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Assignment 1

Question 1

1. X= 8, y= 76
2. X=11, y=137
3. X=5, y=30
4. X=11, y=143

Question 2

- The following source code will compile and run. The program will skip the first “if” statement and then it will execute the “else” statement and print “Where am I?”. The program will then move to the next function and print: “ if the world ended on December 21, 2012.” Essentially, the program would display: “Where am I? if the world ended on December 21, 2012.”

Question 3

- The following source code will compile and run. The program would execute the first print statement and then it would associate the “%f” with the float indicated. Essentially, for the first printf function, it would print $\frac{3}{4} = 0.75$ because the %f is associated with $\frac{3}{4}$. The program would then have the same execution for the other two printf functions. Therefore, it would print the same thing for the second printf function as it did for the first. As for the third printf function, the program would display: “1+2/3+0.4= 2.066666”.

Programming Question

Step 1: Problem identification and Definition

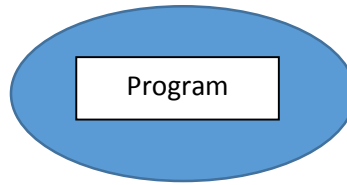
- A software shall be developed in order to convert the grade entered by the user between 0 and 100 to a letter between E and A+.

Step 2: Gathering of information, I/O Description

- Grade conversion
A+ = 90-100, A = 85-89, A- = 80-84, B+ = 75-79, B = 70-74, C+ = 65-69, C = 60-64, D+ = 55-59, D = 50-54, E = 40-49, F = 0-39

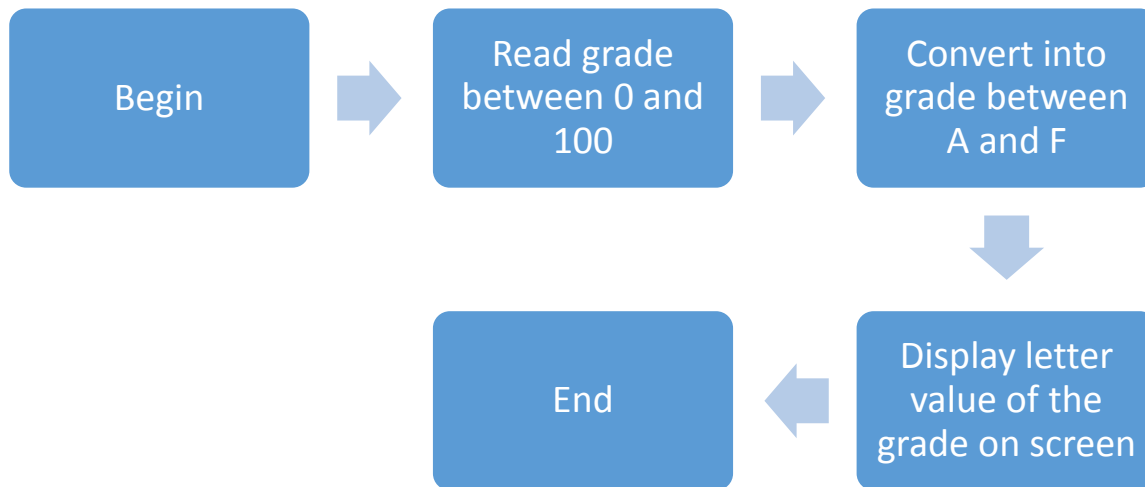
- I/O Description

Grade between 0 and 100 →



Grade between A and F

Step 3: Algorithm Development and Verification



Test cases

- If grade is 94, letter grade is A+
- If grade is 77, letter grade is B+
- If grade is 24, letter grade is F

Step 4: Implementation

```
#include <stdio.h>
```

```
void main()
```

```
{
```

```
    int Grade;
```

```
    printf("Please enter your grade: ");
```

```
scanf("%d", &Grade);

if (Grade >= 90 && Grade <= 100)
    printf("\nYour grade is A+");
else if (Grade >= 85 && Grade < 90)
    printf("\nYour grade is A");
else if (Grade >= 80 && Grade < 85)
    printf("\nYour grade is A-");
else if (Grade >= 75 && Grade < 80)
    printf("\nYour grade is B+");
else if (Grade >= 70 && Grade < 75 )
    printf("\nYour grade is B");
else if (Grade >= 65 && Grade < 70)
    printf("\nYour grade is C+");
else if (Grade >= 60 && Grade < 65)
    printf("\nYour grade is C");
else if (Grade >= 55 && Grade < 60)
    printf("\nYour grade is D+");
else if (Grade >= 50 && Grade < 55)
    printf("\nYour grade is D");
else if (Grade >= 40 && Grade < 50)
    printf("\nYour grade is E");
else if (Grade >= 0 && Grade < 40)
    printf("\nYour grade is F");
else
    printf("\nYour grade is invalid");
}
```

Step 5: Verification

- Test case 1

```
"C:\Users\mark\Documents\GNG1106\Assignments\Program...  
Please enter your grade: 94  
Your grade is A+  
Process returned 17 (0x11) execution time : 11.077 s  
Press any key to continue.  
_
```

- Test case 2

```
"C:\Users\mark\Documents\GNG1106\Assignments\Program...  
Please enter your grade: 77  
Your grade is B+  
Process returned 17 (0x11) execution time : 2.196 s  
Press any key to continue.  
_
```

- Test case 3

```
"C:\Users\mark\Documents\GNG1106\Assignments\Program...  
Please enter your grade: 24  
Your grade is F  
Process returned 16 (0x10) execution time : 3.114 s  
Press any key to continue.  
_
```