Selected Answer: [None Given]

Correct Answer:

Evaluation Method	Correct Answer	Case Sensitivity
Exact Match	4,2,1,3,6,9,7,8	

- **Question 13**

4 out of 4 points

select **all** the correct statements regarding Runnable and Callable interfaces:

Selected Answers:

a.

Runnable can be used with Thread and ExecutorService.

b.

Callable can only work with ExectutorService.

c.

Runnable has one method called run which takes and returns nothing.

d.

Callable<T> has one method called call which takes no arguments and returns a generic type T

Answers:

a.

Runnable can be used with Thread and ExecutorService.

b.

Callable can only work with ExectutorService.

c.

Runnable has one method called run which takes and returns nothing.

d.

Callable<T> has one method called call which takes no arguments and returns a generic type T

- **Question 14**

2 out of 2 points

you cannot inherit from final class

Selected Answer: ✔True

Answers: ✔True

False

- **Question 15**

2 out of 2 points

Which one of the following expressions is legal?

Selected Answer: ✔c.

int x = 6; x = -+ ~x;

Answers: a.

int x = 6; x = !x;

b.

int x = 6; if (!x>3)) {}

✔c.

int x = 6; x = -+ ~x;

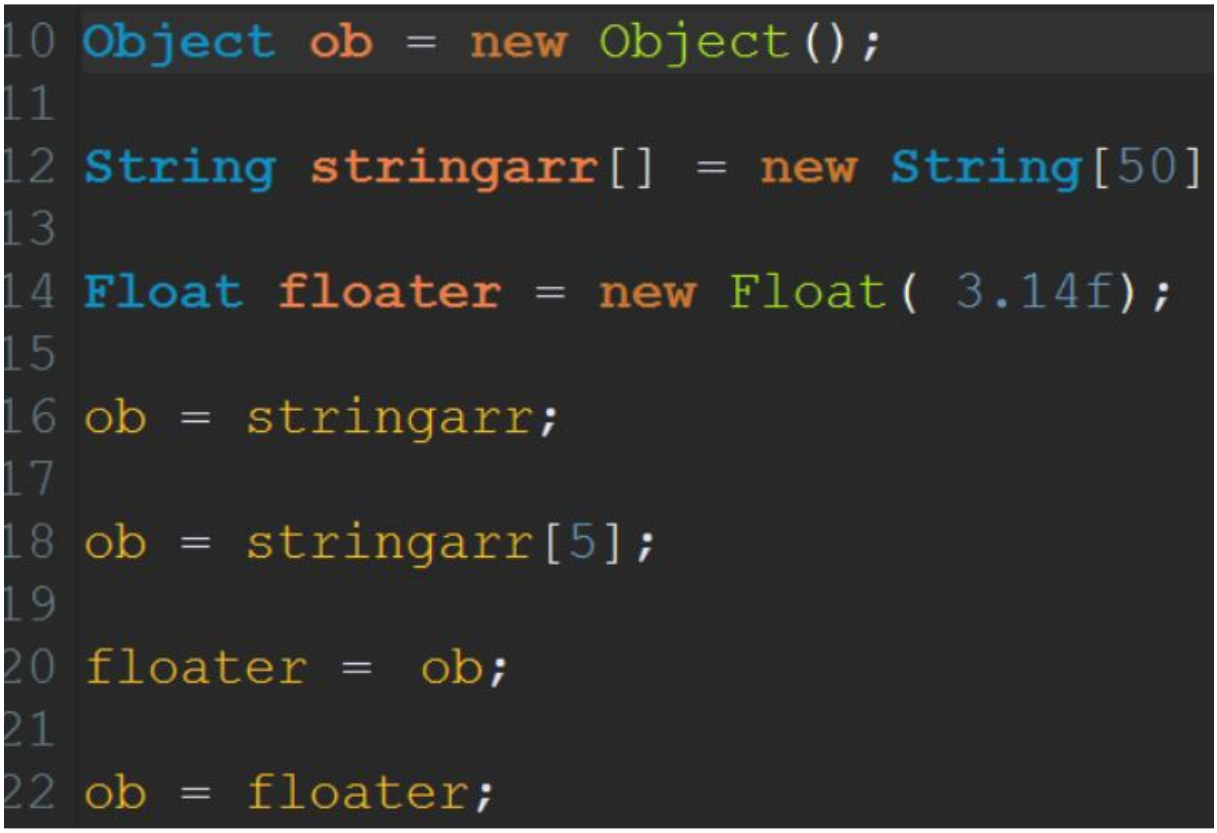
d.

int x = 6; x =- ~(!x);

- **Question 16**

0 out of 2 points

Which line will not compile?



```
10 Object ob = new Object();
11
12 String stringarr[] = new String[50]
13
14 Float floater = new Float( 3.14f);
15
16 ob = stringarr;
17
18 ob = stringarr[5];
19
20 floater =  ob;
21
22 ob = floater;
```

Selected Answer: e.

ob = stringarr[5];

Answers: a.

ob = floater;

b.

All lines will compile

c.

floater = ob;

d.

ob = stringarr;

e.

ob = stringarr[5];

- **Question 17**

2 out of 2 points

_____ refers to the visibility of variables. In other words, which parts of your program can see or use it.

Selected Answer: ✔d. Scope

Answers:
a. Range
b. Domain
c. Space
✔d. Scope

- **Question 18**

2 out of 2 points

A protected method may be overridden by a public method.

Selected Answer: ✔True

Answers:
✔True
False

- **Question 19**

2 out of 2 points

Which of the following is not one of the typical workflow steps when creating a JUnit test?

Selected Answer: ✔c. Perform many tasks to be tested all at once inside one test method.

Answers: a.

Check results for the one task tested using an appropriate assert method.

b.

none of the above

c.

Perform many tasks to be tested all at once inside one test method.

d.

Prepare objects and variables (use meaningful variable names).

- **Question 20**

2 out of 2 points

Given the recursive example below what is printed to the console?

```
public static void main( String[] args){
    recursion( 2);
}

public static void recursion( int n){
    if( n < 0)
        return;
    System.out.print( Integer.toString( n))
    recursion( --n);
    System.out.print( Integer.toString( n))
}
```

Selected Answer: d.

210-101

Answers: a.

012210

b.

-101210

c.

210012

d.

210-101

- **Question 21**

2 out of 2 points

Order the big O notations in ascending order, best to worst.

Answers	Selected Answer
a.	a.
O(1)	O(1)
b.	b.
O(log n)	O(log n)
c.	c.
O(n)	O(n)
d.	d.
O(n log n)	O(n log n)
e.	e.
$O(n^2)$	$O(n^2)$
f.	f.
$O(2^n)$	$O(2^n)$
g.	g.
O(n!)	O(n!)

- **Question 22**

2 out of 2 points

process of one function calling itself is called?

Selected Answer: c.

recursion

Answers: a.

iteration

b.

none of the above

c.

recursion

d.

polymorphisms

- **Question 23**

0 out of 2 points

Refactoring refers to _____.

Selected Answer: b.

the use of the Java Reflection API

Answers: a.

a process of refining a design to make it more flexible, expandable, and reusable

b.

the use of the Java Reflection API

c.

adding funcationality to a design

d.

the separation of presentation logic from domain logic.

- **Question 24**

1 out of 1 points

Objects communicate by sending messages between each other, this is implemented using _____.

Selected Answer: a. Methods

Answers: a. Methods

b. Variables

c. Post Office

d. Reflection

- **Question 25**

0 out of 1 points

Which of the following is not one of Java's access modifiers?

Selected Answer: a. default

Answers: a. default

b. protected

c.

friend

d.

public

- **Question 26**

1 out of 1 points

Which of the following signatures are valid for the main( ) method entry point of an application?

Selected Answer: b.

public static void main(String gotStuff [ ])

Answers: a.

i dont know ask eclipse, it does it for me all the time

b.

public static void main(String gotStuff [ ])

c.

private static void main(String [ ] arg)

d.

static void main (String [ ])

e.

public void static main( )

- **Question 27**

1 out of 1 points

In an Object Oriented programming language data and related functions are combined into a single unit called a(n) _____.

Selected Answer: c.

Object

Answers: a.

Token

b.

Procedure

c.

Object

d.

i did not attend the lecturers

- **Question 28**

1 out of 1 points

What is the purpose of the main method?

Selected Answer: c.

To act as the entry point for the program.

Answers: a.

To build a user interface.

b.

To create buttons and scrollbars.

c.

To act as the entry point for the program.

d.

To hold the APIs of the application.

- **Question 29**

1 out of 1 points

Java applications are platform independent because?

Selected Answer: a. Java Byte Code (complied Java) runs on JVM

Answers:
a. Java Byte Code (complied Java) runs on JVM
b. The server has a built-in JVM.
c. The CPU's have a built-in JVM.
d. Java don't need a JVM.

- **Question 30**

1 out of 1 points

Given the following declaration, what is Runnable?

```
public class BasicApplication extends Application implements Runnabl
```

Selected Answer:

Answers:
an interface.
a class.
an object.
an interface.
a package.

