Programs | Class Room Assignment-13

1.Write a program that lets the user perform arithmetic operations on two numbers. Your program must be menu driven, allowing the user to select the operation (+, -, \*, or /) and input the numbers. Furthermore, your program must consist of following functions:

a). Function showChoice: This function shows the options to the user and explains how to enter data. b). Function add: This function accepts two number as arguments and returns sum.

c). Function subtract: This function accepts two number as arguments and returns their difference. d). Function mulitiply: This function accepts two number as arguments and returns product.

e). Function divide: This function accepts two number as arguments and returns quotient.

2.Create a class to calculate addition of two numbers (data member) using following member functions. Create members function

1.init - to input numbers from user

2.add - to calculate and display result

3.Create a class to calculate factorial with one data member to store the number and another to store factorial value. Create members function

1.init - to input number from user

2.fact - to calculate factorial

3.display- to display answer

4.Write a program to define a class Student with the following specification

Private members of class student

admno integer

sname string

eng, math, science float

total float

ctotal() (a Function to calculate eng + math + science with float return type.)

Public member function of class student

takeData() (a Function to accept values for admno, sname, eng, science and invoke ctotal() to calculate total.)

showData() (a Function to display all the data members on the screen.)

5.Write a program to Define a class TEST in java with following description: Private Members

TestCode of type integer

Description of type string

Candidates of type integer (total candidates appearing)

CenterReqd (number of centers required) of type integer

A member function calcCenter() to calculate and return the number of centers.(Students per center is not more than 50).

Public Members

-A function schedule() to allow user to enter values for TestCode, Description, Candidates & call function calcCenter() to calculate the number of Centres

-A function displayTest() to allow user to view the content of of a Test

6.Create a class account with data members (accno, name, balance). Create function members

a)getdata() to accept member data from user

b)deposit(float money) to deposit money in account

c)withdraw(float money) to withdraw money from account

d)display() to show account info

7.Store six user’s account information using class created in above problem and calculate

-total money deposited in all accounts

-list all account number with balance greater than 1000

8.Write a program to calculate the area of a rectangle, which accepts value from the user and displays it. Use Constructor to initialize members.

9.Create a class Employee with members (empid, salary).Create following functions

a)calcTax() with employee object as argument and print tax on salary with 12.5% tax rate;

b)max() which accepts two employee as objects and return the employee with higher salary

10.Create a class Student with data member (rno, fees and static member totalFees).Create parameterized constructor which update the totalFees and create member function which prints the total fees collected of all the students.

11.Create a Class Number with two member function.

a)showNum() :- which displays the first number using this

b)dispNum() :- which displays the second number using this

12.Create a Class Calculate with two data members(num,num1)Declare two member function.

a) create parameterized constructor which takes two integer value and initialize members with this pointer.

b)sum() :- which displays the number using this

13.Create class Plot with data members length and breadth. Create constructor. Create member functions

a)float calcArea()->to return area of plot

b)Plot compare(Plot p)-> which takes Object of Plot class as argument and return 0 if area of argument object is same as current object, 1 if current object area is > then argument object and -1 if area of argument object is > then current object.

14.Create a class Product with data members (pid, pname, amount) and declare and define the member function

1.acceptProduct()-- which accept product details.

2.displayProduct() -- display product information.

1. Create a class Student (rollno, name) which keeps track of how many objects are created of the class. Every time object of the class is created, it should display number of total objects created.

16.Create a class TCSEmployee with data members name, eid, salary and companyName to store information of All TCS’s Employee records. Create functions which accept these members value and display them. Now u need to manage that companyName should be assign only once, no matter how

many number of object of this class created.

17.Create a class Box with data members (boxlabel, length , width, height) and function that calculate and return volume of that box. Now create a function comapre that take an object of Box class as parameters and show boxlabel of object who’s volume is greater?. you need to create two object of Box

class to compare.

18.Create a class Max with one data member(v) and functions

a)getV(): which is use to read variable value

b)display() : to display value

c)check() : which return an object of Max class and find maximum value using one objects as argument.(use this keyword to return an object).

19.Create a class Distance with data members (feet and inch).Write a program showing the concept of passing object in a function and add the data members of both the objects and find out the total feet and inches.

20.Create a class Distance with data members (feet and inch).Write a program showing the concept of passing object in a function and returning object from a function (add the data members of both the objects and find out the total feet and inches).

21.Create a class Alpha and Beta. Both classes contain one data member of type integer. Write a program to find which class data member is greater.

22.Create a class FourWheeler with two data member(category and amount).Declare two members functions.

a)char getCategory() :- which returns category

b)int getamount():- which returns amount

Create another class Car with two data members (brand and model).

