Data Structure Report

1. Write a C program to calculate salary of an employee given his basic pay (to be entered by the user), HRA = 10% of the basic pay, TA = 5% of basic pay.

2. Write a program to calculate area of a circle using function.

3. Write a program to take input from the user and then check whether it is a number or a character. If it is a character, determine whether it is in upper case or lower case. Also print its ASCII value.

4. Consider an array MARKS[8][3] which stores the marks obtained by 8 students in 3 subjects. Now write a program to

   (a) find the average marks obtained in each subject.
   (b) find the average marks obtained by every student.
   (c) find the number of students who have scored below 50 in their average.
   (d) display the scores obtained by every student.

5. Write a program that calculates the sum of squares of the elements of the array num[10].

6. Write a program to input the elements of a two-dimensional array arr[5][3]. Then from this array, make two arrays: one that stores all odd elements of the two-dimensional array and the other that stores all even elements of the array.

7. Write a program using pointers to interchange the second biggest and the second smallest number in the array.

8. Write a program that reads a matrix and displays the sum of the elements above the main diagonal. (Hint: Calculate the sum of elements A_{ij} where $i<j$)

9. Write a program to input two stacks and compare their contents.

10. Write a program to compute F(M, N) where F(M, N) can be recursively defined as:

$$F(M,N) = 1 \text{ if } M=0 \text{ or } M \geq N \geq 1$$

and $F(M,N) = F(M-1,N) + F(M-1, N-1)$, otherwise.