Inheritance and abstract-02

1.

Main class

```
public class Bank01 {
public static void main(String[] args) {
        BankAccount b=new SavingsAccount();
        b.setAccountNumber(1234);
        b.getAccountNumber();
        b.setBalance(2000000.0f);
        b.getBalance();
        b.calculateInterest();

        BankAccount b2=new CheckingAccount();
        b2.setAccountNumber(4567);
        b2.getAccountNumber();
        b2.setBalance(1000000.0f);
        b2.getBalance();
        b2.calculateInterest();
        }
}
```

BankAccount class

```
abstract class BankAccount {
   private int accountNumber;
   private float balance;

   public void setAccountNumber(int accountNumber)
   {
      this.accountNumber=accountNumber;
```

```
  }
  public void setBalance(float  balance )
  {
     this. balance=balance;
  }
   public int getAccountNumber()
  {
    return accountNumber;
  }

   public float getBalance( )
  {
    return balance;
  }
   abstract void calculateInterest();
 }
```

CheckingAccount class

```
public class CheckingAccount extends BankAccount {
   private float interest;
   public void calculateInterest()
   {
      double interest=getBalance()*2/100;
      System.out.println("Your checking account interest: "+interest);
   }
  }
```

SavingsAccount class

```
public class SavingsAccount extends BankAccount {
   private float interest;
   @Override
  public void calculateInterest()
```

```
  {
     interest= getBalance()*12/100;
      System.out.println("Your saving account interest: "+interest);
  }
 }
```

2.

Main class

```
public class Perimeter {
public static void main(String[] args) {
        Triangle t=new Triangle(3,4,7);
        t.setSidea(5);
        t.getSidea();
        t.setSideb(4);
        t.getSideb();
        t.setSidec(6);
        t.getSidec();

        System.out.println("Area of triangle "+t.calculateArea());
        System.out.println("Perimeter of triangle  "+t.calculatePerimeter());



        Circle c=new Circle(4);
        c.setRadius(8.5);
        c.getRadius();
        System.out.println("Area of circle "+c.calculateArea());
        System.out.println("Perimeter of circle "+c.calculatePerimeter());



        Rectangle r=new Rectangle(4,6);
```

```
        r.setLength(7);
        r.setwidth(5);
        r.getLength();
        r.getwidth();
        System.out.println("Area of rectangle "+r.calculateArea());
        System.out.println("Perimeter of rectangle "+r.calculatePerimeter());


    }
}
```

Shape interface

```
public interface Shape {
    abstract double calculateArea();
     abstract double calculatePerimeter();
  }
```

Triangle class

```
class Triangle implements Shape {
    private double sidea,sideb,sidec,area,perimeter;

    public void setSidea(double Sidea)
    {
        this.sidea=sidea;
    }
    public double getSidea()
    {
        return sidea;
    }
     public void setSideb(double sideb)
```

```
{
   this.sideb=sideb;
}
public double getSideb()
{
   return sideb;
}
 public void setSidec(double sidec)
{
   this.sidec=sidec;
}
public double getSidec()
{
   return sidec;
}
public Triangle(double sidea,double sideb,double sidec)
{
   this.sidea=sidea;
   this.sideb=sideb;
   this.sidec=sidec;
}

@Override
public double calculateArea()
{
   double s = (sidea + sideb + sidec) / 2;
   return Math.sqrt(s * (s - sidea) * (s - sideb) * (s - sidec));
}
@Override
public double calculatePerimeter()
```

```
    {
      return perimeter=sidea+sideb+sidec;
    }
}
```

Circle class

```
public class Circle implements Shape {
    private double radius,area,perimeter;

    public void setRadius(double radius)
    {
        this.radius=radius;
    }
     public double getRadius()
    {
        return radius;
    }
     public Circle(double radius)
     {
         radius=4.783;
     }
     @Override
     public double calculateArea()
     {
       return area=Math.PI*radius*radius;
     }
    @Override
     public double calculatePerimeter()
     {
       return perimeter=2*Math.PI*radius;
     }
```

```
}
```

Rectangle class

```
public class Rectangle implements Shape {
   private double length,width,area,perimeter;

   public void setLength(double length)
   {
      this.length=length;
   }
    public double getLength()
   {
      return length;
   }
    public void setwidth(double width)
   {
      this.width=width;
   }
    public double getwidth()
   {
      return width;
   }

    public Rectangle(double length,double width)
    {
        length=1234.456;
        width=1567.907;
    }

  @Override
```

```
    public double calculateArea()
    {
        return area=length*width;
    }
    @Override
    public double calculatePerimeter()
    {
        return perimeter=(length*2)+(width*2);
    }

}
```