

Lab. (13) Revision

Answer the following questions

- 1) Write a program in C++ to find the area of any triangle using Heron's Formula.

$$\text{area} = \sqrt{s(s-a)(s-b)(s-c)}$$

$$s = \frac{a+b+c}{2}$$

- 2) Write a C++ program that reads a guest balance from the user for a guest which his balance (0:10000) as an input argument. The program yields the interest rate according to the following table:

Balance	Interest rate
5000 <= balance <= 10000	7 %
2500 <= balance < 5000	5 %
1000 <= balance < 2500	3 %
100 <= balance < 1000	2 %
balance < 100	0 %

- 3) Write a C++ program to establish a password consists of seven numbers for the treasury of a factory. In the case of entering correct password, a message will appear to the user (Treasury ready to open). Whereas in case of entering incorrect password, a message will appear to the user (sorry, try again). The program permits the user to enter incorrect password for only 3 times then terminates. Remark a password is (2385110).
- 4) Write a program that will display a list of products:

- | | | |
|-----------------|---------------|----------------|
| 1- Honey (40LE) | 2- Tea (10LE) | 3- Sugar (5LE) |
| 4- Meat (90LE) | 5- Salt (2LE) | 6- Oil (10LE) |

and ask the user to enter the product number plus how many of it, (note: the user can select more than one product). Finally, the program will stop and out the total price if the user enters 0 at the product number.

- 5) Write a program using function which accepts two integers and character (operator) as an argument and return its results based on the operator (+, -, /, *). Call this function from main () and print the results in main.()
- 6) Write a program to calculate the sum of following series where n is input by user.

$$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{n}$$

- 7) Write a program in C++ to find the number and sum of all integer between 100 and 200 which are divisible by 9
- 8) Write a C++ program to separate even and odd numbers of an array of integers. Put all even numbers first, and then odd numbers .
- 9) Write a program to display the number in reverse order.
Input a number: 156749
Expected Output: 947651
- 10) Write a program in C++ to find the sum of first and last digit of a number.
- 11) C++ Program to Find Transpose of a Matrix
- 12) C++ Program to Make a Simple Calculator to Add, Subtract, Multiply or Divide Using switch...case
- 13) Write a program to use a factorial using function example program in C++
- 14) Write a program in C++ to check whether the first prime number is lesser than the user number entered
- 15) Write C++ program takes n number of elements from user (where, n is specified by user) and stores data in an array. Then, this program displays the largest element of that array using loops.
- 16) Write a program in C++ which swap the values of two variables not using third variable.
- 17) Write a program to swap two elements using pointer and functions.
- 18) Write a C++ Program to Add Two Matrix Using Multi-Dimensional Arrays
- 19) Write a program to shows elements value in an array and print the address using pointer where x = [10,20,30,40].
- 20) Write a C++ program to accept five integer values from keyword. the five values will be stored in an array using a pointer. Then print the elements of the array on the screen.
- 21) Write a C++ program to search a predefined element and its index in an array of elements using the sequential search algorithm.
- 22) Write a C++ program to search a predefined element and its index in an array of elements using the binary search algorithm.

23) Write a C++ program to search a predefined element and its index in an array of elements using the Jump search algorithm.

24) You are given a list of n-1 integers and these integers are in the range of 1 to n. There are no duplicates in the list. One of the integers is missing in the list. Write an efficient code to find the missing integer.

Example :

Input: arr[] = {1, 2, 4, 6, 3, 7, 8}

Output: 5

25) Write a C++ program to sort an array of elements using the Bubble sort algorithm.

26) Write a C++ program to sort an array of elements using the selection sort algorithm.

27) Write a C++ program to sort an array of elements using the insertion sort algorithm.

28) Given an array of integers, find the first repeating element in it.

Example: I/P = [1, 4, 5, 8, 7, 3, 7, 6, 9, 5] →O/P =7

29) Given three arrays sorted in ascending order, print all common elements in these arrays.

Example: I/P = [1, 4, 5, 8, 7], [3, 4, 7, 9], [3, 4, 7, 8, 9,10] O/P = 4, 7

30) Write a C++ program to read 10 student names from file then sort them using the Bubble sort algorithm and write the sorted names in new file.

31) Write a C++ program to read 10 student names including their degrees in programming subject from file then print a congratulation sentence to the higher degree student such as “congratulations and best wishes for your effort – student name”.

32) Write a C++ program that reads the content of a text file “input_file.txt” in your working directory. Check to see if the required logical operation is either “and” or “or” or “xor”, then call a function that perform the logical operation (you will write 3 functions). Finally create a text file “output_file.txt” with the result.

For example: -

input_file.txt
and 0 1

output_file.txt
and 0 1 0

33) Declare a structure to represent a complex number (a number having a real part and imaginary part). Write C++ functions to add, subtract, multiply and divide two complex numbers.

- 34) An array stores details of 25 students (roll no, name, marks in three subject). Write a program to create such an array and print out a list of students who have failed in more than one subject.
- 35) Write a program to use a Simple Class to calculate the area of rectangle in C++ using a function is to be defined inside a class definition
- 36) Write a program to use a Simple Class to calculate the area of rectangle in C++ using a function is to be defined outside a class definition
- 37) Write a program to use a Simple Class to calculate the area of rectangle in C++ with two objects
- 38) Write a program to use a Simple Class to add two integers in C++
- 39) Write a program to use a Simple Class to Read and Print Student Information Class in C++
- 40) Write a program to use a simple class example program for find prime number in C++
- 41) Write a program to use a simple constructor in outside class declaration in C++
- 42) Write a program to access a private attribute, use public "get" and "set" methods in C++
- 43) Write a program to use a Simple Class to the Car class (child) inherits the attributes and methods from the Vehicle class (parent) in C++
- 44) Write a program to use a simple class example program for MyGrandChild is derived from class MyChild (which is derived from MyClass) in C++.
- 45) Write a program to use a class which can also be derived from more than one base class, using a comma-separated list in C++.
- 46) Write a program to use the Protected access specifier in C++