Practical Questions- Class XI

Introduction to C++

1) Write a program to read two numbers and perform all the arithmetic operations.

Control Structures

2) Write a program to find the minimum no of dirhams (1000, 500,200, 100, 50, 20, 10, 1) required for the given amount.
3) Write a program to check whether the given date is valid or not.
4) Write a program that reads in 3 real numbers, a, b and c that are the coefficients of a quadratic equation $ax^2+bx+c=0$ and identify the nature of the roots.
5) An electronic shop has announced the following seasonal discounts on the purchase of certain items

Purchase Amount In Rs	Discount on TV	Discount on Music System
0-25000	5%	10%
25001-50000	10%	20%
More than 50000	15%	30%

Develop a program based on the above criteria, to input amount of purchase and the type of purchase (T /M) by a customer. Compute and print the net amount to be paid by a customer.
[Hint: Discount = (Discount rate /100) * Amount of purchase
Net amount = amount of purchase - discount).]

6) Write a program to convert time entered in seconds into its equivalent hours, minutes and seconds. (For example: Enter time in seconds: 7000 Equivalent time: 1 hour 56 minutes 40 seconds.

7) Write a program to accept electricity bill details (i.e.,) customer number, customer name, previous month meter reading and current month reading and then find no, of units consumed by the customer and amount payable to electricity department by performing following checks:
First 100 units cost per unit is Rs. 4.00
Next 500 units cost per unit is Rs. 5.00
Beyond 600 units cost per unit is Rs. 6.00

8) Write a program in C++ for area calculation of circle, square, rectangle and triangle using switch construct.

9) Write a menu driven program using functions to do the following on a given number.
   a. Reverse the number and display both the numbers.
   b. Find the sum of digits of the number.

c. Count the no of odd and even digits present in it.

10) Write a program to print all the prime numbers between 1 and n.

11) Write a program to generate n Fibonacci series.

12) Write a program to display the following series:

S= $1+x+x^2+...+x^n$ (Read x and n from the user and display the sum of the series)

S= $x-\frac{x^2}{2!}+\frac{x^3}{3!}-\frac{x^4}{4!}+.....\pm\frac{x^n}{n!}$

13) Write a program to generate the following pattern for n lines:

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    1
  1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
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Arrays

14) To accept a string and search for a sub-string (a group of contiguous characters). If the search is successful return the position of the substring otherwise return -1

15) Write a program to read a string. The program should handle the options as given below:

a. Check for Palindrome
b. Search for a given substring
c. Reverse all the string
d. Frequency of alphabets in each string
e. Exit

Use functions with proper arguments for each menu options. Use global variables only if it is necessary.

16) Write a program to enter a list of strings and create new list that consists of those strings with their first characters removed.

17) Write a program to input any string and count number of uppercase, lowercase, vowels, consonants and digits.

18) Write a program that takes a string with multiple words and then capitalizes the first letter of each word and forms a new string out of it.

19) Write a program to create an array L1 with n values. Create two user defined functions even () - to create an array which store only even values from L1 and Odd () - to create an array which store only odd values from the L1.

20) Write a program to remove all adjacent duplicate elements from the given array.

The program should contain a function del_adjacent_dups(int n) to delete duplicate elements.

21) Write a menu driven program to read a numeric array and do the following using functions:
   (i) To get the position and insert an element.
   (ii) To delete an element from the array.
   (iii) To search for an element.
   (iv) To sort the given array.

22) Write a function which accept 2D array of integers and its size as arguments and displays the sum of elements which lie on diagonals.

Assuming the 2D list to be a square matrix with odd dimension ie 3 x 3, 4 x 4 etc] Example of the list content is
5 4 3
6 7 8
1 2 9
Output through the function should be
Diagonal One Sum: 21
Diagonal Two Sum: 11

23) Write a program to display the upper and lower triangular matrix.

24) Write a menu driven program to do the following using functions which accept 2-D array A, and its size m and n as arguments:
   a) Sum of all elements of matrix of size m*n
   b) To display row-wise sum of matrix of size m*n
   c) To display column-wise sum of matrix of size m*n
   d) To create transpose of matrix

25) Write a program that accepts an integer array and pass the array to a user defined function shift () to shift all odd numbers to left and even numbers to the right.

Structures

26) Write a menu driven program to read details of book such as book number (int), title (string), quantity(int), cost(float) with the following menu options:
   a. Read Details //Read n book details
   b. Search for a book //Search for a given book number. If found display "Record found" else "Not Found"
   c. Total Stock Value //Stock Value is product of quantity and cost. Find sum of all stock value
   d. List //Display the details of all the book
   e. Exit

Use functions with proper arguments. Use global variable only if it is necessary.

27) Write a program to store information of 10 employees and to display information of an employee depending on the employee number given.

28) Create an application to enter the roll no., name of the student and marks in five subjects (like English, Physics, Mathematics and computer) in an user defined structure Student with following attributes:
Rollno as integer
Name as 25 characters
Marks as an array of 5 integers
Total and Percentage as float
Grade as 2 characters
Write the code to enter the above Student structure data and calculate total, percentage and grade in a tabular form.

Project

The project has to be developed in C++ language with array and structures. A group of 2-3 students as team may be allowed to work on one project.
The project should include:

- Presentation on the computer
- Project report (Listing, Sample Outputs, Documentations)
- Viva

* 1 mark is for innovation while writing program.
The aim of the project is to highlight the abilities of algorithmic formulation, modular programming, optimized code preparation, systematic documentation and other associated aspects of Software Development.

Theme of the project can be

- Any subsystem of a System Software or Tool
- Any Scientific or a fairly complex algorithmic situation
- School Management, Banking, Library Information System, Hotel or Hospital Management System, Transport query system
- Quizzes / Games;
- Tutor, Computer Aided Learning Systems

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