Computer Science Lab Manual

Month : May-June
Topic : Introduction to C++
    1. Write a program that inputs a student's marks in five subjects(out of 100) and print the percentage.
    2. To find the minimum of three numbers using conditional operator.
    3. WAP to read time in hours, time in minutes, time in seconds and print time in seconds.

Month : July
Topic : Flow of Control
    4. Write a program to print the largest of three numbers.(only if)
    5. Write a menu driven program to find the area of circle, rectangle, circumference of circle and area of square. Your program should take input accordingly.
    6. Write a program to check whether an entered year is leap year or not.
    7. WAP to calculate commission of a salesman according to the following rates:

SALESMAN COMMISSION RATE	COMMISSION
30001 onwards	15%
22001 – 30000	10%
12001 – 22000	7%
5000 – 12000	3%
0 – 5000	0%

    8. WAP to convert a decimal number into its equivalent Binary.
    9. Write a program to find the factorial of any number.
    10. Write a program to print the Fibonacci series of specified terms (0 1 1 2 3 5 ………)
    11. Write a program to count the number of digits in a number, reverse the number and print it and to check whether the same number is a palindrome e or not.
    12. Find GCD and LCM of two numbers.
    13. WAP to print 'n' terms of the pell series. Pell series is a series which starts with 1,2 and subsequent numbers are sum of the twice the previous numbers and the number previous to the previous number.
        For example: 1, 2, 5, 12, 29, 70, 169, 408,…..
    14. Write a program to use nested for loop to print the following pyramid:

```
a)                  b)         *
                             *  *  *
        1                 *  *  *  *  *
      1   2             *  *  *  *  *  *  *
  1     2    3             *  *  *  *  *
                             *  *  *
                                *
```

Topic: Standard Library Functions
    15 . Write a program that reads a string and converts case of each character in the string.
    16. WAP to read a string and a character and count the number of occurrence of the character in the given string.

Month: August-September
Topic: User Defined functions
    17. Write a program to return the sum of the following series:
        (1)+(1+2)+(1+2+3)+(1+2+3+4)------------(1+2+3+4-----n)
    18. Write a program to return the sum of the following series:

$$1+x/2!+x^2/3!+x^3/4!\text{-----------------}x^n/(n+1)!$$

19. Write a program to reverse a given string.
20. Write a program to swap two numbers using Call by Reference method.
21. Write a program, to print the series of prime numbers up to n.

Topic : Arrays in C++
One Dimensional Array:
22. Write a program to find the number of vowels, consonants, digits and other characters in a given string.
23. Write a program to find the maximum and minimum number in a vector.
24. Write a program to reverse an integer array of size n.
25. Write a program to use a user defined function which will take an array, its size and an element and return the position of the element in the array.
26. Write a program to enter 'n' elements in an array. Square the number if it is odd and half the number if it is even and print accordingly.
27. Write a program to check whether a given string is a Palindrome or not.
28. Write a program to count the numbers of words, characters, vowels and other characters in a given string.

Two Dimensional Array:
29. Write a program to find the print the row-sum and column-sum separately of a 2D array.
30. Write a program to display the upper and lower diagonal elements of a M X N array.
31. Write a program to swap the first and the last row, the first and the last column elements respectively.

Month : November
Topic: Structure
32. Write a program to make a structure of student with the following details. (Name, Age, Class, Marks, Average, Result) & Get Input from the user for the data Name, Age, Class Marks and Find the average & result of the student if average>=40 result 'P' if not result 'F'.

Month: December
Topic: Classes and Objects
33. Define a class serial in C++ with the following specification:
Private members of class Serial

Serial	integer
Title	20 characters
Duration	float
Noofepisodes	integer

Public member function of class serial

- Newserial() function to accept values for serialcode and title
- Otherentries() function to assign values of duration and noofepisodes with the help of corresponding values passed as parameters to this function.
- Dispdata() function to display the data members on the screen.

Input the value for 5 records and display them using array of objects.

34. Define a class travel in C++ with the following description:

Private members:

- Travelcode of long type
- Place   of type character array
- No_of_travellers of type integer
- No_of _buses of type integer

Public member:

  o A function newtravel() which allows user to enter travelcode, palce, and no_of_travellers. Also assign the value of no_of_buses as per the following condition:

  No_of_travellers no_of_buses

  Less than 20   1

  >=20 and <40   2

  >=40   3

  o Function display() to display all the details

Input the value for 5 record and display them using array of objects.

35. Define a class named admission in c++ with the following details

Private members:

- Ad_no integer(should between 10-2000)
- Name array of character (string)
- Class character
- Fees float

Public members:

- Function read_data() to read object of admission type
- Function display() to display the details
- Function draw_nos() to choose 1 students randomly

Input the value for 5 record and display them.

Define a user defined function to choose and display the details of 2 students which are selected randomly.