- **Question 31**

1 out of 1 points

What is the value of days.length for the following array?

```
String[] days = {"Monday", "Tuesday","Wednesday", "Thursday","Friday", "Saturday"
```

Selected Answer: ✅b. 6

Answers:
a. 7
✅b. 6
c. 3
d. 5

- **Question 32**

1 out of 1 points

Which of the following is not a valid comment in the Java programming language?

Selected Answer: ✅d.

```
<!--   A comment  -->
int x;
```

Answers:
a.

```
int x;    // a comment
```

b.

```
/*    A comment    */
int x;
```

c.

```
/**  A comment    */
int x;
```

✅d.

```
<!--   A comment  -->
int x;
```

- **Question 33**

1 out of 1 points

What is wrong with the Java class declaration below, with regard to coding conventions?

public class tuna_fish{}

Selected Answer: c.

Both of other options

Answers: a.

Class identifiers in Java should start with an upper case letter.

b.

Class identifiers in Java should use mixed case instead of underscores.

c.

Both of other options

Which method is called internally by Thread start() method?

A. execute()
B. **run()**
C. launch()
D. main()

What is maximum thread priority in Java ?

A. **10**
B. 12
C. 5
D. 8

Where an object of a class get stored?

A. **Heap**
B. Stack
C. Disk
D. File

Unchecked exception caught at

A. compile time
B. **run time**
C. Both at compile and run time
D. None

- 0 out of 4 points

Which one of the JUnit methods below is best used for comparing two double values?

Selected Answer: ✗ b.

assertEquals(String message, double expected, double actual)

Answers: a.

assertTrue(String message, (expected == actual))

b.

assertEquals(String message, double expected, double actual)

✓ c.

assertEquals(String message, double expected, double actual, double delta)

- **Question 5**

0 out of 4 points

which statement is true?

```
public class SingleThing{

    private static final SingleThing thing = new SingleThing()

    private SingleThing(){}

    public static SingleThing instance(){
        return thing;
    }
}
```

Selected Answer: ✗ c.

this singleton has lazy initialization. object is created when calling instance()

Answers: a.

there was not enough hints in this question, i will complain about it after midterm.

✓ b.

this singleton has eager initialization. object is created at class loading time.

c.

this singleton has lazy initialization. object is created when calling instance()

d.

singleton object can never have an instance, it is by design only static

- **Question 6**

4 out of 4 points

In the Model View Controller Design Pattern what component typically takes on the role of storing the data?

Selected Answer: a.

Model

Answers: a.

Model

b.

Controller

c.

never in MVC, in a XML file, DataBase and/or appropriate data structure

d.

View

- **Question 7**

4 out of 4 points

what is true about get/set pattern?

Selected Answer: a.

provides the functionality for retrieving and updating attribute values with no other functionality

Answers: a.

provides the functionality for retrieving and updating attribute values with no other functionality

b.

provides a beautiful and fashionable design which programmers cannot live without

c.

this pattern is only used in conjunction with MVC

d.

when using this pattern all methods must start with set or get with no exceptions

- **Question 8**

4 out of 4 points

The code sample below is for a Singleton design pattern. What is wrong?

```
public class SingleThing{

    public SingleThing(){
    }

    public static SingleThing instance()
        return new SingleThing();
    }
}
```

Selected Answer: d.

All of the above

Answers: a.

The method instance() should not make new SingleThing objects

b.

The constructor is marked public, it needs to be private

c.

there is no static variable to hold the reference for SingleThing

✅d.

All of the above

- **Question 9**

4 out of 4 points

The following code is an example of using the _____ design pattern.

```
Person p = PersonBuilder.create().firstName( "First").lastName( "Last
        .personId( 1).phone( "123 123 1234").email( "a@b.com").build(
```

Selected Answer: ✅a.

Fluent (Builder)

Answers: ✅a.

Fluent (Builder)

b.

Delegate

c.

Singleton

d.

MVC

- **Question 10**

4 out of 4 points

What's printed when the following program is executed:

```
public class WhatsPrinted{

    public void doIt( int achar){
        System.out.println( achar + achar);
    }

    public static void main( String args[])
        new WhatsPrinted().doIt( 'B');
    }
}
```

Selected Answer: a.

132 (The ASCII value of B is 42hex)

Answers: a.

132 (The ASCII value of B is 42hex)

b.

B

c.

BB

d.

Does not compile

- **Question 11**

4 out of 4 points

Match each function in Executors to their correct definition:

Question	Correct Match	Selected Match
newCachedThreadPool	A. create a pool of threads that automatically creates threads when need, with size of min 0 and max Integer.MAX_VALUE. inactive threads are killed after 60 seconds.	A. create a pool of threads that automatically creates threads when need, with size of min 0 and max Integer.MAX_VALUE. inactive threads are killed after 60 seconds.
newFixedThreadPool	B. create a pool of threads with given fixed number of threads	B. create a pool of threads with given fixed number of threads
newSingleThreadExecutor	C. create a pool of threads with one thread only	C. create a pool of threads with one thread only

- **All Answer Choices**

  A.

  create a pool of threads that automatically creates threads when need, with size of min 0 and max Integer.MAX_VALUE. inactive threads are killed after 60 seconds.

  B.

  create a pool of threads with given fixed number of threads

  C.

- create a pool of threads with one thread only

• Question 12

1.33333 out of 4 points

Match definition of each thread condition to its name

Question	Correct Match	Selected Match
Deadlock	A. two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.	B. multiple threads try and access the same code and create a buggy outcome
Race condition	B. multiple threads try and access the same code and create a buggy outcome	A. two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.
Starvation	C. when one or more thread must wait for access because other threads have higher priorit	C. when one or more thread must wait for access because other threads have higher priorit

- **All Answer Choices**

  A.

  two threads gain sync lock while waiting for other one to release the lock. One way to prevent is from all threads to take their locks in the same order.

  B.

  multiple threads try and access the same code and create a buggy outcome

  C.

  when one or more thread must wait for access because other threads have higher priorit

  D.

- i did not listen in class or labs, so i am just going to play a game of chance here

- **Question 13**

4 out of 4 points

match Java properties to correct UML Class Diagram notation.

Question	Correct Match	Selected Match
public	✅G.	✅G.
	+	+
private	✅H.	✅H.
	-	-
protected	✅C.	✅C.
	#	#
package	✅E.	✅E.
	~	~
constant (final)	✅B.	✅B.
	CAPITALIZE	CAPITALIZE
abstract	✅D.	✅D.
	italic	*italic*
static	✅F.	✅F.
	<u>underline</u>	<u>underline</u>

- **All Answer Choices**

  A.

  bold

  B.

  CAPITALIZE

  C.

#

D.

italic

E.

~

F.

<u>underline</u>

G.

+

H.

-

- **Question 14**

2 out of 2 points

When a class (not abstract) implements an interface, it must provide behavior for...

Selected Answer: ✔c. All methods defined in that interface.

Answers:

a. Any methods in a class.

b. Only certain methods in an interface.

✔c. All methods defined in that interface.

d. Two methods defined in that interface.

- **Question 15**

0 out of 2 points

An overridden method can be in the same class as the original method.

Selected Answer: ✗True

Answers: True

✓False

- **Question 16**

2 out of 2 points

Order the big O notations in ascending order, best to worst.

Answers	Selected Answer
✓a.	✓a.
O(1)	O(1)
✓b.	✓b.
O(log n)	O(log n)
✓c.	✓c.
O(n)	O(n)
✓d.	✓d.
O(n log n)	O(n log n)
✓e.	✓e.
$O(n^2)$	$O(n^2)$
✓f.	✓f.
$O(2^n)$	$O(2^n)$
✓g.	✓g.
O(n!)	O(n!)

- **Question 17**

2 out of 2 points

_____ refers to the visibility of variables. In other words, which parts of your program can see or use it.

Selected Answer: ✅d. Scope

Answers:
a. Space
b. Domain
c. Range
✅d. Scope

- **Question 18**

1.5 out of 2 points

Match data structures with their definitions.

-

Question	Correct Match	Selected Match
Stack	✅A. First In Last Out policy. can be used to solve tower of hanoi.	❌E. who needs data structures, just store everything in single variables.
Queue	✅B. First In First Out policy. used for problems like buffering data to be rendered.	✅B. First In First Out policy. used for problems like buffering data to be rendered.
ArrayList	✅C.	✅C.

	can add or remove from both ends and it is based on array implementation.	can add or remove from both ends and it is based on array implementation.
LinkedList	✅D.	✅D.
	can add and remove from both ends. it is based on connecting object together, called Nodes.	can add and remove from both ends. it is based on connecting object together, called Nodes.

- **All Answer Choices**

  A.

  First In Last Out policy. can be used to solve tower of hanoi.

  B.

  First In First Out policy. used for problems like buffering data to be rendered.

  C.

  can add or remove from both ends and it is based on array implementation.

