Year 1

Tutorial 8

IT1010 – Introduction to Programming Semester 1, 2020

Question 1

Show the value of x after each of the following statements is performed:

i. x = floor(7.5)
ii. x = ceil (0.0)
iii. x = ceil (-6.4)
iv. x = log10(100.0)
v. x = ceil (floor (-5.5))

Question 2

Write a function called circleArea() that take the radius of a circle as an argument and calculate and return the area. In the main program read the radius value from the user, call circleArea() and display the result.

Question 3

Write three functions do the following **add -** add two integers pass as parameters and return the result **multiply -** multiply two integers pass as parameters and return the result **square** – receive an integer as a parameter and return the result after multiplying the number by itself.

Use these functions in the main program to calculate the result of the following mathematical expression. $(3*4 + 5*7)^2$

Additional Exercises

Question 1

i) Write a function that displays a solid square of asterisks whose side is specified in integer parameter *side*. For example, if *side* is 4, the function displays

```
****
****
****
****
```

ii) Modify the function created in i) above to form the square out of the character contained in character parameter *fillCharacter*. Thus if *side* is 3 and *fillCharacter* is "#", then this function should print

```
###
###
###
```

Question 2

The roots of a function can be calculated as given below.

$$x = \frac{-b \mp \sqrt{b^2 - 4ac}}{2a}$$

Write a C program to input any three values for a, b, c and to calculate the roots.

Hint : Use pow and sqrt function in math library.

Question 3

You are asked to write a C program to calculate the final mark and grade of 5 students for a subject.

a) Write a function called **calcFinalMark()** to calculate the final mark of the subject. When calculating the final mark, 30% is taken from the assignment mark and 70% is taken from the paper mark. Function should return the final mark. Assignment mark and paper mark are given as parameters to the functions.

```
float calcFinalMark(float assignmentMark, float paperMark);
```

b) Write a function called **findGrades()** to return the grade obtained for the given final mark. Grades are calculated as follows:

```
char findGrades(float finalMark);
```

Final mark	Grade
Mark >= 75	A
60 <= Mark < 75	B
50 <= Mark <60	C
Mark <50	F

c) Write a function called **printDetails()** to print the name, final mark and the grade of a student.

Your output should be as follows:

```
Name        Final Mark    Grade
--------    ----------    --------
......      .........     ......
```

```
void printDetails(char name[],float assignmentMark, float paperMark);
```

d) In your main function, ask the user to enter the name, assignment marks (out of 100) and the paper mark(out of 100) of the 5 students from the keyboard. Allow the user to enter the paper mark only if the student has got more than 50% for the assignment mark. If not the paper mark is considered as zero. Display the name, final mark and the grade of a student using the function written in section c).