ITI 1121. Introduction to Computing II *

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(based on Marcel Turcotte's slides)
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Abstract

- Introduction

*These lecture notes are meant to be looked at on a computer screen. Do not print them unless it is necessary.

Runing Java

We will **not** use an "integrated development environment" (aka IDE) such as Eclipse, Netbean etc.

Not that IDEs are bad, quite the opposite: they are **too good**!

IDEs help you being efficient. Now is the time be **inefficient**! You want to spend those hours finding silly mistakes.

(of course, as you become a more proefficient programmer, you will want to use all the (good) tools you can find!)

Getting Java

Where do I get Java to install it on my machine?

You can grab your copy of the Java Platform, Standard Edition (Java SE) from

http://www.oracle.com/technetwork/java/javase/downloads/index.html.

See Lab 0 for details..

Editing your code

You will also need an editor, such as

- Notepad++ (Windows, http://notepad-plus-plus.org)
- Sublime Text (Mac OS, Windows, Linux, http://www.sublimetext.com)
- TextWrangler (Mac OS, http://www.barebones.com/products/textwrangler/)
- TextMate (Mac OS, http://macromates.com)

Command/Shell

You need to navigate your file system.

- In the labs: "Start", then "All Programs", then"Programming", then "Java Development Kit", then "Java-Cmd-xxxx"

- On Windows:
  - use the"Start" Menu, select "Run" and type "cmd"
  - Change directory: "cd DirectoryName"
  - List directory content: "dir"

Simple compilable class

Here is a simple class

```
public class MyFirstClass {

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Save it as “MyFirstClass.java”. Move to the corresponding directory and compile:

```
> javac MyFirstClass.java
>
```

It worked.

Simple compilable class

Here is a simple class

```
public class MyFirstClass {

}
```

Save it as “MyFirstClass.java”. Move to the corresponding directory and compile:

```
> javac MyFirstClass.java
>
```

It worked. But we can’t run it:

```
> java MyFirstClass
Error: Main method not found in class MyFirstClass, please define the main method as:
   public static void main(String[] args)
```

Adding a main()

We need to have a “main” method, a starting point.

```
public class MyFirstClass {

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public class MyFirstClass {

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}
```

Now we can run it:

```
> javac MyFirstClass.java
> java MyFirstClass
>
```

It worked. But it does nothing...

Printing something

We can print something:

```
public class MyFirstClass {

  public static void main(String[] args){

    System.out.println("yes!");

