ITE 101 – Problem Solving Using C

Lab Cycle Sheet – II

ONE-DIMENSIONAL ARRAYS

33. Write a program to print the following array in descending order.
    Height[]={5.3, 5.2, 5.4, 5.1, 5.9, 5.8, 5.7, 5.6, 5.0, 5.5}.
    Also display the K_{th} greatest value in this array.
34. Code a C program to convert the given decimal number to the specified base (octal, binary or hexadecimal).
35. Write a program to remove the duplicate elements from an array and display the resulting array.
36. Write a program to search for a given element in the array using the following two search techniques
    i) Linear Search
    ii) Binary Search

37. Implement the Russian Peasant method for multiplying any two numbers.
    Eg. 17 X 19

Column 1	Column 2
17	**19**
8	38
4	76
2	152
1	**304**

    Result= 19 +304= 323

    Note: Repeatedly divide 17 by 2 and multiply 19 by 2 till the column for 17 becomes Then take the entries in the 2nd column corresponding to the odd number entries in the 1st column and add them to get the result.

38. Write a program to merge two arrays in sorted order, so that if an integer is in both the arrays , it gets added to the final array only once.

TWO-DIMENSIONAL ARRAYS

39. Write a C program to perform matrix addition and multiplication.
40. Nokia company maintains a record of sales for five of its models for a period of five years in the format given below.

Year	Model 1	Model 2	Model 3	Model 4	Model 5
2005	4020	3500	3010	5000	4570
2006	7080	10150	8500	8010	7900
2007	12050	15000	23060	18010	16000
2008	20040	25070	8090	15100	21080
2009	28000	26480	20100	24040	23300

Display the above table. Also display the sales details of a particular model for all the 5 years, sales details of all the models in a particular year and the total sales for the company.

STRING HANDLING

41. Write a program to replace every occurrence of the letter 'a' in a given text, with the user- specified character.
42. Write a program to check whether the given word is a palindrome or not.
43. Write a menu driven program to perform the following string operations with and without using built-in functions.
    i) String length
    ii) String Copy
    iii) String Concatenation
    iv) String Compare
    v) Substring extraction
44. Write a program to read an array of names and sort them in alphabetical order.

45. Use two 2-D arrays to store a list of usernames and passwords. Write a program to check for user authentication . After 3 unsuccessful attempts , the program should terminate.
46. Write a program to compute the Transposition Cipher for a given line of text.
    Eg. "Hello World" . Arrange this in a 2-D array with each row having 5 letters. Then read the letters column-wise.
    H E L L O
    W O R L D -> "HWEOLRLLOD".

FUNCTIONS

47. Write an user-defined function named SHIFT to circularly shift the given array elements towards the right. Call this function in the main( ) to perform the shifting for specified number of times.
48. Code a program to accept an integer value, pass it to two different user-defined functions named SQUARE and SQUAREROOT to compute the square and square root of a given number respectively and print the results in the main() function.
49. Write a C program to sort all the words in a given text in alphabetical order by calling the built-in function for sorting the individual word.
50. Write a program using user-defined function to check whether the given number is a strong number or not.
    Note: Sum of factorials of all digits of a number should be equal to the original number.
51. Write a recursive function to find the factorial of a given number.