LAB IV

LOOPS

1. Write a program to find the sum of the digits of the number entered (You should write two different ways the same program ie by using while, do while,

2. Write a program to find the average of any 'n' numbers. (using while and do while).

3. Write a program which reads in a **float** from the user, tests if the value is positive, and if so, computes the square root of the value and prints out the result. Use the library function **sqrt()** to compute the square root and %f printf() format to print out the result. Put the following line in your program to include information about the **sqrt()** function.

4. Write a program which reads in three **int** and prints the maximum of the three using conditional operator (? :).

5. Write a menu driven program which reads in a character and two integers from the user. The character should be an arithmetic operator **(+, -, *, /).** Use a **switch** statement to determine which operator the user entered, perform that operation on the two integers, and output the result. Continue till the user wishes.

6. Write a program that inputs a positive integer number n and outputs the odd numbers between 1 and n.
   For example, for $n = 12$, program should output:
   1 3 5 7 9 11.

7. Write a program that reads a positive integer number m and then prints the english name of each digit of that number in a single line.
   For example, for $m = 147$, program should output:
   one four seven.

8. Write a program that reads a positive integer n from the user and then prints square and cube of numbers till n. Use a do-while loop structure.

9. Write a program to print the multiplication table of the number entered by the user. The table should get displayed in the following form.

   29 * 1 = 29
   29 * 2 = 58…
10. Write a loop that will calculate the sum of every third integer, beginning with i=2
    (i.e. calculate the sum 2 + 5 + 8 + 11 + -) for all values of I that are less than 100. Write the loop in two different ways.
    (a) Using a while statement.

(b) Using a do - while statement

11. Write a loop that will generate every third integer, beginning with i= 2 and continuing for all integers that are less than 100. Calculate the sum of those integers that are evenly divisible by 5. Use two different methods to carry out the test.

(a) Use the conditional operator (? :).
(b) Use an if - else statement.

12. Calculate the sum of the first n odd integers (i.e., 1 + 3 + 5 + - - - + 2n - 1). Test the program by calculating the sum of the first 100 odd integers (note that the last integer will be 199).

13. Write a nested for loop that outputs the following 4-by-10 pattern of 0s:

```
0000000000
0000000000
0000000000
 0000000000
```

14. Write a program to print the following pattern using nested loops

```
Pass 1:1 2 3 4 5
Pass 2:1 2 3 4 5
Pass 3:1 2 3 4 5
Pass 4:1 2 3 4 5
Pass 5:1 2 3 4 5
```

15. Write a program to print the following pattern using nested loops

```
1
1 2
1 2 3
1 2 3 4
```

16. Write a program to print the following pattern using nested loops

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

17. Write a program to check whether the entered number is a palindrome.