**C Programming Lab Assignment-1**

**(Branching and Looping)**

**Instructions:**

* *Write C code for following problems in Lab record. Input and output will be in Left side page, right side page will be question and program only.*
* *Do not forget to write name, roll number and section on first page of Lab record.*
* ***Last date to submit the assignment is 21st January 2019.***

**Section 1: Branching Programs:**

1. Write a program to check whether a given number is negative, positive or zero.
2. Write a program to check whether a given number is even or odd.
3. Write a program to check whether a number is divisible by 5 and 11 or not.
4. Write a program to find maximum between three numbers.
5. Write a program to input week number and print week day.
6. A shop will give discount of 10% if the cost of purchased quantity is more than 1000. Ask user for quantity. Suppose, one unit will cost 100. Calculate and print total cost for user.
7. Write a program to input angles of a triangle and check whether triangle is valid or not.
8. Write a program to input Percentage. Calculate percentage and grade according to following: Percentage >= 90% : Grade A Percentage >= 80% : Grade B Percentage >= 70% : Grade C Percentage >= 60% : Grade D Percentage >= 40% : Grade E Percentage < 40% : Grade F
9. Write a program to input basic salary of an employee and calculate its Gross salary according to following: Basic Salary <= 10000 : HRA = 20%, DA = 80% Basic Salary <= 20000 : HRA = 25%, DA = 90% Basic Salary > 20000 : HRA = 30%, DA = 95%
10. Write a program that computes the real roots of a quadratic function. Your program should begin by prompting the user for the values of a, b and c. Then it should display a message indicating the nature of real roots, along with the values of the real roots (if any). (Use math.h)

**Section 2: Looping Programs:**

1. Write two programs to print the squares of 1,2,...,10 with for loop and while loop.
2. Find n! for given n as an input from keyboard.
3. Find the sum of first n integers for given n
4. Write a program to find those numbers which are divisible by 7 and 5,

between 1 and 100.

1. Write a program that prints all the numbers from 0 to 10 except 3 and 6.
2. A Fibonacci sequence is the integer sequence of 0, 1, 1, 2, 3, 5, 8....
3. Print multiplication table of n using loop for given number n.
4. Write a for loop that writes out the decimal equivalent of the reciprocals 1/2, 1/3,1/4, ... , 1/19, 1/20.
5. Write a for loop that writes out the decimal equivalent of the series 1/2+1/3+1/4+ ... +1/19+1/20.
6. Given two input number A and B. Find the sum of number between A and B. For example: input: A=2, B=5 output:14 (2+3+4+5)
7. Write a program that prompts user to enter numbers. The process will repeat until user enters 0. Finally, the program prints sum of the numbers entered by the user.
8. Print all factors of the given number n.
9. Check given number n is prime number or not.
10. Take 10 integers from keyboard using loop and print their average value on the screen.
11. Write a program to print all the numbers from 1 to 1000 that are not divisible by 2, 3, 5, 7, 11, 13, 17 and 19.
12. Write a program to find greatest common divisor (GCD) or highest common factor (HCF) of given two numbers.
13. Write a program to print all digits of a given number. For example: Input: 6789, Output: 6,7,8,9.
14. Write a program to check whether a number is Armstrong number or not.
15. Write a program to print all Prime numbers between 1 to n.
16. Write a program that prints the 5×5 identity matrix.
17. Write a program to construct the following pattern, using a nested for loop.

\*   
\* \*   
\* \* \*   
\* \* \* \*   
\* \* \* \* \*   
\* \* \* \*   
\* \* \*   
\* \*   
\*

1. Print the following pattern as a output:

\*\*\*\*\*\*\*\*\*

\*0\*0\*0\*0\*

\*\*\*\*\*\*\*\*\*

\*0\*0\*0\*0\*

\*\*\*\*\*\*\*\*\*

1. Write a program to print following matrix.

1 0 1 0

1 0 1 0

1 0 1 0

1 0 1 0

1. Write a program to print following matrix.

1 0 1 0

0 1 0 1

1 0 1 0

0 1 0 1

1. [Write a program to print Pascal triangle up to n rows](https://codeforwin.org/2015/07/c-program-to-print-pascal-triangle.html). (**Optional**)

**Section 3: C Programs on Arrays:**

1. Write a C program to create an array of n numbers (user input from keyboard) where n is given as input from user.
2. Write a C program to sum all the numbers in an array.
3. Write a C program to multiply all the numbers in an array.
4. Write a C program to print the even numbers from a given array.
5. Write a C program that takes an array and returns a new array with unique elements of the first array.
6. Find the maximum element in an array.
7. Print the alternate elements from an array.
8. Write a C program to print a specified array after removing the 0th, 4th and 5th elements. Example: Input: 5,55,60,70,46,78,90, Output: 55,60,70,90
9. Write a C program to create an array of each digit is a element in a array from a number. Example: Input: 5467, Output: 5,4,6,7 (hint: while loop with % and //)
10. Write a C program to form a number from a given array of digits Example: Input: 5, 4, 6, 7, Output a number: 5467 (hint: for loop)
11. Write a C program to convert a list of characters into a string. Example: Input: ‘s’, ’t’, ’r’, ’i’, ’n’, ’g’, Output: string.