  }
}
```

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yes!
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Doing more...

See lab 0 and 1 to continue...

Software Design

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- In real life, you don't have instructions, no **if** statements in the middle of the road!

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- In real life, you don't have instructions, no **if** statements in the middle of the road!

When designing large software systems, a closer mapping between real life and what is being built will help.

Real Life

So, what's "real life"?

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Real Life

So, what's "real life"? Look around you, in real life, there are "things":

- A book

Real Life

So, what's "real life"? Look around you, in real life, there are "things":

- A book, a phone

Real Life

So, what's "real life"? Look around you, in real life, there are "things":

- A book, a phone, a classroom

Real Life

So, what's "real life"? Look around you, in real life, there are "things":

- A book, a phone, a classroom, a desk...

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So, what's "real life"? Look around you, in real life, there are "things":

- A book, a phone, a classroom, a desk...

and "things like" entities

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- A prof (me)

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- A prof (me), a lecture (this one)

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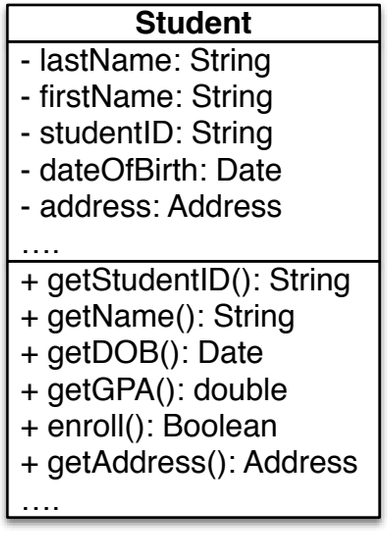
They are "black boxes" that we use to accomplish something. Only few of us need to know much about each one of these things, and as long as their "interfaces" don't change, we can keep using them without worrying about their specifics.

Students

What is a **student**?

Students

What is a **student**?



Professors

What is a **student**? What is a **professor**?

Professors

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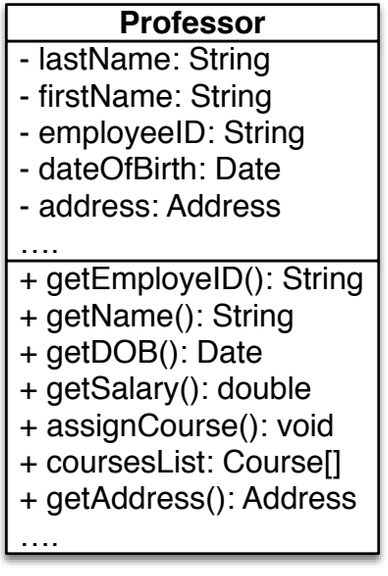

Students and Professors

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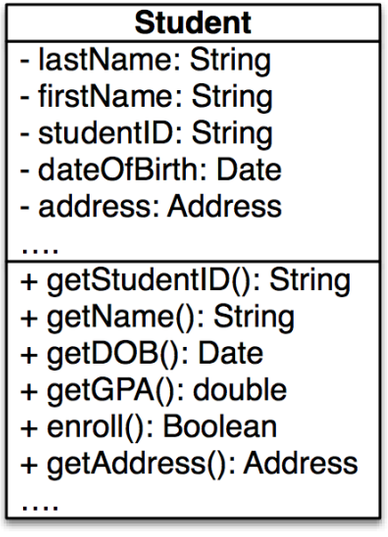
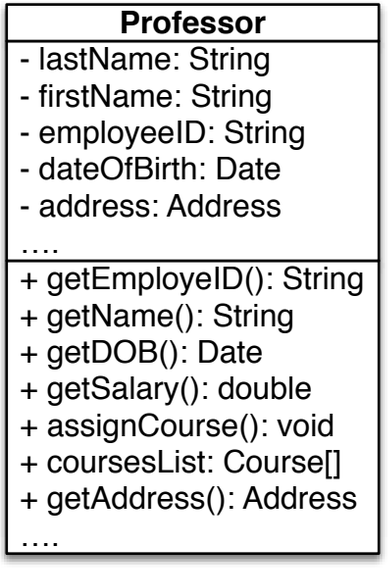
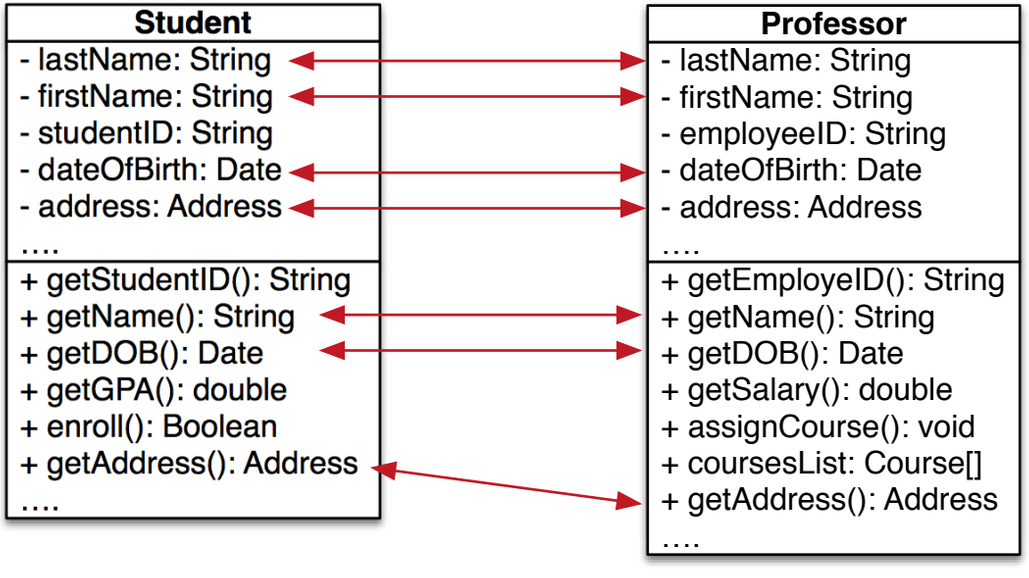




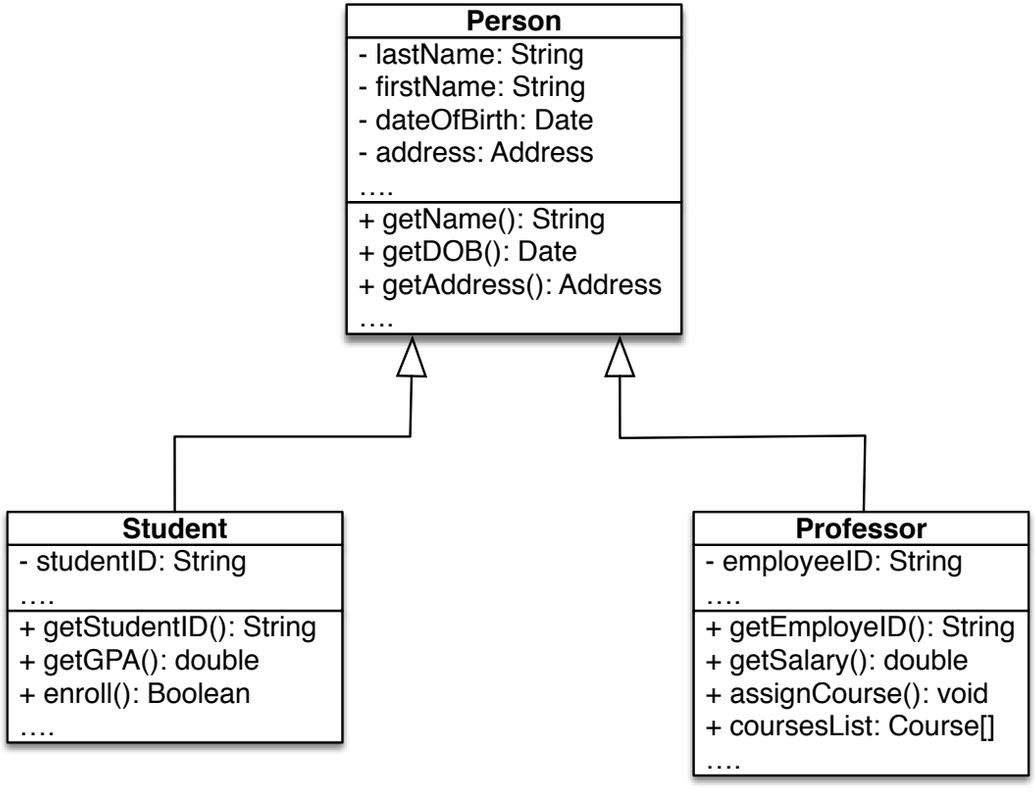
Students and Professors

Students and **professors** have lots in common !



Persons, Students and Professors

We can create a **Hierarchy** for our system:



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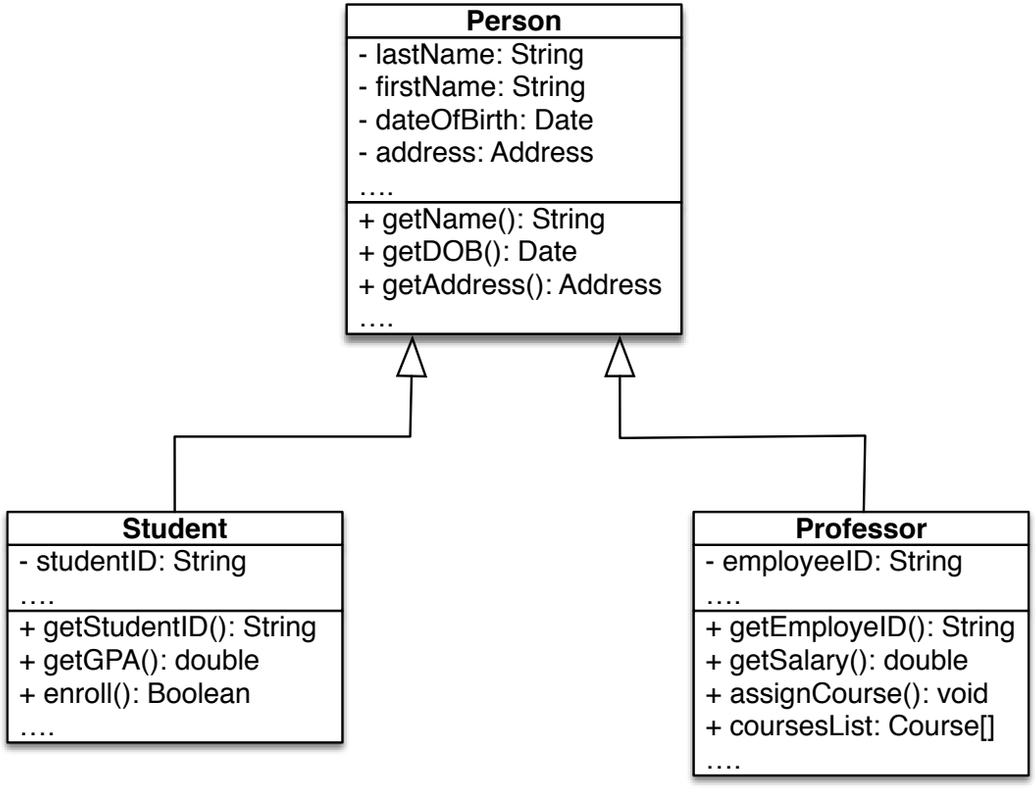


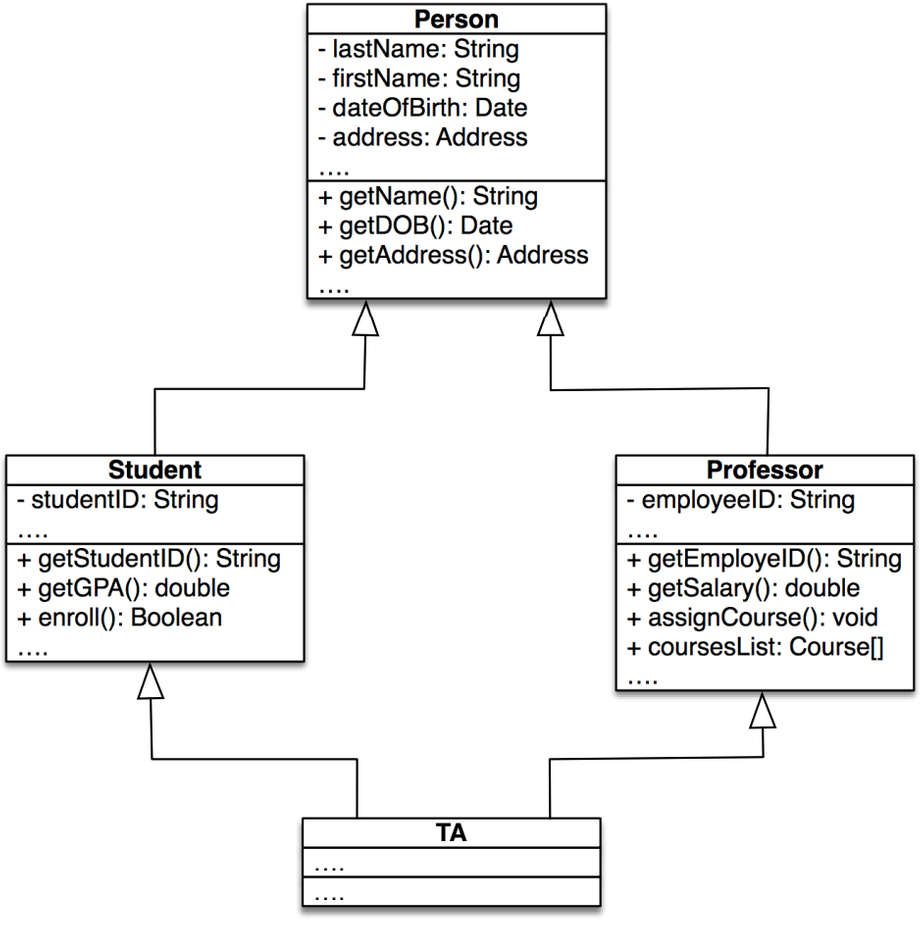
You are an **instance** of a **Person**, more specifically of a **Student**.

Persons, Students and Professors

What is a **teaching assistant**?

Persons, Students and Professors