  D.

  can add and remove from both ends. it is based on connecting object together, called Nodes.

  E.

- who needs data structures, just store everything in single variables.

• Question 19

0 out of 2 points

In the code fragment below, after execution of first line, sbuf references an instance of the StringBuilder class. After execution of next line, sbuf still references the same instance. correct?

```
StringBuilder sbuf = new StringBuilder("abcde")

sbuf.append("xyz");
```

Selected Answer: ✗False
Answers: ✓True
False

- **Question 20**

2 out of 2 points

Which of the classes below represent an immutable (non-changeable) sequence of characters in a Java program?

Selected Answer: ✓c.

String

Answers: a.

StringBuilder

b.

StringBuffer

✓c.

String

d.

StringJoin

- **Question 21**

2 out of 2 points

Which line will not compile?

```
10 Object ob = new Object();
11
12 String stringarr[] = new String[50]
13
14 Float floater = new Float( 3.14f);
15
16 ob = stringarr;
17
18 ob = stringarr[5];
19
20 floater =  ob;
21
22 ob = floater;
```

Selected Answer: b.

floater = ob;

Answers: a.

ob = stringarr[5];

b.

floater = ob;

c.

All lines will compile

d.

ob = stringarr;

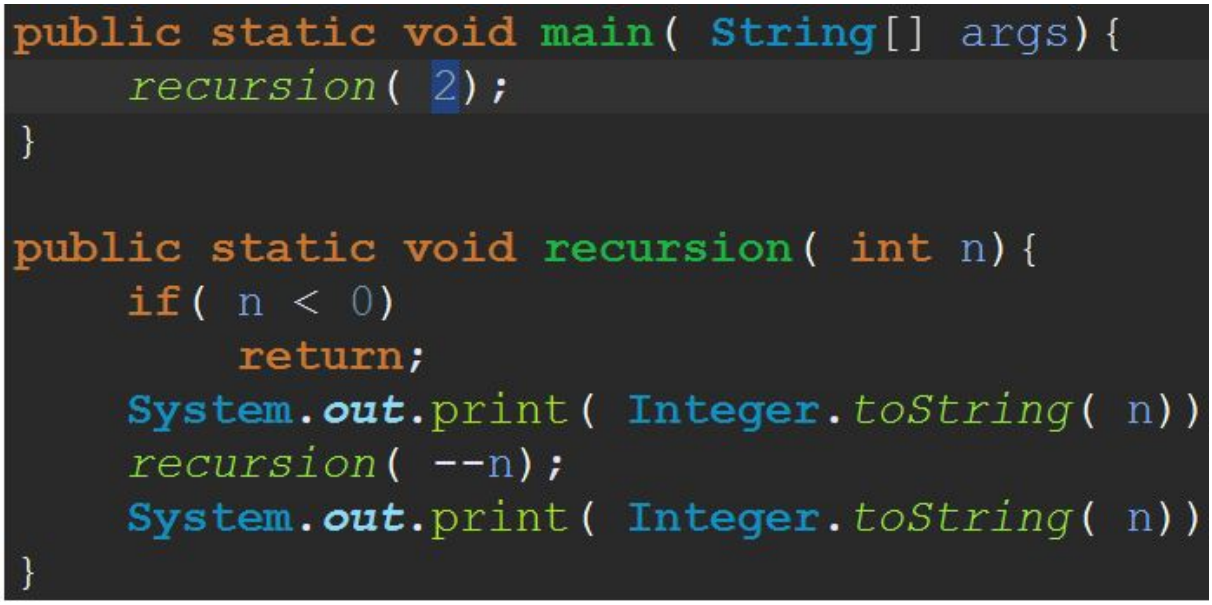
e.

ob = floater;

- **Question 22**

2 out of 2 points

Given the recursive example below what is printed to the console?



```
public static void main( String[] args){
    recursion( 2);
}

public static void recursion( int n){
    if( n < 0)
        return;
    System.out.print( Integer.toString( n))
    recursion( --n);
    System.out.print( Integer.toString( n))
}
```

Selected Answer: ✔ c. 210-101

Answers:
a. 210012
b. 012210
✔ c. 210-101
d. -101210

- **Question 23**

2 out of 2 points

What is the nature of data typing in the Java programming language?

Selected Answer: a.

Strongly typed

Answers: a.

Strongly typed

b.

Untyped

c.

Weakly typed

d.

Typed like C++

e.

Typed Like JavaScript

- **Question 24**

1 out of 1 points

In an Object Oriented programming language data and related functions are combined into a single unit called a(n) _____.

Selected Answer: a.

Object

Answers: a.

Object

b.

i did not attend the lecturers

c.

Procedure

d.

Token

- **Question 25**

1 out of 1 points

Given the following declaration, what is Runnable?

```
public class BasicApplication extends Application implements Runnabl
```

Selected Answer: ✔ an interface.

Answers:
- a package.
- an object.
- a class.
- ✔ an interface.

- **Question 26**

1 out of 1 points

What is the purpose of the main method?

Selected Answer: ✔c. To act as the entry point for the program.

Answers:
- a. To hold the APIs of the application.
- b. To build a user interface.
- ✔c. To act as the entry point for the program.
- d.

To create buttons and scrollbars.

- **Question 27**

1 out of 1 points

Objects communicate by sending messages between each other, this is implemented using _____.

Selected Answer: b. Methods

Answers:
a. Variables
b. Methods
c. Post Office
d. Reflection

- **Question 28**

1 out of 1 points

Which of the following is not a valid comment in the Java programming language?

Selected Answer: c.

```
<!--   A comment  -->
int x;
```

Answers:
a.

```
/*    A comment    */
int x;
```

b.

```
/**  A comment    */
int x;
```

c.

```
<!--   A comment  -->
int x;
```

d.

```
int x;    // a comment
```

- **Question 29**

1 out of 1 points

Java applications are platform independent because?

Selected Answer: d. Java Byte Code (complied Java) runs on JVM

Answers:
a. The server has a built-in JVM.
b. The CPU's have a built-in JVM.
c. Java don't need a JVM.
d. Java Byte Code (complied Java) runs on JVM

- **Question 30**

1 out of 1 points

What is wrong with the Java class declaration below, with regard to coding conventions?

public class tuna_fish{}

Selected Answer: c.

Both of other options

Answers: a.

Class identifiers in Java should start with an upper case letter.

b.

Class identifiers in Java should use mixed case instead of underscores.

c.

Both of other options

- **Question 31**

1 out of 1 points

Which of the following is not one of Java's access modifiers?

Selected Answer: a.

friend

Answers: a.

friend

b.

default

c.

public

d.

protected

- **Question 32**

1 out of 1 points

Which of the following signatures are valid for the main( ) method entry point of an application?

Selected Answer: e.

public static void main(String gotStuff [ ])

Answers: a.

private static void main(String [ ] arg)

b.

i dont know ask eclipse, it does it for me all the time

c.

public void static main( )

d.

static void main (String [ ])

e.

public static void main(String gotStuff [ ])

- **Question 33**

0 out of 1 points

What is the value of days.length for the following array?

Selected Answer: c.

7

Answers: a.

3

b.

6

c.

7

d.

5

Created by Parin:

Question 1

Created by Parin

1. What pattern does the Java event model resemble.

Model-View-Controller

Simple Factory

Observer

None of the above

1 points

Question 2

1. Which of the following statements about adapters is
false.

An adapter class implements an interface.

An adapter class provides a default (empty) implementation of every method in
the interface.

Programmers override selected adapter methods.

A ComponentListener is a ComponentAdaptor.

1 points

Question 3

1. Consider the following application:

```
1. class Q6 {
2. public static void main(String args[]) {
```

Created by Parin

```
3. Holder h = new Holder();
4. h.held = 100;
5. h.bump(h);
6. System.out.println(h.held);
7. }
8. }
9.
10. class Holder {
11. public int held;
12. public void bump(Holder theHolder) { theHolder.held++; }

13. }
```

What value is printed out at line 6?

0

1

101

100

1 points

Question 4

1. Which of the following does not generate GUI events.

Typing in a text field.

Selecting an item from a menu.

Viewing the text in a label.

Moving the mouse.

Created by Parin

1 points

Question 5

1. Assume that the class AcLis implements the ActionListener interface. The code fragment below constructs a button and gives it four action listeners. When the button is pressed, which action listener is the first to get its actionPerformed() method invoked?

```
1. Button btn = new Button("Hello");
2. AcLis a1 = new AcLis();
3. AcLis a2 = new AcLis();
4. AcLis a3 = new AcLis();
5. AcLis a4 = new AcLis();
6. btn.addActionListener(a1);
7. btn.addActionListener(a2);
8. btn.addActionListener(a3);
9. btn.addActionListener(a4);
10. btn.removeActionListener(a2);

11. btn.removeActionListener(a3);
12. btn.addActionListener(a3);
13. btn.addActionListener(a2);
```

a1 gets its actionPerformed() method invoked first.

a2 gets its actionPerformed() method invoked first.

a3 gets its actionPerformed() method invoked first.

a4 gets its actionPerformed() method invoked first.

