CSB101: Problem Solving and Computer Programming

LAB 7: Function in C

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Instructions:
A) Save your lab.doc as LAB_no_RollNo.doc.  At the end of lab you need to submit your all programs along with the output.
-- LAB_No_Roll_No_2hr.doc for  lab task executed duing the lab
-- LAB_No_Roll_No_complete.doc for Full solution of the Lab assignment ( It should contain all lab assignemnt/problems)
B) Use/paste the snapshot of the steps followed along with result/s.
C) Mention your observation/comment after results in the doc.
D) Along with the doc/pdf file you need to upload your c program filles with following nomenaculture.
-- LAB_No_Prob_No.c
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Objective(s):

- To be familiar with Functions in C Programming

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PART A : Conceptual Questions

1. Write a program to enter a decimal number. Using function , calculate and display the
   - Binary equivalent
   - Octal equivalent
   - Hexadecimal equivalent

   Sample input
   Enter the choice : 10

   Sample output
   Binary : 00001010
   Octal : 12
   Hexadecimal : A

2. Write a function to swap the value of two variables and it should illustrates the use of call by value and call be reference

3. Design a calculator using function this time, that prompt input as a choice for operation to perform on them(1 for addition, 2 for subtraction, 3 for multiplication, 4 for division, 5 for exit) and two numbers(if required by operation) . The program should not terminate untill the user don't choose to close it.

   Sample input
   Enter the choice : 1, 20,30
   Enter the choice : 5

   Sample output
   Addition of 20 and 30 : 40
   Exiting calculator…

4. Write a program to display the list of all leap years from 1900 to 2100. You may define reverse function in another file and save it as header file.

5. Write a program in C using function to display the multiplication table of n, where n is entered by the user.

   Sample input : Enter any Number : 5
   Sample output : Multiplication table of : 5
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   5 X 1 = 5

5 X 2 = 10
:
5 X 10 = 50
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6. Write a program to print the reverse of a number. And display sum of its digit. It should illustrates the use of local, global and static variables.

Sample input	**Sample output**
1384	Revers of no : 4831 Sum is : 16

7. Write a program to calculate pow(x,n) i.e to calculate x^n , where n is negative or positive.
A) Using recursion b) without recursion

Sample input	**Sample output**
3,4	81
2,5	32

8. Write a program to calculate sum of series $\frac{1}{1!}+\frac{2}{2!}+\frac{3}{3!}+\frac{4}{4!}+\cdots+\frac{n}{n!}$

9. Write a program to swap first and last digits of any number.

Sample input	***Sample output***
6482	2486

PART B : Exploratory Problem :

10. Write a c program to solve the tower of Hanoi problem. Take the number of rings as input from the user and Display the number of the step required to solve that problem.
The problem statement is as following :

- Initially all the disks are stacked on the LEFT pole.
- Required to transfer all the disks to the RIGHT pole.
  - Only one disk can be moved at a time.
  - A larger disk cannot be placed on a smaller disk.
- CENTER pole is used for temporary storage of disks

Observation /Comments: