



ABES Engineering College, Ghaziabad
Department of Applied Sciences & Humanities
Programming for Problem Solving Lab
(BCS- 251)



Session-2023-2024

List of Experiments as per university syllabus:

- 1. BASIC INPUT/OUTPUT-----**
 - a) WAP that accepts the marks of 5 subjects and finds the sum and percentage marks obtained by the student.
 - b) Basic salary of an employee is input through the keyboard. The DA is 25% of the basic salary while the HRA is 15% of the basic salary. Provident Fund is deducted at the rate of 10% of the gross salary (BS+DA+HRA). Program to calculate the Net Salary.
 - c) WAP that swaps values of two variables using a third variable and without using third variable.
- 2. OPERATORS -----**
 - a) WAP that finds whether a given number is even or odd using ternary operator.
 - b) WAP that tells whether a given year is a leap year or not, using conditional operator.
- 3. DECISION MAKING STATEMENTS-----**
 - a) WAP to find the greatest of three numbers using nested if else.
 - b) WAP that accepts marks of five subjects and finds percentage and prints grades according to the following criteria:
Between 90-100% --- Print 'A'
80-90%----- Print 'B'
60-80%----- Print 'C'
Below 60% ----- Print 'D'
- 4. SWITCH Statement. -----**
 - a) Write a program to find the value of y for a particular value of n. The a, x, b, n is input by user if $n=1$, $y=ax \% b$ if $n=2$ $y=ax^2+b^2$ if $n=3$ $y=a-bx$ if $n=4$ $y=a + x/b$.
- 5. LOOPING STATEMENTS-----**
 - a) WAP to print the Fibonacci series up to n term.
 - b) WAP to check whether the entered number is prime or not.
 - c) WAP to take input of 3digit number and check whether it is an Armstrong number and Palindrome number or not.
 - d) Write a program to find the sum of following series $1-X^1/1! + X^2/2! - \dots + X^n/n!$.
 - e) Write a program to print the entire prime no between 1 and 300.
 - f) Write a program to draw the following figure:
3 2 1
21
1
- 6. ARRAY-----**
 - a) WAP to find maximum and minimum element present in an array
 - b) WAP to insert an element into an array in any position.
 - c) WAP to delete an element from an array in any position.
 - d) WAP to search an element in an array using Linear Search.
 - e) WAP to search an element in an array using Binary Search.
 - f) WAP to sort the elements of the array in ascending order using Bubble Sort technique.
 - g) Write a program to find the transpose of a given matrix & check whether it is symmetric or not.
 - h) WAP to multiply two matrices of order M X N and P X Q.
 - i) WAP to add two matrices
- 7. FUNCTION and RECURSION-----**
 - a) Write a program to print area of rectangle using function & return its value to main function.
 - b) Write a program to print Fibonacci series using recursion.
 - c) WAP to print factorial of a number using recursion.

8. STRING -----

Write a program in C to check whether the given string is a palindrome or not.(using and without using library function).

9. STRUCTURE -----

WAP to keep records of a class of 50 students. For each student, we need to read a name of upto 20 characters, roll number and marks in 3 subjects. Display the complete database and total marks of 50 students.

10. FILE AND COMMAND LINE -----

- a) Write a c program to copy & count the character content of one file says a.txt to another file b.txt
- b) Write a program to find the sum of digits of a 5-digit number using command line argument.

11. POINTER AND DMA. -----

- a) Write a program to swap two integers using the concept of call by value and call by reference
- b) Write a program to find the largest no among 20 integers array using dynamic memory allocation.

List of Experiments beyond syllabus:

- 1. C program to insert an element at any position in a linked list using Pointers.
- 2. C program to delete first node from Singly Linked List by key using Pointers.

Signature of HOD

Signature of Lab Coordinator