It is impossible to know which listener will be first.

Created by Parin

1 points

Question 6

1. You cannot access a database using a servlet.

True

False

1 points

Question 7

1. A typical servlet would output ____.

XML.

XSL.

HTML.

none of these.

1 points

Question 8

1. When you want to listen for an event, you can

implement an appropriate _____ for your class.

handler.

Created by Parin

listener.

abstract class.

superclass.

1 points

Question 9

1. The catch block that begins catch (Exception ex) can

catch Exceptions of type.

IOException

ArithmeticException

both of these

neither of these

1 points

Question 10

1. Which of the following statements about JPanels is

false.

A JPanel is a JComponent.

A JPanel is a Container.

A JPanel does not have a content pane.

A JPanel has a fixed size.

1 points

Created by Parin

Question 11

1. We can derive many of the operations of each class by examining the key _____ and _____ in the requirements documents.

verbs, verb phrases.

nouns, noun phrases.

objectives, objective phrases.

Both a and b.

1 points

Question 12

1. Java data types are the same as the data types used in the database.

True

False

1 points

Question 13

1. Using the protected keyword gives a member.

public access.

package access.

private access.

block scope.

1 points

Question 14

1. SQL statements that are stored in a database can be invoked using an object that implements interface _____.

Callable.

StoredStatement.

CallableStatement.

Connection.

1 points

Question 15

1. Which JFrame constant indicates that the program should terminate when the window is closed by the user.

TERMINATE_ON_CLOSE.

IMMEDIATELY_CLOSE.

EXIT_ON_CLOSE.

All of the above.

Created by Parin

1 points

Question 16

1. You have been given a design document for a veterinary registration system for implementation in Java technology. It states: "A pet has an owner, a registration date, and a vaccination-due date. A cat is a pet that has a flag indicating if it has been neutered, and a textual description of its markings." Given that the Pet class has already been defined, which of the following fields would be appropriate for inclusion in the Cat class as members.

Pet thePet;

Date registered;

Date vaccinationDue;

Cat theCat;

boolean neutered;

1 points

Question 17

1. Which of the following statements about anonymous inner classes is false?

They are declared without a name.

Created by Parin

They typically appear inside a method declaration.

They are declared with the anonymous keyword.

They can access their top-level class's members.

1 points

Question 18

1. Declaring a method final means.

it will prepare the object for garbage collection.

it cannot be accessed from outside its class.

it cannot be overloaded.

it cannot be overridden.

1 points

Question 19

1. Which statement is false.

A generic class can be derived from a non-generic class.

A non-generic class cannot be derived from a generic class.

A generic class can be derived from another generic class.

A generic method in a subclass can override a generic method in a superclass if

both methods have the same signatures.

1 points

Question 20

Created by Parin

1. In java, String concatenation is done using

_____.

String1.concat(String2).

String1 + (String2) .

String1 & (String2) .

Either a or b will perform String concatenation.

Any of the above will perform String concatenation.

1 points

Question 21

1. In the UML, public visibility is indicated by placing a

_____ before an operation or an attribute, whereas a

_____ indicates private visibility.

letter p, letter n.

letter n, letter p.

plus sign (+), minus sign (-).

minus sign (-), plus sign (+).

1 points

Question 22

1. String literals in java, such as, "John Q. Doe".

Created by Parin

Are also known as anonymous String objects.

Are not stored, but replaced at compile time.

Are not String objects. They are only data.

None of the above are true.

1 points

Question 23

1. The BorderLayout manager will divide the screen into a

maximum of _____.

2 components

4 components

6 components

none of the above

1 points

Question 24

1. All of the following methods are implicitly final except.

a method in an abstract class.

a private method.

a method declared in a final class.

static method.

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1 points

Question 25

1. How many bytes does the following code write to file destfile?

```
1. try {
2. FileOutputStream fos = new
FileOutputStream("destfile");
3. DataOutputStream dos = new
DataOutputStream(fos);
4. dos.writeInt(3);
5. dos.writeDouble(0.0001);
6. dos.close();
7. fos.close();
8. }
9. catch (IOException e) { }
```

2

8

12

16

1 points

Question 26

1. You can get a list of the methods through which an

Exception has traveled by using the method.

getHistory().

callStack().

getPath().

printStackTrace().

1 points

Question 27

1. Which statement is false?

A generic method may be overloaded.

A class can provide two or more generic methods that specify the same method name but different method parameters.

A generic method cannot be overloaded by nongeneric methods.

When the compiler encounters a method call, it searches for the method declaration that most precisely matches the method name and the argument types specified in the call.

1 points

Question 28

1. The Data Access Object pattern (DAO)

_____.

helps with the design of GUI programs.

abstracts the database access logic out of a domain class.

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is a Gang of Four pattern.

is a simple way of creating a data access component.

1 points

Question 29

1. A JSlider does not use a model.

True

False

1 points

Question 30

1. When a superclass variable refers to a subclass object
and a method is called on that object, the proper
implementation is determined at execution time. What
is the process of determining the correct method to call?

early binding.

non-binding.

on-time binding.

late binding.

1 points

Question 31

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1. The UML represents operations by listing the operation name, followed by a _____-separated list of parameters in parentheses, a _____ and the return type.

colon, semicolon.

colon, colon.

comma, colon.

comma, semicolon.

1 points

Question 32

1. Consider the classes below, declared in the same file:

```
class A {
int a;
public A() {
a = 7;

}
}
class B extends A {
int b;
public B() {
b = 8;

}
```

}

Both variables a and b are instance variables.

After the constructor for class B executes, the variable a will have the value 7.

After the constructor for class B executes, the variable b will have the value 8.

A reference of type A can be treated as a reference of type B.

1 points

Question 33

1. The two key tasks required to process an event are.

Add ActionListener and ActionEvent to the program.

Register an event listener and implement an event handler.

Create an inheritance hierarchy and implement polymorphism.

Create two different ButtonHandler classes.

None of the above.

1 points

Question 34

1. You can simulate atomicity by ensuring that _____.

at least one thread carries out its operations on an object at a time.

two threads carry out their operations on an object in parallel.

only one thread carries out its operations on an object at a time.

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None of the above.

1 points

Question 35

1. Overriding a method differs from overloading a method

because.

Overloaded methods have the same signature.

Overridden methods have the same signature.

Both of the above.

Neither of the above.

1 points

Question 36

1. Assigning a subclass reference to a superclass variable

is safe.

because the subclass object has an object of its superclass.

because the subclass object is an object of its superclass.

only when the superclass is abstract.

only when the superclass is concrete.

1 points

Question 37

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1. An advantage of inheritance is that:

All methods can be inherited.

All instance variables can be uniformly accessed by subclasses and superclasses.

Objects of a subclass can be treated like objects of their superclass.

None of the above.

1 points

Question 38

1. Which of the following statements about interfaces is
false.

An interface describes a set of methods that can be called on an object, providing a default implementation for the methods.

An interface describes a set of methods that can be called on an object, not providing concrete implementation for the methods.

Interfaces are useful when attempting to assign common functionality to possibly unrelated classes.

Once a class implements an interface, all objects of that class have an is-a relationship with the interface type.

1 points

Question 39

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1. Which statement is false.

A ListIterator accesses the elements of a List.

Class ArrayList is a fixed-size array.

A LinkedList is a linked list implementation of a List.

ArrayLists execute faster than Vectors because they are not thread safe.

1 points

Question 40

1. The classes and interfaces which comprise the

collections framework are members of package

_____.

java.util.

javax.swing.

java.collections.

java.collection.

1 points

Question 41

1. Java applications and Java applets are similar because

both _____.

are compiled using the javac command

are executed using the java command

are executed from within an HTML document

have a main() method

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1 points

Question 42

1. Which of the following statements for a JTextField is

false.

Can be used to display uneditable text.

Can be used to display editable text.

Enables users to enter data from the keyboard.

Displays a list of fields.

1 points

Question 43

1. In a PreparedStatement, parameters are counted from

position _____.

0.

1.

2.

3.

1 points

Question 44

1. From which object do you ask for MetaData describing

columns after you execute a prepared statement.

Connection.

ResultSet.

DriverManager.

Driver.

1 points

Question 45

1. Consider the abstract superclass below:

public abstract class Foo { private int

a; public int b; public Foo(int aVal, int

bVal) { a = aVal; b = bVal; } // end

Foo constructor public abstract int

calculate(); } // end class Foo

Any concrete subclass that extends class Foo:

Must implement a method called calculate.

Will not be able to access the instance variable a.

Both (a) and (b).

Neither (a) nor (b).

1 points

Question 46

1. PreparedStatement method _____ returns a

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ResultSet.

executeUpdate.

executeQuery.

execute.

None of the above.

