01).This program will declare an array and then add all the array elements and finds the average of the array.

**Steps for the solution.**

1. Create an array of fixed size (maximum capacity), lets say 10.
2. Take n, a variable which stores the number of elements of the array, less than maximum capacity of array.
3. Iterate via for loop to take array elements as print them.
4. Iterate via for loop to access each element of array to get sum (sum of positive integers and negative integers are separate) and overall sum to calculate average.
5. Sum of positive and negative numbers are shown.
6. Average is calculated by dividing overall sum to the number of elements in array.

Ex: array

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| -8 | 9 | -100 | -80 | 90 | 45 | -23 | -1 | 0 | 16 |

**Output:**

- **Sum of all negative numbers = -212**
- **Sum of all positive numbers = 160**
- **Average of all input numbers = -5.20**

02).Write a program in C to copy the elements one array into another array in a reverse order.

Ex:

First array

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

New array

| | | | | |
|---|---|---|---|---|
| 5 | 4 | 3 | 2 | 1 |

03) Write a program in C to count a total number of duplicate elements in an array. Also you have to calculate the mean of those elements.

Ex:

Array

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 4 | 3 | 2 | 5 | 3 | 1 | 3 | 2 | 3 | 1 |

**Output:**

- **Mean = 3.**
- **5 number is repealty 2 times.**
- **4 number is repealty 1 times.**
- **3 number is repealty 4 times.**
- **2 number is repealty 2 times.**
- **1 number is repealty 2 times.**

04) Write a program in C to separate odd and even integers in separate arrays.

Test Data :
Input the number of elements to be stored in the array :5
Input 5 elements in the array :
element - 0 : 25
element - 1 : 47
element - 2 : 42
element - 3 : 56
element - 4 : 32

*Expected Output* :
**The Even elements are :**
**42 56 32**
**The Odd elements are :**
**25 47**

05) Write a program to perform Push, Pop, and Peek operations on a stack.

06) Write a program to reverse a list of given numbers using stack data structure.

07) Write a program to reverse a string using recursion.

08) Convert given expression in to postfix and prefix.

a) 3 * 2 + 4 * (A + B)
b) (A + B) * (C + D)
c) (A + B) * C - (D - E) * (F + G)
d) ( A + B ) * C - ( D - E ) * ( F + G )

09) Write a C program to evaluate the postfix expression using corresponding data structure.

a) What is the suitable data structure?
b) Write a C program to above scenario.