

S2 CSE
C- PROGRAMMING LAB
LAB EXERCISES

Cycle-1

1. Find the **roots of a quadratic equation** in the form $ax^2 + bx + c = 0$. (if .. else)
2. Input a date in the format dd/mm/yyyy and validate it. (switch)
3. Find the **GCD and LCM** of two numbers. (while / do ..while)
4. Find the **largest and smallest** of a set of N numbers. (for)
5. Input a binary number and display the **decimal equivalent** of that number. (while /do .. while)
6. Display the **perfect numbers** in first N counting numbers. (nested loop)
7. Display the first N **prime numbers**. (nested loop)

Cycle-2

8. Search for a particular number in a list of N numbers using **linear search**. Display the position of the number in the list if the number is present. Otherwise display suitable message.
9. Display the **binary equivalent** of an unsigned decimal integer. (using 1-D array)
10. Sort N integers in ascending order using **bubble sort** algorithm.
11. Search for a number in a sorted list of numbers using **binary search**.
12. Given two sets (mathematical set) of numbers A and B. Find $A \cup B$, $A \cap B$, $A - B$.
13. Given two sorted list of numbers. **Merge** these two lists to form a new list such that the resultant list is also in sorted order. (do the operation without further sorting).

Cycle-3

14. Find the largest element in a **m x n** matrix. Also display its position. {If the largest element is appearing more than once display the position of the first one in the matrix}
15. Check whether a given square matrix is **symmetric**. If not symmetric display the **transpose** of the matrix.
16. Write a program for displaying the palindrome numbers in a matrix.
17. Find the alphabet which is occurring more number of times in a **line of text**. Also display its frequency. (b and B are treated same).
18. Sort the letters of a string in alphabetical order.
19. Input N student names and arrange them in alphabetical order using **exchange sort**.

Cycle-4

20. Write a **function** for checking whether a positive integer number is **prime or not**. Using this function display the prime numbers in a mxn matrix.
21. Write a **recursive function** for finding **factorial**. Using this function find nCr.

22. Write a **function** for checking whether a string is **palindrome**. Using this function display the palindrome words in a line of text.
23. Write a **recursive function** for displaying the binary equivalent of a decimal number. Using this function display the binary equivalent of a set of N positive integers stored in an array.
24. Write a program for finding the product of two matrices. Write separate **functions** for Reading matrices, **Multiplication of matrices** and Displaying matrix.
25. Write a **function** for finding the largest number in a one dimensional array, having N elements. Using this function display the **largest element in each row of a mxn matrix**.

Cycle-5

26. Store the register number, name and 4 marks of a set of students in an **array of structure** and display the details along with total marks in the descending order of total marks.
27. Define an **array of structure** for storing the coefficients and exponents of a polynomial. Write a program for adding two polynomials.

{Hint :- Input number of terms of each polygons before reading. Input the terms of a polynomial in the decreasing order of exponents. Ex : $7x^5 + 8x^2 - 10$ }

28. Define a **structure** for storing a complex number. Write functions for finding the sum, difference and product of two complex numbers. Input two complex numbers and display their sum, difference and product using the above functions.
29. Implement the following string library functions using **pointers** :
 1. string length (int StringLengh(char *s))
 2. string copy (void StringCopy(char *s1, char *s2))
 3. string comparison (int StringCompare (char *s1, char *s2))
 4. string concatenation (void StringConcat(char *s1, char *s2))
30. Write a program to find the second largest number in a list of integers using **command line argument**. *{better to draw the flowchart for getting the correct logic}*

Cycle-6

31. Using command line arguments **copy the content of one text file to another** after converting all lower case letters to upper case.
32. Implement **wc** command in UNIX.
33. A text file 'STUDENT.DAT' contains regno, name and 6 marks in the following format:

Regno	Name	Mark1	Mark2	Mark3	Mark4	Mark5	Mark6
6	25	3	3	3	3	3	3

Input a register number and display the mark list corresponding to that student. Repeat the process if the user wants to continue.

34. An unformatted data file "NUM.DAT" contains integer numbers written using putw() function. Write a C program for displaying the numbers stored in the file. Also display the numbers in ascending order.

35. You are given an unformatted file named “STOCK.DAT” contains the following information:
Item_Code (char(5)), Item_Name (Char(30)), Unit_Price (float), Qty_Stock (float)

Write a C program to accept the item_code and quantity_purchased of N items and display the bill for the customer in the following format :

SlNo	Item_Code	Item_Name	Unit_Price	Quantity	Price
1.					
2.					
.....					
N.					
Total Price					:

Also update the stock file by deducting the quantity sold from the quantity in stock. Assume that there are sufficient quantity of all items in stock. {*create the unformatted file “STOCK.DAT” using another program*}