

Computer Project Questions(AY 22-23)

- 1) Write a program to determine whether a given number is a Disarium number or not.

A number is said to be the Disarium number when the sum of its digit raised to the power of their respective positions is equal to the number itself.

Example : $1^1 + 7^2 + 5^3 = 1 + 49 + 125 = 175$

- 2) Write a program to display the given output:

```
1 2 3 4 5
2 2 3 4 5
3 3 3 4 5
4 4 4 4 5
5 5 5 5 5
```

- 3) Write a program to display the given output:

```
1 2 3 4 5 5 4 3 2 1
1 2 3 4   4 3 2 1
1 2 3     3 2 1
1 2       2 1
1         1
```

- 4) Design a class to overload a function series() as follows:

- (i) void series(int n,int a) – To display the sum of the series given below.

$$S = \frac{a}{2!} - \frac{a^4}{4!} + \frac{a^7}{6!} - \frac{a^{10}}{8!} + \dots \text{ upto } n \text{ terms}$$

- (ii) void series() – To display the following series

0, 6, 24,.....,720

Write a main method to call the above function.

5) Design a class to overload a function area() as follows:

i) double area(double a, double b, double c) with three double arguments, returns the area of scalene triangle using the formula:

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)} \quad \text{where } s = \frac{a+b+c}{2}$$

ii) double area(int a, int b, int height) with three integer arguments, returns the area of a trapezium using the formula:

$$\text{Area} = \frac{1}{2} * \text{height} * (a+b)$$

double area(double diagonal1, double diagonal2) with two double arguments, returns the area of a rhombus using the formula:

$$\text{Area} = \frac{1}{2} * (\text{diagonal1} * \text{diagonal2})$$

6) Define a class called 'Library' with the following description:

Data Members:

int acc_num	stores the accession number of the book
String title	stores the title of the book
String author	stores the name of the author

Member methods:

void input ()	to input the accession number, title and author
void compute ()	to accept the number of days late, calculate and display the fine charged at the rate of Rs 2 per day.
void display ()	to display the details in the following format:

Accession Number Title Author

Write a main () method to create object of the class and call the above member methods.

7) Define a class Employee_Sal described below:

Data members:

String name : to store name of the employee
String empno : to store employee number
int basic : to store basic salary of the employee

Member methods:

i) A parameterized constructor to initialize the data members

ii) To accept the details of an employee

iii) To compute the gross and net salary as:

da = 30% of basic

hra = 15% of basic

pf = 12% of basic

gross = basic + da + hra

net = gross - pf

iv) To display the name, empno, gross salary and net salary

Write a main method to create an object of a class and call the above member methods.

8) Define a class named MovieMagic with the following description:

Data members:

int year : to store the year of release of the movie
String title : to store the title of the movie
float rating : to store the popularity rating (min rating = 0.0 and max rating = 5.0)

Member methods:

1) MovieMagic() : default constructor to initialize numeric data members to 0 and string data members to ""

2) void accept() : to input and store year, title and rating

3) void display() : to display the title of the movie and a message based on the rating as per the table given below.

Rating	Message to be displayed
0.0 to 2.0	Flop
2.1 to 3.4	Semi-Hit
3.5 to 4.5	Hit
4.6 to 5.0	Super Hit

9) A company pays commission to its salesmen on the sale value according to the following rates:

Sale	Commission
Up to Rs 1000	5% on sale
Rs 1001 - Rs 2000	10% on sale
Rs 2001 and above	15% on sale

Model a class program with the following specifications:

Class name : Salecom

Data members : double sale, com;

Member methods:

Salecom(double s, double c) : constructor to initialize sale and com with s and c respectively.

void commission() : to find the commission

void display() : to display the commission

10) “A number is said to be palindrome if it appears to be the same after reversing its digits”. Write a program by using a class with the following specifications:

Class : Number

Data members : int num;

Member functions:

Number(int x) : constructor to initialize num with x

int reverse(int n) : used to return the reverse of number

void palindrome() : to check and print if the number is palindrome or not.

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