**Lab 9**

Q1. Write a program to add two 2\*2 matrices

Q2. Write a program to add two 3\*3 matrices.

Q3. Write a program to find the sum of the diagonal elements of a matrix.

Q4. Write a program to store employee details of 3 employees. Each employee has a name, date of birth, year of joining, salary. A date itself is composed of date, month and year.

1. Create the necessary structures for the same. Store the details of all the employees in an array. Take the details from the user
2. Print the details. For printing, create a separate print function.

Q5. A recipe is to be created for a cupcake. The ingredients are flour, butter, eggs, baking powder. All of these are quantities either as int or float. In addition, there is an additional ingredient called flavour which can be either choco-chip (int) or cream (float).

1. How will you capture flavour? Create the necessary data type for it.
2. Create a structure for the cupcake. Take the details to make your cupcake from the user
3. Create a function bake that prints the details.

Q6. Create a file “test.txt” in your working directory. Perform the following operations:

1. Display the position of the stream pointer when the file is opened.
2. Print the character in the 10th position
3. Print all the characters in the file
4. Print the position of the stream pointer at this point.
5. Convert all the characters in this file to Uppercase and store them in the same file.

Q7. Get the number of elements for the array. Dynamically allocate memory using malloc. Check if the memory has been successfully allocated by malloc or not. Allocate the index as the value of the array. Print the elements in the array.

Q8. Repeat Q7 using calloc.

Q9. Write a program to take four colours as command line arguments. Display the number of arguments and the four colours.

Q10. You have to find the volume of a cylinder. Define macros for Pi as well as volume. Write the main method so that the program runs using the two macros.

Q11. Create two files file1.c and file2.c. Use the concept of extern storage class

1. Define a variable Pi in file2. Print the value Pi from file1.c.
2. Define a function func that prints “Hello” in file1. Call it from file2.

Q12. Write a function to generate unique sequential IDs starting from 1. Your main method should call this method 10 times in a loop to generate 10 unique sequential IDs. Use the concept of static storage class.