What is a **teaching assistant**? A TA is **Person** who happens to be **both** a **Student** and a **Professor**!

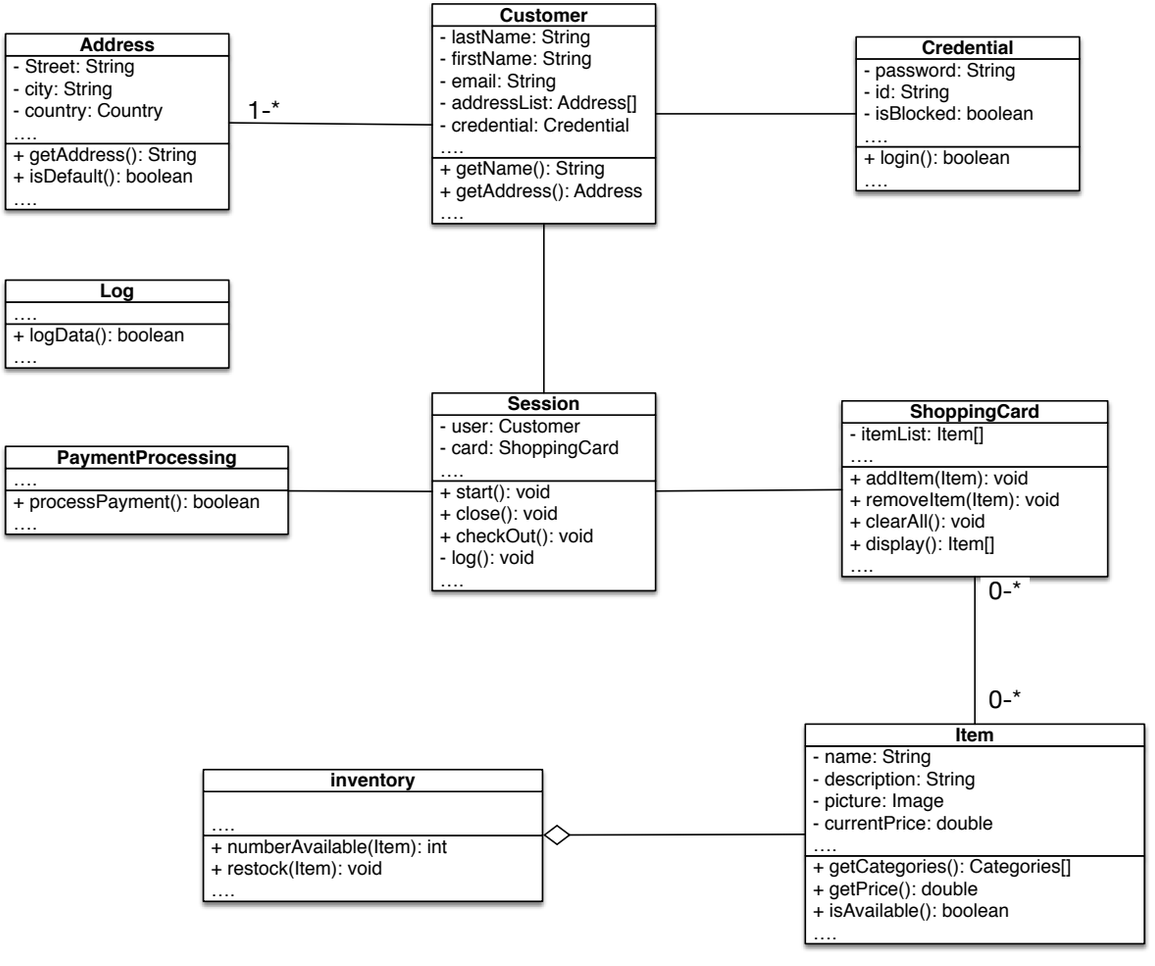


E-Commerce Web Site

How would you design an e-commerce Web site?

E-Commerce Web Site

How would you design an e-commerce Web site?Here is a sketch:



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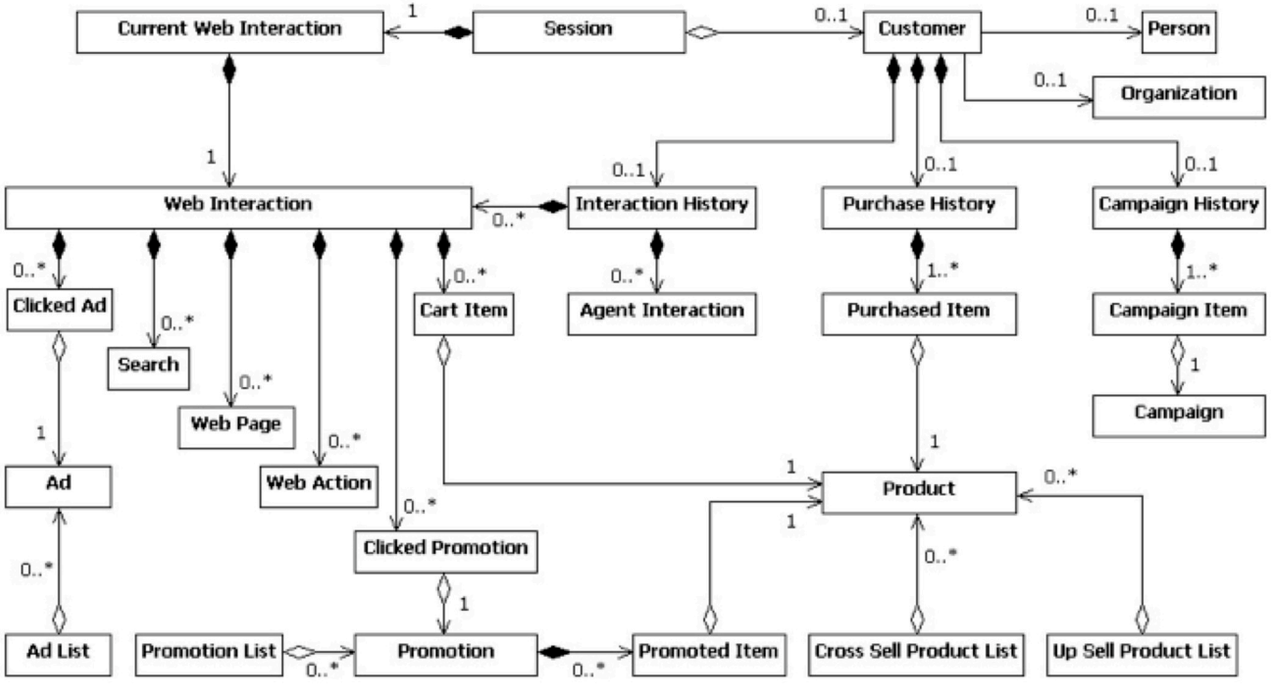

source docs.oracle.com/cd/E1218_01/doc/rtd.221/e12182/base_comm_is_elements.htm

Next lecture

- Primitive vs reference types
- Call by value
- Scope

Reminders

- Lab 0 is available, make sure to look at it
- First assignment posted, now is the right time to start
- Questions ? Suggestions ? $\Rightarrow$ Piazza