Digital Assignment - I

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Slot: G1 Course:

CSE1007 – JAVA PROGRAMMING

Question 1 :

A class called Circle contains: Two private instance variables: radius (of the type double) and color (of the type String), with default value of 1.0 and "red", respectively. Two overloaded constructors - a default constructor with no argument, and a constructor which takes a double argument for radius. Two public methods: getRadius() and getArea(), which return the radius and area of this instance, respectively. Create a class MainCircle to have main method and to run the program and also to display the area of the circle.

Solution

```
class Circle
{
  private double radius;
  private String color;

  Circle()
  {
    radius = 1.0;
    color = "red";
  }

  Circle(double r)
  {
    radius = r;
  }

  public double getRadius()
```

```
    {
        return radius;
    }

    public double getArea()
    {
        return(Math.PI*radius*radius);
    }

}

class MainCircle extends Circle
{
    public static void main(String[] args)
    {
        Circle obj = new Circle();
        System.out.println("Radius = "+obj.getRadius());
        System.out.println("Area = "+obj.getArea());

        Circle obj1 = new Circle(2.5);
        System.out.println("Radius = "+obj1.getRadius());
        System.out.println("Area = "+obj1.getArea());
    }
}
```

Question 2

Write a java program that creates an Account with annual interest rate 1.5%, balance 1000, ID: 1122, and name George. Deposit 300, 400, 500 to the account and withdraw rupees 50, 40, 20 from the account at different transaction. Print the account summary that shows account holder name, interest rate, balance, and all transactions. Use Java Inheritance.

Solution

```
class Account
{
    double rate=1.5;
    double balance = 1000.0;
    int ID = 1122;
    String name = "George";
    void display()
    {
        System.out.println("Name : "+name);
        System.out.println("ID :"+ID);
        System.out.println("Balance :"+balance);
        System.out.println("Rate : "+rate);
    }

}
class Deposit extends Account
{
    Deposit(double x)
    {
       super.balance = super.balance + x;
       System.out.println("Amount Deposited: "+x);
       System.out.println("Account Balance: "+super.balance);
    }
}
```

```
class Withdraw extends Account
{
    Withdraw(double x)
    {
        super.balance = super.balance - x;
        System.out.println("Amount Withdrawn: "+x);
        System.out.println("Account Balance: "+super.balance);
    }
}
class AccountInherit
{
    public static void main(String[] args)
    {
        Account obj = new Account();
        obj.display();
        Deposit x = new Deposit(300.0);
        Deposit x1 = new Deposit(400.0);
        Deposit x2 = new Deposit(500.0);
        Withdraw x3 = new Withdraw(50.0);
        Withdraw x4 = new Withdraw(40.0);
        Withdraw x5 = new Withdraw(30.0);



    }
}
```

Question 3

“Java does not support multiple inheritance”. Justify this statement with proper explanations and explain how multiple inheritance can be implemented in java

Solution

Yes, Java does not support multiple inheritance like many other common programming languages like C,C++. Java does not support Multiple Inheritance to avoid the ambiguity caused by it.

The most common problem with multiple inheritance occurs during function overriding. Suppose, two base classes have a same function which is not overridden in derived class. If you try t call the function using the object of the derived class, compiler shows error. It’s because the compiler does not know which function to call.

We can implement Multiple Inheritance in Java with the help of Interfaces.

In case of multiple interfaces with the same default method, we can implement multiple inheritance. In the class implementing both the interfaces, one can implement the common method and call both super methods. Through this process, one has clearly achieved, multiple inheritance in Java.