Declare two member function:-

a)getDetail():- which accepts the brand, model, category and amount of a Car

b)showDetail():- which displays the category, amount, brand and model.

23.Create three classes

Faculty (facultyname, department, salary)

FullTimeFaculty (basic, allowance) inherits class Faculty

PartTimeFaculty (hour, rate) inherits class Faculty

Create a function for accepting input for FullTimeFaculty and PartTimeFaculty but salary should not be accepted. Salary is calculated on the basis of (basic+allowance) for FullTimeFaculty and (hour\*rate) for PartTimeFaculty. Also create function for displaying data for any faculty.

24.Create a class Rectangle with two protected data members (length and breadth).Declare a Constructor which accepts length and breadth of a Rectangle

Create another class Area which calculates the area of a Rectangle.

Create another class Perimeter which calculates the perimeter of a Rectangle.

25.Create a class Publication with two data members (title and price).Declare two member function:-

a)getData():- for accepting data from user.

b)putData():- for displaying data.

Create another class Sales with three data member ((s1,s2,s3) which accepts the sales of three months).

Declare two member function :-

a)getSales():- for accepting three month sales.

b)showsales():- for displaying sales.

Create one more class Book with one data member (pages).

Declare two member function :-

a)getBookDetail():- which accepts the book details which includes title, price, sales and pages.

b)showBookDetail():- which displays the book details which includes title, price, sales and pages.

26.Create a class Employee with two protected data member (name, payRate).

Declare two member function

a)void getName() :- which accepts name.

b)float getPay() :- which accepts the pay.

Create a class Manager with one data member is\_salaried (which should be in the form of 0(false) or 1(true).

Declare one member function

a)int is\_salaried() :- which returns whether the manager is salaried or not. b)showDetail() :- it display the entire detail of a employee.

27. Create a class Shape with one member function

a) double calcArea()

Create a class Rectangle with two data members (length and breadth) and inherits Shape and calculate the area

Create a class Circle with one data members (radius) and inherits Shape and calculate the area

28.Create a class BankAccount with one data member(balance).

Declare four methods

a)BankAccount() :- which initialize the member function with 0.

b)void deposit(double amount) :- which adds balance in amount.

c)void withdraw(double amount) :- which deducts balance in amount.

d)double getBalance() :- which returns the balance.

Create a class SavingAccount with two data members(interest\_rate and min\_balance).

Declare a member function

1. setInterestRate() :- which sets the interest and use the above methods to calculate the account balance.

29. Create a Abstract class Volume with two data members(radius and height).

Declare two member function

a)getValue() :- which accepts value from user.

b)showValue() :- which displays valus.

c)calVol() :- which calculates volumes.

Create a class Cone which uses the above mentioned three methods to calculate the volume of Cone. Create a class Cylinder which uses the above mentioned three methods to calculate the volume of Cylinder.

30.Create a class Employee with one data member(name).Declare the member function

a)Employee() :- initializes the data member.

b)getName() :- which gets the name.

c)setName() :- which sets the name.

d)pay(int hours\_worked)

Create a class HourlyEmployee which takes two data members(name and wage).Use above member function. The pay method should calculate the hourly wage of an employee.

Create a class SalariedEmployee which takes two data members(name and wage).Use above member function. The pay method should calculate the hourly wage of an employee.

31.Create a class to calculate Area of circle with one data member to store the radius and another to store area value. Create method members

1. init - to input radius from user

2. calc - to calculate area

3. display- to display area

32.Create a class MathOperation with two data member X and Y to store the operand and third data member R to store result of operation.Create method members

● init - to input X and Y from user

● add - to add X and Y and store in R

● multiply - to multiply X and Y and store in R

● power - to calculate X Y and store in R

● display- to display Result R

33. Create a class MathOperation containing method ‘multiply’ to calculate

multiplication of following arguments.

a. two integers

b. three float

c. all elements of array

d. one double and one integer

34. Create a class Person with properties (name and age) with following features.

a. Default age of person should be 18;

b. A person object can be initialized with name and age;

c. Method to display name and age of person34.

Create and use copy constructor for above problem.

35. Create a class Employee with(empNo ,salary and totalSalary) ) with following features.

a. Only parameterized constructor;

b. totalSalary always represent total of all the salaries of all employees created.

c. empNo should be auto incremented.

d. display total employees and totalSalary using class method.

36.Create class Product (pid, price, quantity) with parameterized constructor.

Create a main function in different class (say XYZ) and perform following task:

a. Accept five product information from user and store in an array

b. Find Pid of product with highest price.

c. Create method (with array of product’s object as argument) in XYZ class to calculate and return total amount spent on all products. (amount spent on single product=price of product \* quantity of product)

37. Make list of Students having name, roll no., age, score. Write a program to accept 10 students record and arrange the Students based on the score group [0-50], [50-65],[65-80],[80-100].