1 points

Question 47

1. Which one statement below most accurately describes the

following code listing?

```
1. class CustomException extends EOFException { }
2.
3. class Parent {
4. void doSomething() throws CustomException {
5. throw new CustomException ();
6. }
7. }
8.
9. class Kid extends Parent {
10. void doSomething() throws EOFException {
11. throw new EOFException ();
12. }
13. }
```

Compiler error at line 4.

Compiler error at line 5.

Compiler error at line 10.

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Compiles without error.

1 points

Question 48

1. Accessing a superclass method through a subclass reference is

A syntax error.

Straightforward

Inheritance.

Polymorphism.

1 points

Question 49

1. ActionEvent is an interface in java.awt.event

True.

False.

1 points

Question 50

1. In UML diagrams, abstract methods are

_____.

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displayed in italics.

displayed in bold.

not shown, as they have yet to be implemented.

displayed, but without the parentheses following the method name.

1 points

Question 51

1. Which of the following is the superclass constructor call

syntax?

keyword super, followed by a dot (.) .

keyword super, followed by a set of parentheses containing the superclass

constructor arguments.

keyword super, followed by a dot and the superclass constructor name.

None of the above.

1 points

Question 52

1. Which of the following declarations are illegal.

transient int i = 41;

public final static native int w();

final static double d;

1 points

Created by Parin

Question 53

1. What is the base case for the recursive merge sort
algorithm.

Any array that is already sorted.

A two-element array.

A one-element array.

A zero-element array.

1 points

Question 54

1. For which of the following would polymorphism not
provide a clean solution.

A billing program where there is a variety of client types that are billed with
different fee structures.

A maintenance log program where data for a variety of types of machines is
collected and maintenance schedules are produced for each machine based on the
data collected.

A program to compute a 5% savings account interest for a variety of clients.

An IRS program that maintains information on a variety of taxpayers and
determines who to audit based on criteria for classes of taxpayers.

1 points

Question 55

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1. Which statement is false.

When declaring a generic method, the type parameter section is placed before the return type of the method.

Each type parameter section contains only one type parameter.

A type parameter is an identifier that specifies a generic type name.

Type parameters can represent only reference types.

1 points

Question 56

1. Refactoring refers to _____.

the separation of presentation logic from domain logic.

a process of refining a design to make it more flexible, expandable, and reusable

adding functionality to a design

the use of the Java TM Reflection API

1 points

Question 57

1. A typical Servlet follows the _____,

_____ model when communicating

with a client.

Request, Response.

Model, View.

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HTML, HTTP.

Request, dispatch.

None of the above.

1 points

Question 58

1. The == operator with the String class returns a true

value if _____.

lengths are unequal or the characters do not match if lengths are equal

lengths are equal and the characters match exactly

lengths are equal and the characters match except for case

lengths are equal and the characters do not match

none of the above

1 points

Question 59

1. Java performs automatic _____ of objects that are

no longer referenced in a program.

memory distribution.

garbage collection.

storage compression.

trash aggregation.

Created by Parin

1 points

Question 60

1. A catch block is executed.

after all of the statements in a try block have been executed

if a method executed in the try block throws any exception

if a method executed in the try block throws the exception that is specified (in brackets) after the catch keyword

both a and c are true

1 points

Question 61

1. A(n) _____ allows a program to walk through the collection and remove elements from the collection.

Set.

Queue.

Iterator.

List.

1 points

Question 62

1. In lab 4 you implemented what design pattern with the queue implmenetation.

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Model-view-controller.

Singleton.

Builder.

Adapter.

1 points

Question 63

1. Classes and methods are declared final for all but the

following reasons.

final methods allow inlining the code.

final methods and classes prevent further inheritance.

final methods are static.

final methods can improve performance.

1 points

Question 64

1. The code below draws a line. What color is the line?

1. g.setColor(Color.red.green.yellow.red.black);

2. g.drawLine(0, 0, 100, 100);

Red

Black

Green

Yellow

Created by Parin

1 points

Question 65

1. Which statement best describes the relationship between
superclass and subclass types.

A subclass reference cannot be assigned to a superclass variable and a superclass reference cannot be assigned to a subclass variable.
A subclass reference can be assigned to a superclass variable and a superclass reference can be assigned to a subclass variable.
A superclass reference can be assigned to a subclass variable, but a subclass reference cannot be assigned to a superclass variable.
A subclass reference can be assigned to a superclass variable, but a superclass reference cannot be assigned to a subclass variable.

1 points

Question 66

1. It is a UML convention to denote the name of an
abstract class in _____.

bold.
italics.
a diamond.
there is no convention of the UML to denote abstract classes—they are listed just as any other class.

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1 points

Question 67

1. Suppose Stack is a generic class that has one type

parameter. The following assignment Stack< Integer >

integerStack = new Stack(10); is _____.

illegal.

permitted and safe.

permitted but unsafe, the compiler issues a warning message.

permitted but unsafe, the runtime environment issues a warning message.

1 points

Question 68

1. Which method changes the text the label displays.

changeText.

setText.

changeLabel.

setLabel.

1 points

Question 69

Created by Parin

1. Recursion can be less efficient than iteration because.

it can cause an explosion of method calls.

it is not as intuitive.

recursive methods are harder to debug.

recursive methods take longer to program.

1 points

Question 70

1. Servlet get input from a client (browser) using an

HTML form. The servlet accesses the form fields using

_____.

the ServletResponse object method getParameter().

the ServletRequest object method getParameter().

the ServeltRequest object method getFormField().

None of the above.

1 points

Question 71

1. Which of the following statements about abstract

superclasses is true.

abstract superclasses may contain data.

Abstract superclasses may not contain implementations of methods.

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abstract superclasses must declare all methods as abstract.

abstract superclasses must declare all data members not given values as abstract.

1 points

Question 72

1. The UML specifies a relationship called a(n) to model

inheritance.

inheritization.

specialization.

generalization.

All of the above.

1 points

Question 73

1. One generic Stack class could be the basis for creating

many Stack classes, e.g., Stack, Stack and Stack. These

classes are known as _____.

subclasses.

generic subclasses.

concrete classes.

parameterized classes.

1 points

Created by Parin

Question 74

1. An interface may contain.

private static data and public abstract methods.

only public abstract methods.

public static final data and public abstract methods.

private static data and public final methods.

1 points

Question 75

1. Using layout managers _____.

provides the greatest level of control over a GUI's appearance.

can be faster than creating a GUI with absolute positioning.

allows the programmer to specify the exact location of each GUI component with respect to the upperleft corner of the Container.

allows the programmer to specify the exact location of each GUI component with respect to the lowerleft corner of the Container.

1 points

Question 76

1. True or False: A protected method may not be overridden by a public method.

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True

False

1 points

Question 77

1. Which of the following sorting algorithms is the fastest.

Selection sort.

Insertion sort.

Merge sort.

They all run at roughly the same speed.

1 points

Question 78

1. Which of the following is not possible.

A class that implements two interfaces.

A class that inherits from two classes.

A class that inherits from one class, and implements an interface.

All of the above are possible.

1 points

Question 79

Created by Parin

1. Consider classes A, B and C, where A is an abstract superclass, B is a concrete class that inherits from A and C is a concrete class that inherits from B. Class A declares abstract method originalMethod, implemented in class B. Which of the following statements is true of class C.

Method originalMethod cannot be overridden in class C—once it has been implemented in concrete class B, it is implicitly final.
Method originalMethod must be overridden in class C, or a syntax error will occur.
If method originalMethod is not overridden in class C but is called by an object of class C, an error occurs.
None of the above.

1 points

Question 80

1. Which one of the following will not get the data from the first column of ResultSet rs, returned from executing the following SQL statement: SELECT name, rank, serialNo FROM employee.

rs.getString(0);
rs.getString("name");
rs.getString(1);
None of the above

Created by Parin

1 points

Question 81

1. Consider the following class definition:

1. public class Test extends Base {

2. public Test(int j) {

3. }

4. public Test(int j, int k) {

5. super(j, k);

6. }

7. }

Which of the following forms of constructor must exist explicitly in the definition of the Base class?

Base() { }

Base(int j) { }

Base(int j, int k) { }

Base(int j, int k, int l) { }

None of the above

1 points

Question 82

1. Which of the following could be used to declare abstract method method1 in abstract class Class1 (method1 returns an int and takes no arguments).

public int method1();.

public int abstract method1();.

public abstract int method1();.

public int nonfinal method1();.

1 points

Question 83

1. The code within a finally block executes when a try

block.

identifies one or more Exceptions

does not identify any Exceptions

either a or b

neither a nor b

1 points

Question 84

1. Which one of the following is not a region constant for

the BorderLayout manager.

CENTER.

EAST.

RIGHT.

NORTH.

1 points

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Question 85

1. From which object do you ask for DatabaseMetaData.

Connection.

ResultSet.

DriverManager.

Driver.

1 points

Question 86

1. The default implementation of method clone of Object

performs a _____.

empty copy.

deep copy.

full copy.

shallow copy.

1 points

Question 87

1. Java programs communicate with databases using what

API.

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DBMS.

JDBC.

RDBMS.

Database.

