ESS111: Programming in C

LAB - 1

(Due by: 25/11/2020 before 11:59 pm)

(Note: only Part A will be evaluated)

PART A

Problem 1: Write a program that takes a temperature reading in the centigrade scale and outputs its equivalent value in the fahrenheit scale (give output up to 2 decimal places).

Input	Output
0	32.00
-10	14.00

(Sample Input/Output for Problem 1)

Problem 2: You are given three floats *a b c* as inputs which represent the length, the breadth of a rectangle and the radius of a circle, respectively. Write a program which gives the output: area of the rectangle, perimeter of the rectangle, area of the circle and circumference of the circle, respectively. (Make sure that output sequence is as mentioned above). (Assume π = 3.14) (Give output up to 2 decimal places)

Input	Output
9 6 1	54.00 30.00 3.14 6.28
8 12 10	96.00 40.00 314.00 62.8

(Sample Input/Output for Problem 2)

Problem 3: Write a program that takes *n* as input and gives the average of the squares of the first *n* natural numbers. (Give output up to 2 decimal places)

Input	Output
4	7.50
9	31.67

(Sample Input/Output for Problem 3)

Problem 4: Given two positive integers (read from the input), write a program to print the remainder and the quotient, respectively, when the first integer is divided by the second integer.

Input	Output
23 5	3 4
41 8	1 5

(Sample Input/Output for Problem 4)

PART B

[A] Which of the following are invalid C constants and why?

1) '3.15'
2) 2e-3
3) 'Quest'
4) 35,550
5) 'eLearning'
6) 2^3
7) 3.25e2
8) "show"
9) 4 6 5 2

[B] Which of the following are invalid variable names and why?

1) B'day
2) #HASH
3) totalArea
4) total%
5) variable name
6) int
7) dot.
8) _main( )
9) 1st
10) %name%
11) $hello
12) number
13) temp_in_Deg
14) stack-queue
15) salary

[C] State whether the following statements are True or False:

1. C language was developed by Dennis Ritchie.
2. Operating systems like Windows, UNIX, Linux and Android are written in C.
3. C language programs can easily interact with hardware of a PC / Laptop.
4. A real constant in C can be expressed in both Fractional and Exponential forms.
5. A character variable can at a time store only one character.
6. The maximum value that an integer constant can have varies from one compiler to another.
7. Usually all C statements are written in small case letters.
8. Spaces may be inserted between two words in a C statement.
9. Spaces cannot be present within a variable name.
10. C programs are converted into machine language with the help of a program called Editor.
11. Most development environments provide an Editor to type a C program and a Compiler to convert it into machine language.
12. int, char, float, real, integer, character, char, main, printf and scanf all are keywords.

[D] Match the following pairs:

(a)	\n	(1)	Literal
(b)	3.145	(2)	Statement terminator
(c)	-6513	(3)	Character constant
(d)	'D'	(4)	Escape sequence
(e)	4.25e-3	(5)	Input function
(f)	main( )	(6)	Function
(g)	%f, %d, %c	(7)	Integer constant
(h)	;	(8)	Address of operator
(i)	Constant	(9)	Output function
(j)	Variable	(10)	Format specifier
(k)	&	(11)	Exponential form
(l)	printf( )	(12)	Real constant
(m)	scanf( )	(13)	Identifier

[E] Point out the errors, if any, in the following programs:

(a)

```
int main( )
{
    int a ; float b ; int c ;

    a = 25 ; b = 3.24 ; c = a + b * b – 35 ;
}
```

(b)

```
#include <stdio.h>

 int main( )
 {

     int  a = 35 ; float b = 3.24 ;

     printf ( "%d %f %d", a, b + 1.5, 235 ) ;

 }
```

(c)

```
#include <stdio.h>

int main( )

{
     int  a, b, c ;

     scanf ( "%d %d %d", a, b, c ) ;
}
```

(d)

```
#include <stdio.h>

int main( )
{
     int  m1, m2, m3

     printf ( "Enter values of marks in 3 subjects" )

     scanf ( "%d %d %d", &m1, &m2, &m3 )

     printf ( "You entered %d %d %d", m1, m2, m3 )

}
```