6. Arrays (1D & 2D), Searching and sorting using arrays

CO2: Design searching and sorting algorithms using arrays and strings.

A.1-D Array:

1. Write a C program to read 'n' numbers from the user. Calculate and display the total, average, minimum and maximum of 'n' integer numbers.
2. Write a C program to copy the contents of one array into another in the reverse order.
3. Write a C program to read a number containing five digits. Perform square of each digit. For example, number is 45252. Output should be the square of each digit. i.e 16254254.
4. Create an array of 25 random numbers. Ask the user to enter a number to search. Write a program to find if the number searched is present in the array or not. If it is present, display the position in which it occurred and count the total number of occurrences.
5. If x1,x2,x3...,xnare 'n' random numbers and y1,y2,y3,...,yn are 'n' random numbers, Write a C program to calculate the Karl Pearson's Correlation Coefficient given by

$$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}(y_i - \bar{y})^2}}$$

where $\bar{x}$ and $\bar{y}$ are the respective means.

6. Write a C program to replace the zero with the successive number in the following array
   int x[8]={1,0,3,0,5,0,7,0}
7. Write a program to create an array of 'n' random numbers in the range 1 to 100. Insert a new data received from the user in the desired position given by the user
8. Write a program to create an array of 'n' random numbers in the range 50 to 100. Delete the data from the desired position given by the user.
9. Write a C program for swapping of two arrays.
10. Write a C program to sort the given set of elements.
11. Five candidates contest an election. The candidates are numbered from 1 to 5 and the voting is done by marking the candidate number on the ballot paper. Write a program to read the ballots and count the votes cast for each candidate using an array variable count. In case a number read is, outside the range 1 to 5, that particular ballot should considered as a spoilt ballot and the program should count the number of spoilt ballots.
12. Every book published by international publishers should carry an International Standard Book Number (ISBN). It is a 10 character 4 part number as shown below.

    0-07-041183-2

    The first part denotes the region, the second represents publisher, the third identifies the book and the fourth is the check digit. Computation of check digit is as follows:

    Sum=(1 x first digit) + (2 x second digit) + (3 x third digit)+---+(9 x ninth digit).

    Check digit is the remainder when 11 divide sum. Write a program that reads a given ISBN number and checks whether it represents a valid ISBN.