1 points

Question 88

1. Write the code to implement a thread safe Singleton design

pattern. Then name of you class should be SafeSingleton.

Press Tab to enter the content editor. For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

Path: p

Words:21

10 points

Question 89

1. To place an element on a queue you call the

_____ method of the Queue ADT.

dequeue().

push().

setElement().

None of the above.

Created by Parin

1 points

Question 90

1. The equals() method in the String class returns a true

value if _____.

lengths are unequal or the characters do not match if lengths are equal

lengths are equal and the characters match exactly

lengths are equal and the characters match except for case

lengths are equal and the characters do not match

none of the above

1 points

Question 91

1. What is the minimal modification that will make the code

below compile correctly?

```
1. final class Aaa
2. {
3. int xxx;
4. void yyy() { xxx = 1; }
5. }
6.
7.
8. class Bbb extends Aaa
9. {
```

```
10. final Aaa finalref = new Aaa();
11.
12. final void yyy()
13. {
14. System.out.println("In method yyy()");
15. finalref.xxx = 12345;

16. }
17. }
```

On line 1, remove the final modifier

On line 10, remove the final modifier

Remove line 15

On lines 1 and 10, remove the final modifier

The code will compile as is. no modification is needed

1 points

Question 92

1. Servlets run under the control of a(n) .

applet.

owner class

web browser

web server or servlet engine

1 points

Question 93

Created by Parin

1. Which of the following keywords allows a subclass to access a superclass method even when the subclasshas overridden the superclass method?

protected

this

public

super

1 points

Question 94

1. In Lab 03, the implementation of Shannon's Theorem in a GUI program used the pattern.

Value Object.

Dependent Object.

Model-View-Controller.

Simple Factory.

1 points

Question 95

1. Design patterns _____.

are proven ways for implementing behavior that help increase cohesion and

reduce coupling.

are elegant ways for writing code.

cannot be implemented in Java.

only apply to C++.

1 points

Question 96

1. What exception is thrown if the class loader cannot

locate the driver class.

NoSuchClassException.

ClassCastException.

ClassNotFoundException.

IllegalClassException.

1 points

Question 97

1. When a subclass constructor calls its superclass

constructor, what happens if the superclass's constructor

does not assign a value to an instance variable.

A syntax error occurs.

A compile-time error occurs.

A run-time error occurs.

The program compiles and runs because the instance variables are initialized to

their default values.

1 points

Question 98

1. Which of the following statements about recursion are

true.

Recursion can occur infinitely.

Recursion uses a termination test.

Both a and b.

Neither a nor b.

1 points

Question 99

1. Use AWT components for a greater level of portability

and flexibility.

True

False

1 points

Question 100

1. Which layout manager is the default for JFrame.

Created by Parin

FlowLayout.

BorderLayout.

GridLayout.

None of the above.

1 points

Question 101

1. Generics provide _____ that allows programmers

to catch invalid types at compile time.

compile-time type safety.

compile-time exception handling.

compile-time error checking.

run-time type safety.

1 points

Save and Submit

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Answer is before questions:

c
1. What pattern does the Java event model resemble.
a) Model-View-Controller
b) Simple Factory
c) Observer
d) None of the above
b
1. Which of the following statements about adapters is
false.
a) An adapter class implements an interface.
b) An adapter class provides a default (empty) implementation of every method in
the interface.
c) Programmers override selected adapter methods.
d) A ComponentListener is a ComponentAdaptor.
c
1. class Q6 {
2. public static void main(String args[]) {
3. Holder h = new Holder();
4. h.held = 100;
5. h.bump(h);
6. System.out.println(h.held);
7. }
8. }
9.
10. class Holder {
11. public int held;
12. public void bump(Holder theHolder) { theHolder.held++; }
13. }
What value is printed out at line 6?
a) 0
b) 1
c) 101
d) 100
c
Which of the following does not generate GUI events.
a) Typing in a text field.
b) Selecting an item from a menu.
c) Viewing the text in a label.
d) Moving the mouse.
e
Assume that the class AcLis implements the ActionListener interface. The code fragment below constructs a button and gives it four action listeners. When the button is pressed, which action listener is the first to get its actionPerformed() method invoked?
Button btn = new Button("Hello");

2. AcLis a1 = new AcLis();
3. AcLis a2 = new AcLis();
4. AcLis a3 = new AcLis();
5. AcLis a4 = new AcLis();
6. btn.addActionListener(a1);
7. btn.addActionListener(a2);
8. btn.addActionListener(a3);
9. btn.addActionListener(a4);
10. btn.removeActionListener(a2);
11. btn.removeActionListener(a3);
12. btn.addActionListener(a3);
13. btn.addActionListener(a2);

a) a1 gets its actionPerformed() method invoked first.
b) a2 gets its actionPerformed() method invoked first.
c) a3 gets its actionPerformed() method invoked first.
d) a4 gets its actionPerformed() method invoked first.
e) It is impossible to know which listener will be first.
b
1. You cannot access a database using a servlet.
a) True
b) False
c
A typical servlet would output ____.
a) XML.
b) XSL.
c) HTML.
d) none of these. 1
b
When you want to listen for an event, you can implement an appropriate _____ for your class.
a) handler.
b) listener.
c) abstract class.
d) superclass.
c
The catch block that begins catch (Exception ex) can catch Exceptions of type.
a) IOException
b) ArithmeticException
c) both of these
d) neither of these
d
Which of the following statements about JPanels is false.
a) A JPanel is a JComponent.
b) A JPanel is a Container.

c) A JPanel does not have a content pane.
d) A JPanel has a fixed size.
a
We can derive many of the operations of each class by examining the key _____ and _____ in the requirements documents.
a) verbs, verb phrases.
b) nouns, noun phrases.
c) objectives, objective phrases.
d) Both a and b.
b
Java data types are the same as the data types used in the database.
a) True
b) False
b
Using the protected keyword gives a member.
a) public access.
b) package access.
c) private access.
d) block scope.
c
SQL statements that are stored in a database can be invoked using an object that implements interface _____.
a) Callable.
b) StoredStatement.
c) CallableStatement.
d) Connection.
c
Which JFrame constant indicates that the program should terminate when the window is closed by the user.
a) TERMINATE_ON_CLOSE.
b) IMMEDIATELY_CLOSE.
c) EXIT_ON_CLOSE.
d) All of the above. 1
e
You have been given a design document for a veterinary registration system for implementation in Java technology. It states: "A pet has an owner, a registration date, and a vaccination-due date. A cat is a pet that has a flag indicating if it has been neutered, and a textual description of its markings." Given that the Pet class has already been defined, which of the following fields would be appropriate for inclusion in the Cat class as members.
a) Pet thePet;
b) Date registered;
c) Date vaccinationDue;
d) Cat theCat;
e) boolean neutered;
c

Which of the following statements about anonymous inner classes is false?
a) They are declared without a name.
b) They typically appear inside a method declaration.
c) They are declared with the anonymous keyword.
d) They can access their top-level class's members.
d
Declaring a method final means.
a) it will prepare the object for garbage collection.
b) it cannot be accessed from outside its class.
c) it cannot be overloaded.
d) it cannot be overridden.
B
Which statement is false.
a) A generic class can be derived from a non-generic class.
b) A non-generic class cannot be derived from a generic class.
c) A generic class can be derived from another generic class.
d) A generic method in a subclass can override a generic method in a superclass if both methods have the same signatures.
d
In java, String concatenation is done using _____.
a) String1.concat(String2).
b) String1 + (String2) .
c) String1 & (String2) .
d) Either a or b will perform String concatenation.
e) Any of the above will perform String concatenation.
c
In the UML, public visibility is indicated by placing a _____ before an operation or an attribute, whereas a _____ indicates private visibility.
a) letter p, letter n.
b) letter n, letter p.
c) plus sign (+), minus sign (-).
d) minus sign (-), plus sign (+). 1
a
String literals in java, such as, "John Q. Doe".
a) Are also known as anonymous String objects.
b) Are not stored, but replaced at compile time.
Are not String objects. They are only data.
None of the above are true. 1
D
The BorderLayout manager will divide the screen into a maximum of _____.
a) 2 components
b) 4 components
c) 6 components
d) none of the above
a

All of the following methods are implicitly final except.
a) a method in an abstract class.
b) a private method.
c) a method declared in a final class.
d) static method.
c
How many bytes does the following code write to file destfile? 1. try { 2. FileOutputStream fos = new FileOutputStream("destfile"); 3. DataOutputStream dos = new DataOutputStream(fos); 4. dos.writeInt(3); 5. dos.writeDouble(0.0001); 6. dos.close(); 7. fos.close(); 8. } 9. catch (IOException e) { }
a) 2
b) 8
c) 12
d) 16
d
You can get a list of the methods through which an Exception has traveled by using the method.
a) getHistory().
b) callStack().
c) getPath().
d) printStackTrace().
d
Which statement is false?
a) A generic method may be overloaded.
b) A class can provide two or more generic methods that specify the same method name but different method parameters.
c) A generic method cannot be overloaded by nongeneric methods.
d) When the compiler encounters a method call, it searches for the method declaration that most precisely matches the method name and the argument types specified in the call.
b
The Data Access Object pattern (DAO) _____.
a) helps with the design of GUI programs.
b) abstracts the database access logic out of a domain class.
c) is a Gang of Four pattern.
d) is a simple way of creating a data access component
b
A JSlider does not use a model.
a) True
b) False
d
When a superclass variable refers to a subclass object and a method is called on that object, the proper implementation is determined at execution time. What is the process of determining the correct method to call?
a) early binding.
b) non-binding.
c) on-time binding.
d) late binding.