38.Create class Tile to store the edge length of a square tile , and create another class Floor to store length and width of a rectangular floor. Add method totalTiles(Tile t) in Floor class with Tile as argument to calculate the whole number of tiles needed to cover the floor completely.

39. Create class OneBHK with instance variable roomArea , hallArea and price

a. Create default and parameterized constructor;

b. Method show(): to print OneBHK data member information;

40. Create another class TwoBHK which has all the properties and behaviour of OneBHK and a new instance variable room2Area.

a. Create default and parameterized constructor;

b. Method show(): to print all data member information;

Write main function in another class(Say XYZ) and store three TwoBHK flat’s information and print information using show method. Also print total amount of all flats.

41. Create three classes Faculty (facultyid, salary)

FullTimeFaculty (basic, allowance) inherits class Faculty

PartTimeFaculty (hour, rate) inherits class Faculty

Create a method for accepting input in FullTimeFaculty and PartTimeFaculty, but salary should not be accepted. Salary is calculated on the basis of (basic+allowance) for FullTimeFaculty and (hour\*rate) for PartTimeFaculty. Also create method in above classes to display faculty data.

Create another class(say XYZ) for main method and store 2 fulltime and 2 parttime faculty information. Also print their details.

42. Create a class Student with two members : rollno and percentage.

Create default and parameterized constructors. Create method show() to display information.

Create another class CollegeStudent inherits Student class. Add a new member semester to it. Create default and parameterized constructors. Also override show() method.

Create another class SchoolStudent inherits Student class. Add a new member classname(eg 12 th ,10 th etc.) to it. Create default and parameterized constructors. Also override show() method.

Create a class(say XYZ) with main method that carries out the operation of the

project :

-- has array to store objects of any class(Student or CollegeStudent,SchoolStudent)

--create two CollegeStudent and three SchoolStudent record objects and store them inside the array

-- display all record from the array

-- search record on the basic of rollno and check given rollno is of SchoolStudent or of CollegeStudent.--count how many students are having A grade, if for A grade percentage >75

43.Create an Abstract class Processor with int member variable data and method showData to display data value.

a.Create abstract method process() to define processing of member data.

b.Create a class Factorial using abstract class Processor to calculate and print factorial of a number by overriding the process method.

c. Create a class Circle using abstract class Processor to calculate and print area of a circle by overriding the process method Ask user to enter choice (factorial or circle area). Also ask data to work upon; Use Processor class reference to achieve this mechanism

44. Create Interface Taxable with members salesTax=7% and incomeTax=10.5%. Create abstract method calcTax().

a. Create class Employee(empId,name,salary) and implement Taxable to calculate incomeTax on yearly salary.

b. Create class Product(pid,price,quantity) and implement Taxable to calculate salesTax on unit price of product.

c. Create class for main method(Say XYZ), accept employee information and a product information from user and print income tax and sales tax respectively.

45.Create a program that helps banks to maintain records. It should have following facilities.

o Anybody can create current or saving account with following initial information:account number, name, balance, and branch.

o display account detail for a particular accounts.

o display total money deposited in bank.

o allow deposit and withdrawal in an account .

o for saving account opening balance and minimum balance must be 5000.

o for current account opening balance and minimum balance must be 1000.

o can not withdraw the amount from the account that makes balance less than the minimum balance.

46. Create a following class/package structure in your application. Filled squares are

packages and empty circles are classes.

campus.data

Person (name, age, address)

campus.academics

o Student(rollno, branch, semester) inherits Person▪

o Faculty(facultyId, name, salary, branch) inherits Person

campus

o CampusApp- this class contains main method to accept 5 Faculty

information and print total of salaries of all faculties.

47. Add following package to above structure

▪campus.accounts

o Fees(Student, amount, paymentDate)

▪ campus -

o CampusApp- this class contains main method to accept 4 Students information with their fees for second semester and print total fees collected from all 4 students.

Take your assumptions regarding subject, branch and student data. Create this application as a runnable jar file.

48. Input name of a person and count how many vowels it contains. Use String class functions.

49. Input data exactly in the following format, and print sum of all integer values.

“67, 89, 23, 67, 12, 55, 66”. (Hint use String class split method and Integer class parseInt method)

50. Store name of weekdays in an array (starting from “Sunday” at 0 index). Ask day position from user and print day name. Handle array index out of bound exception and give proper message if user enter day index outside range (0-6).

1. Create a class Voter(voterId, name, age) with parameterized constructor. The parameterized constructor should throw a checked exception if age is less than 18. The message of exception is “invalid age for voter ”

52. Write a program to create Login and Registration example using string showing validation on registration form fields(validations on email, mobile number, username etc)