UNIT -1 – Lab Questions

1. Write a menu driven C++ program with following option
    a. Accept elements of an array
    b. Display elements of an array
    c. Sort the array using insertion sort method
    d. Sort the array using selection sort method
    e. Sort the array using bubble sort method
2. Write a C++ program to add two numbers using the concept of data abstraction
3. Develop a class to represent a bank account. Include methods to deposit money, withdraw money, and check the account balance. Ensure that the withdrawal method checks for sufficient funds.
4. Create a class to represent a student in a grading system. Include attributes for the student's name, ID, and an array to store grades. Implement methods to calculate the average grade, display the student's information, and add a new grade.
5. Develop a class to represent an employee in a payroll system. Include attributes for the employee's name, ID, hourly wage, and hours worked. Implement methods to calculate the weekly salary and display the employee's information.
6. Write a C++ program to display product detail using classes.
7. Suppose A, B, C are arrays of integers of size M, N, and M + N respectively. The numbers in array A appear in ascending order while the numbers in array B appear in descending order. Write a user defined function in C++ to produce third array C by merging arrays A and B in ascending order. Use A, B and C as arguments in the function.
8. To celebrate the Reunion of 96 Batch of the Famous School the Ram and Jannu the organizers of the event decided to liters of Fruit Drinks. However, an unexpected difficulty occurred in the shop: it turned out that Fruit Drinks is sold in bottles 0.5, 1 and 2 li volume. At that, there are exactly 0.5 bottles in volume, bone-liter bottles and c of two-liter ones. The organizers have enough money to buy any amount of Fruit Drinks. What did cause the heated arguments was how many bottles of every kind to buy, as this question is pivotal for the of Fruit Drinks among the Friends. Your task is to count the number of all the possible ways to buy exactly n liters of Fruit Drinks and persuade the organ this number is too large .All the bottles of Fruit Drinks are considered indistinguishable, i.e. two variants of buying are different from each other they differ in the number of bottles of at least one kind.

    Constraints:
    $1 \leq n \leq 10000$
    $0 \leq a, b, c < 5000$
    Input Format:
    The first line contains four integers representing, a, b, c respectively.
    Output Format:
    Print the unique number representing the solution to the problem.
    If it is impossible to buy exactly n liters of Fruit Drinks, print 0.
9. Tamilnadu Educational Minister has ordered the Director of Higher education to make the Libraries in Government schools advanced. So they are planning to create a software which keeps track of the books availability and respond to students request for books. Can you help the government to do this?

    Functional Description:
    Input values need to be passed to the Parameterized constructor and to output need to be printed by accessing i t.
    Constraints:
    $1 < roll \leq 100$
    $100 \leq bcode < 999$
    Input Format:
    First and Second Line of Input has 3 values of type integer, String and Integer separated by a space representing
    Roll Number,
    Name and Book code respectively.
    Output Format:

Print the Details of Student and Book in the expected format.

10. Tamilnadu land registration authority is panning to keep track of the native addresses and total area of the flats people have across the state. Since the total population and area need to be monitored is huge. Government is looking for the software which does this task. Can you help them with proper programming logic for implementing the same?

    Constraints:

    $1 \leq hno < 500$

    $1 < no\ room < 10$

    $1 \leq length < 50$

    $1 < breadth < 50$

    $1 \leq height < 50$

    Input Format:

    The first line of the input contain a single string denoting the house name.

    The second line of the input contain three values of type Integer String and String separated by a space representing house number, city and state respectively.

    The third line of the input has a single Integer representing the number of rooms.

    The subsequent lines of input must have length, breadth and height of each room

    Output Format:

    Print the details of the house in the expected format.