c
The UML represents operations by listing the operation name, followed by a _____-separated list of parameters in parentheses, a _____ and the return type.
a) colon, semicolon.
b) colon, colon.
c) comma, colon.
d) comma, semicolon.
d
Consider the classes below, declared in the same file: class A { int a; public A() { a = 7; } } class B extends A { int b; public B() { b = 8; } }

a) Both variables a and b are instance variables.
b) After the constructor for class B executes, the variable a will have the value 7.
c) After the constructor for class B executes, the variable b will have the value 8.
d) A reference of type A can be treated as a reference of type B.
b
.The two key tasks required to process an event are.
a) Add ActionListener and ActionEvent to the program.
b) Register an event listener and implement an event handler.
c) Create an inheritance hierarchy and implement polymorphism.
d) Create two different ButtonHandler classes.
e) None of the above. 1
c
You can simulate atomicity by ensuring that _____.
a) at least one thread carries out its operations on an object at a time.
b) two threads carry out their operations on an object in parallel.
c) only one thread carries out its operations on an object at a time.
d) None of the above.
b
Overriding a method differs from overloading a method because.
a) Overloaded methods have the same signature.
b) Overridden methods have the same signature.
c) Both of the above.
d) Neither of the above.
b
Assigning a subclass reference to a superclass variable is safe.
a) because the subclass object has an object of its superclass.
b) because the subclass object is an object of its superclass.
c) only when the superclass is abstract.
d) only when the superclass is concrete.
c
An advantage of inheritance is that:
a) All methods can be inherited.
b) All instance variables can be uniformly accessed by subclasses and superclasses.
c) Objects of a subclass can be treated like objects of their superclass.
d) None of the above.

a
Which of the following statements about interfaces is false.
a) An interface describes a set of methods that can be called on an object, providing a default implementation for the methods.
b) An interface describes a set of methods that can be called on an object, not providing concrete implementation for the methods.
b) Interfaces are useful when attempting to assign common functionality to possibly unrelated classes.
c) Once a class implements an interface, all objects of that class have an is-a relationship with the interface type
b
Which statement is false.
a) A ListIterator accesses the elements of a List.
b) Class ArrayList is a fixed-size array.
c) A LinkedList is a linked list implementation of a List.
d) ArrayLists execute faster than Vectors because they are not thread safe.
a
The classes and interfaces which comprise the collections framework are members of package _____.
a) java.util.
b) javax.swing.
c) java.collections.
d) java.collection.
a
Java applications and Java applets are similar because both _____.
a) are compiled using the javac command
b) are executed using the java command
c) are executed from within an HTML document
d) have a main() method
d
Which of the following statements for a JTextField is false.
a) Can be used to display uneditable text.
b) Can be used to display editable text.
c) Enables users to enter data from the keyboard.
d) Displays a list of fields.
b
In a PreparedStatement, parameters are counted from position _____.
a) 0.
b) 1.
c) 2.
d) 3.
b
From which object do you ask for MetaData describing columns after you execute a prepared statement.
a) Connection.
b) ResultSet.

c) DriverManager.
d) Driver.
c
Consider the abstract superclass below: public abstract class Foo { private int a; public int b; public Foo(int aVal, int bVal) { a = aVal; b = bVal; } // end Foo constructor public abstract int calculate(); } // end class Foo Any concrete subclass that extends class Foo:
a) Must implement a method called calculate.
b) Will not be able to access the instance variable a.
c) Both (a) and (b).
d) Neither (a) nor (b). 1
b
PreparedStatement method _____ returns a ResultSet.
a) executeUpdate.
b) executeQuery.
c) execute.
d) None of the above.
c
Which one statement below most accurately describes the following code listing?
1. class CustomException extends EOFException { }
2.
3. class Parent {
4. void doSomething() throws CustomException {
5. throw new CustomException ();
6. }
7. }
8.
9. class Kid extends Parent {
10. void doSomething() throws EOFException {
11. throw new EOFException ();
12. }
13. }
a) Compiler error at line 4.
b) Compiler error at line 5.
c) Compiler error at line 10.
d) Compiles without error.
a
Accessing a superclass method through a subclass reference is
a) A syntax error.
b) Straightforward
c) Inheritance.
d) Polymorphism.
b
ActionEvent is an interface in java.awt.event
a) True.
b) False.
a

In UML diagrams, abstract methods are _____.
a) displayed in italics.
b) displayed in bold.
c) not shown, as they have yet to be implemented.
d) displayed, but without the parentheses following the method name.
b
Which of the following is the superclass constructor call syntax?
a) keyword super, followed by a dot (.) .
b) keyword super, followed by a set of parentheses containing the superclass constructor arguments.
c) keyword super, followed by a dot and the superclass constructor name.
d) None of the above. 1
ba
Which of the following declarations are illegal.
a) transient int i = 41;
b) public final static native int w();
c) final static double d;
a
What is the base case for the recursive merge sort algorithm.
a) Any array that is already sorted.
b)A two-element array.
c) A one-element array.
d) A zero-element array.
c
For which of the following would polymorphism not provide a clean solution.
a) A billing program where there is a variety of client types that are billed with different fee structures.
b) A maintenance log program where data for a variety of types of machines is collected and maintenance schedules are produced for each machine based on the data collected.
c) A program to compute a 5% savings account interest for a variety of clients.
d) An IRS program that maintains information on a variety of taxpayers and determines who to audit based on criteria for classes of taxpayers.
b
Which statement is false.
a) When declaring a generic method, the type parameter section is placed before the return type of the method.
b) Each type parameter section contains only one type parameter.
c) A type parameter is an identifier that specifies a generic type name.
d) Type parameters can represent only reference types
b
Refactoring refers to _____.
a) the separation of presentation logic from domain logic.
b) a process of refining a design to make it more flexible, expandable, and reusable
c) adding functionality to a design
d) the use of the Java ™ Reflection API
a

A typical Servlet follows the _____, _____ model when communicating with a client.
a) Request, Response.
b) Model, View.
c) HTML, HTTP.
d) Request, dispatch.
e) None of the above.
e
the == operator with the String class returns a true value if _____.
a) lengths are unequal or the characters do not match if b) lengths are equal
b) lengths are equal and the characters match exactly
c) lengths are equal and the characters match except for case
d) lengths are equal and the characters do not match
e) none of the above
b
Java performs automatic _____ of objects that are no longer referenced in a program.
a) memory distribution.
b) garbage collection.
c) storage compression.
d) trash aggregation.
c
A catch block is executed.
a) after all of the statements in a try block have been executed
b) if a method executed in the try block throws any exception
c) if a method executed in the try block throws the exception that is specified (in brackets) after the catch keyword
d) both a and c are true
b
A(n) _____ allows a program to walk through the collection and remove elements from the collection.
a) Set.
b) Queue.
c) Iterator.
d) List.
a
In lab 4 you implemented what design pattern with the queue implmenetation.
a) Model-view-controller.
b) Singleton.
c) Builder.
d) Adapter.
c
Classes and methods are declared final for all but the following reasons.
a) final methods allow inlining the code.
b) final methods and classes prevent further inheritance.
c) final methods are static.
d) final methods can improve performance.

b
The code below draws a line. What color is the line? 1. g.setColor(Color.red.green.yellow.red.black); 2. g.drawLine(0, 0, 100, 100);
a) Red
b) Black
c) Green
d) Yellow
d
Which statement best describes the relationship between superclass and subclass types.
a) A subclass reference cannot be assigned to a superclass variable and a superclass reference cannot be assigned to a subclass variable.
b) A subclass reference can be assigned to a superclass variable and a superclass reference can be assigned to a subclass variable.
c) A superclass reference can be assigned to a subclass variable, but a subclass reference cannot be assigned to a superclass variable.
d) A subclass reference can be assigned to a superclass variable, but a superclass reference cannot be assigned to a subclass variable.
b
It is a UML convention to denote the name of an abstract class in _____.
a) bold.
b) italics.
c) a diamond.
d) there is no convention of the UML to denote abstract classes—they are listed just as any other class.
c
Suppose Stack is a generic class that has one type parameter. The following assignment Stack< Integer > integerStack = new Stack(10); is _____.
a) illegal.
b) permitted and safe.
c) permitted but unsafe, the compiler issues a warning message.
d) permitted but unsafe, the runtime environment issues a warning message.
B
Which method changes the text the label displays.
a) changeText.
b) setText.
c) changeLabel.
d) setLabel.
a
Recursion can be less efficient than iteration because.
a) it can cause an explosion of method calls.
b) it is not as intuitive.
c) recursive methods are harder to debug.
d) recursive methods take longer to program.
b
Servlet get input from a client (browser) using an HTML form. The servlet accesses the form fields using _____.

