

S2 CSE
CS110 COMPUTER PROGRAMMING LAB
LAB EXERCISES

CYCLE 1 (Branching and looping)

Write C programs for the following:

1. Roots of quadratic equation $ax^2+bx+c=0$.
2. Find GCD and LCM of two numbers.
3. Check whether a particular date(dd-mm-yyyy format) is valid in the range 21-05-1969 to 05-06-2014.
4. Second largest of a set of N numbers.
5. Binary to Decimal conversion.
6. Find the value of $\sin(x)$ and $\cos(x)$.
7. Find the largest digit in a number.
8. Write a menu driven program to print the following patterns using while and do-while. No. of lines should be read from the user.

(i) Floyd's triangle

```
1
2 3
3 4 5
4 5 6 7 .
...
```

(ii)

```
1
0 1
1 0 1
0 1 0 1
...
```

(iii)

```
5 4 3 2 1
4 3 2 1
3 2
2 1
1
```

(iv) Pascal's triangle

```
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
```

(v)

```
* * * *
 * * *
  * *
```

CYCLE 2 (Arrays, Strings & functions)

9. Sort N numbers in descending order using Bubble sort.
10. Write a C program to perform Sequential search.
11. Write a C program to perform Binary search.
12. Give two sorted list of numbers. Merge these two lists to form a new list such that the resultant list is also in sorted order. (without sorting)
13. Write a function to check whether a counting number is prime or not. Using this function display the prime numbers in first N counting numbers.
14. Write a recursive function for finding factorial. Using this find nCr .
15. Write a recursive function for finding the binary equivalent of a decimal number.
16. Given two sets of numbers (A,B). Write a menu driven program for performing the following set operations using functions
 1. Union
 2. Intersection
 3. Set Difference
17. Find the largest number and its position in a $m \times n$ matrix.
18. Write a C program to perform Matrix Multiplication and addition. Write separate function for Reading, operation and Display.
19. Write a program to:
 - (i) Find the saddle point of a matrix. (Find the minimum from each row and maximum from each column, if they are the same, the position of the element is the saddle point)
 - (ii) Print the upper diagonal and lower diagonal elements
 - (iii) Interchange any two rows and columns.
20. Selection sort- Sort N student names in alphabetic order.
21. Input a line of text and display the palindrome words in it. Write a function each for :
 - (i) checking whether a string is palindrome or not.
 - (ii) to count the no.of vowels and digits in the string.
 - (iii) Search for a substring & replace with a new substring.

CYCLE 3 (Structure, Pointers and Files)

22. Store the regno, 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.
23. Implement the following string library functions using pointers :
 1. string length
 2. string copy
 3. string comparison
 4. string concatenation
24. Find the average of a set of numbers using command line argument.
25. Display the frequency of each alphabet and each digits in a given text file.
26. To find the no. of words and sentences in a text file.
27. Using command line arguments copy the content of one text file to another after converting all lower case letters to upper case.
28. 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.

29. Write a menu driven program to create a linked list in
 1. LIFO order.
 2. FIFO order.