Lab 7

1. Write a program to print the sizes of integer, float and character in your machine.
2. Declare and initialize an array as follows:

   int A[] = {10,20,30,40,50}

   a) Print the size of this array.
   b) Print the number of elements in this array using sizeof().
3. Write a program to
   a) take an user input float number in main().
   b) Pass this number to a function called **funcA()** using call by reference. The return type of funcA() should be void.
   c) Calculate the ceil() anf floor() of this number in **funcA()**.
   d) Print both values from main().
4. Ten distinct integers are entered from the keyboard into an array. Also, the number to be searched (key) is entered through the keyboard by the user. Write a program to find if the key is present in the array or not.
   a) Use Linear search
   b) Use binary search – assume that the input array is sorted in ascending order. How will this code change if the input array is sorted in descending order?
5. Sort an integer array of size 10 using Bubble sort.
   a) In ascending order
   b) In descending order
6. Write a C program to display the contents of an user input integer array of size 6, using a function. Pass each individual element of the array to function using
   a) Call by value

b) Call by reference

7. Write a C program to calculate the sum of array elements in a float type array of size 10, by passing entire array to a function (do not pass individual elements).
8. Access the elements of an user input integer array of size 15 using pointer notation and print the values and their addresses.
    a) Also, find the smallest number in an integer array of size 8 using pointer notation.
9. Write a program to declare an integer 2D array of 4 rows and 5 columns. Take user inputs to populate it.
    a) Print the elements of the array and their addresses.
    b) Also print the sum and product of all the elements of the array. Use index notation.
10. Declare an integer type 3D array of size 5X2X3. Populate it with user inputs. Display the values in proper format. Display the addresses.
11. Write the code for problem number 4 for an array which can contain the key multiple times, and display the number of times it appears in the array along with its indices for using linear search algorithm.
12. Declare and populate an int type 1D array of size 10 taking inputs from user. Pass individual elements to a function and print them and their corresponding characters from this function.
13. Declare and populate a float type 1D array of size 10 taking inputs from user. Pass the whole array to a function. Calculate the sum and product in the function and print them from main().
14. For a 1-D array of type integer, size 5, write a function to shift it circularly left by 1 position. Call this function for a (3 x 5) matrix and get its rows left shifted.

    Example: if input array is 15, 30, 28, 19, 61

    After the shift: 30, 28, 19, 61, 15