Section 14

PDS Lab **Assignment - 3** **22.12.2021**

Instructions:

Give sufficient comment against each statement in your program.
You should save each program with the file name (e.g., Lab3_1.c for the program of Problem 1 in this assignment).
There is a partial credit even if your program does not run successfully for all the test cases as mentioned.
There are FIVE problems and you have to solve in 150 minutes. A tentattive time against each problem is given and can be considered for your guidance.
You should upload each program (only .c file) against the problem. Thete is no need to submit any .zip file at the end of your lab.

1. Write a program (in C) to check that whether the following variable declarations are valid or not.
   (a) int xyz = 1.5;
   (b) char name[] = "My name is Khan";
   (c) float $amount;
   (d) short 1_2_3
   (e) void _Abc*;
   (f) double Double;

   Modify the incorrect declarations so that your program can run and values can be stored in them.
   For each of 6 declarations, read appropriate value from the keyboard and then print the values on the screen.

   [Time: 15 Minutes] [5X4 = 20]

2. Declare two integer variables, say x and y. Your declaration should store long integer values.
   Read any two long integers from the keyboard.
   Define another identifier, say z of type float.
   Store the value when x is divided by y in z.
   Print the value in z with 5 decimal point precision.

   [Time: 20 Minutes] [5X3 = 15]

3. Rules for a valid keyword entry are as follows:
   It should be a minimum 8 and maximum 12 characters.
   It should contain at least one uppercase letter.
   It should contain at least one lowercase letter.
   It should contain at least one digit.
   It should contain at least any one of the special characters: _ * $ # @
   No other symbols are allowed.
   Read a keyword from the keyboard and then check if it satisfies all the rules.

   [Time: 25 Minutes] [5X5 = 25]

4. A function f(x) is given below.
   $f(x) = ax^4+bx^3+cx^2+dx+e$
   where a, b, c, d and e are any real numbers.

   Write a program to calculate the value of f(x).
   Your program should read the values of x as well as a, b, c, d and e from the keyboard.
   You should not use any library function in your program.
   Your calculation should involve only multiplication and addition operations.
   A special credit will be given for solving the problems with a minimum number of multiplication and addition operations.

   [Time: 30 Minutes] [15+5 = 20]

5. Consider the equation of a circle and straight line as given below.

   Circle: $x^2+y^2=50$
   Line: `y = x + 5`

   Write a program which will calculate the area bounded between the circle and the line.

   [Time: 60 Minutes] [5+5+5+5 = 20]

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