a) the ServletResponse object method getParameter().
b) the ServletRequest object method getParameter().
c) the ServeltRequest object method getFormField().
d) None of the above. 1
a
Which of the following statements about abstract superclasses is true.
a) abstract superclasses may contain data.
b) Abstract superclasses may not contain implementations of methods.
c) abstract superclasses must declare all methods as abstract.
d) abstract superclasses must declare all data members not given values as abstract.
c
The UML specifies a relationship called a(n) to model inheritance.
a) inheritization.
b) specialization.
c) generalization.
d) All of the above.
b
One generic Stack class could be the basis for creating many Stack classes, e.g., Stack, Stack and Stack. These classes are known as _____.
a) subclasses.
b) generic subclasses.
c) concrete classes.
d) parameterized classes.
c
An interface may contain.
a) private static data and public abstract methods.
b) only public abstract methods.
c) public static final data and public abstract methods.
d) private static data and public final methods.
b
Using layout managers _____.
a) provides the greatest level of control over a GUI's appearance.
b) can be faster than creating a GUI with absolute positioning.
c) allows the programmer to specify the exact location of each GUI component with d) respect to the upperleft corner of the Container.
d) allows the programmer to specify the exact location of each GUI component with respect to the lowerleft corner of the Container.
b
True or False: A protected method may not be overridden by a public method.
a) True
b) False
c
Which of the following sorting algorithms is the fastest.
a) Selection sort.
b) Insertion sort.

c) Merge sort.
d) They all run at roughly the same speed.
b
Which of the following is not possible.
a) A class that implements two interfaces.
b) A class that inherits from two classes.
c) A class that inherits from one class, and implements an interface.
d) All of the above are possible.
d
Consider classes A, B and C, where A is an abstract superclass, B is a concrete class that inherits from A and C is a concrete class that inherits from B. Class A declares abstract method originalMethod, implemented in class B. Which of the following statements is true of class C.
a) Method originalMethod cannot be overridden in class C—once it has been implemented in concrete class B, it is implicitly final.
b) Method originalMethod must be overridden in class C, or a syntax error will occur.
c) If method originalMethod is not overridden in class C but is called by an object of class C, an error occurs.
d) None of the above.
c
Which one of the following will not get the data from the first column of ResultSet rs, returned from executing the following SQL statement: SELECT name, rank, serialNo FROM employee.
a) rs.getString(0);
b) rs.getString("name");
c) rs.getString(1);
d) None of the above
c
Consider the following class definition: 1. public class Test extends Base {
2. public Test(int j) {
3. }
4. public Test(int j, int k) {
5. super(j, k);
6. }
7. }
Which of the following forms of constructor must exist explicitly in the definition of the Base class?
a) Base() { }
b) Base(int j) { }
c) Base(int j, int k) { }
d) Base(int j, int k, int l) { }
e) None of the above
c
Which of the following could be used to declare abstract method method1 in abstract class Class1 (method1 returns an int and takes no arguments).
a) public int method1();.
b) public int abstract method1();.

c) public abstract int method1();.
d) public int nonfinal method1();.
c
The code within a finally block executes when a try block.
a) identifies one or more Exceptions
b) does not identify any Exceptions
c) either a or b
d) neither a nor b
c
Which one of the following is not a region constant for the BorderLayout manager.
a) CENTER.
b) EAST.
c) RIGHT.
d) NORTH.
a
From which object do you ask for DatabaseMetaData.
a) Connection.
b) ResultSet.
c) DriverManager.
d) Driver.
d
The default implementation of method clone of Object performs a _____.
a) empty copy.
b) deep copy.
c) full copy.
d) shallow copy.
b
Java programs communicate with databases using what
API.
a) DBMS.
b) JDBC.
c) RDBMS.
d) Database.
write singleton
SafeSingleton
d
To place an element on a queue you call the
_____ method of the Queue ADT.
a) dequeue().
b) push().
c) setElement().
d) None of the above.
b
The equals() method in the String class returns a true value if _____.
a) lengths are unequal or the characters do not match if lengths are equal
b) lengths are equal and the characters match exactly

c) lengths are equal and the characters match except for case
d) lengths are equal and the characters do not match
e) none of the above 1
a
What is the minimal modification that will make the code below compile correctly? 1. final class Aaa 2. { 3. int xxx; 4. void yyy() { xxx = 1; } 5. } 6. 7. 8. class Bbb extends Aaa 9. { 10. final Aaa finalref = new Aaa(); 11. 12. final void yyy() 13. { 14. System.out.println("In method yyy()"); 15. finalref.xxx = 12345;
16. } 17. }
a) On line 1, remove the final modifier
b) On line 10, remove the final modifier
c) Remove line 15
d) On lines 1 and 10, remove the final modifier
e) The code will compile as is. no modification is needed 1
d
Servlets run under the control of a(n) .
a) applet.
b) owner class
c) web browser
d) web server or servlet engine
d
Which of the following keywords allows a subclass to access a superclass method even when the subclasshas overridden the superclass method?
a) protected
b) this
c) public
d) super
c
In Lab 03, the implementation of Shannon's Theorem in a GUI program used the pattern.
a) Value Object.
b) Dependent Object.
c) Model-View-Controller.
d) Simple Factory.
a
Design patterns _____.
a) are proven ways for implementing behavior that help increase cohesion and reduce coupling.
b) are elegant ways for writing code.
c) cannot be implemented in Java.
d) only apply to C++. 1
c
What exception is thrown if the class loader cannot locate the driver class.
a) NoSuchClassException.
b) ClassCastException.
c) ClassNotFoundException.
d) IllegalClassException.
d

When a subclass constructor calls its superclass constructor, what happens if the superclass's constructor does not assign a value to an instance variable.
a) A syntax error occurs.
b) A compile-time error occurs.
c) A run-time error occurs.
d) The program compiles and runs because the instance variables are initialized to their default values.
c
Which of the following statements about recursion are true.
a) Recursion can occur infinitely.
b) Recursion uses a termination test.
c) Both a and b.
d) Neither a nor b. 1
a
Use AWT components for a greater level of portability and flexibility.
a) True
b) False
b
Which layout manager is the default for JFrame.
a) FlowLayout.
b) BorderLayout.
c) GridLayout.
a
Generics provide _____ that allows programmers
to catch invalid types at compile time.
a) compile-time type safety.
b) compile-time exception handling.
c) compile-time error checking.
d) run-time type safety.

- Which of these is better?

  Answers: $O(n^2)$

O(nlogn)

- **Question 2**

10 out of 10 points

If a sort algorithm take O(n) and the search algorithm takes O(nlogn) then the total complexity is

Answers: O(n + logn)

O(n)

O(nlogn)

- **Question 3**

10 out of 10 points

```
void printAllPossibleOrderedPairs(int arr[], int size)  {
 for (int i = 0; i < size; i++)      {
 for (int j = 0; j < size; j++)          {
 printf("%d = %d\n", arr[i], arr[j]);
 }
 }
}
```

This algorithm is

Answers: $O(n^2)$

O(n*m)

O(n)

- **Question 4**

10 out of 10 points

```
void printAllItemsTwice(int arr[], int size)  {
 for (int i = 0; i < size; i++)      {
 printf("%d\n", arr[i]);
 }

 for (int i = 0; i < size; i++)      {
 printf("%d\n", arr[i]);
```

```
 }
}
```

This algorithm is

Answers: O(n)

O(2n)

O(2n + 2)

- **Question 5**

10 out of 10 points

```
void printFirstItemThenFirstHalfThenSayHi100Times(int arr[], int size)  {
 printf("First element of array = %d\n",arr[0]);
 for (int i = 0; i < size/2; i++)      {
 printf("%d\n", arr[i]);
 }
 for (int i = 0; i < 100; i++)      {
 printf("Hi\n");
 }
}
```

This algorithm is

Answers: O(1 + n/2 + 100)

O(n/2)

O(n)

- **Question 6**

10 out of 10 points

```
void printAllNumbersThenAllPairSums(int arr[], int size)  {
 for (int i = 0; i < size; i++)      {
 printf("%d\n", arr[i]);
 }
 for (int i = 0; i < size; i++)      {
 for (int j = 0; j < size; j++)          {
 printf("%d\n", arr[i] + arr[j]);
 }
 }
}
```

This algorithm is

Answers: $O(n + n^2)$

$O(n)$

$O(n^2)$

$O(n^2 + n)$

- **Question 7**

0 out of 10 points

Which of these are valid big-O notations? Select all that apply.

Answers: $O(n)$

$O(n + \log n)$

$O(n \log n)$

$O(n^2 + n)$