IS2104

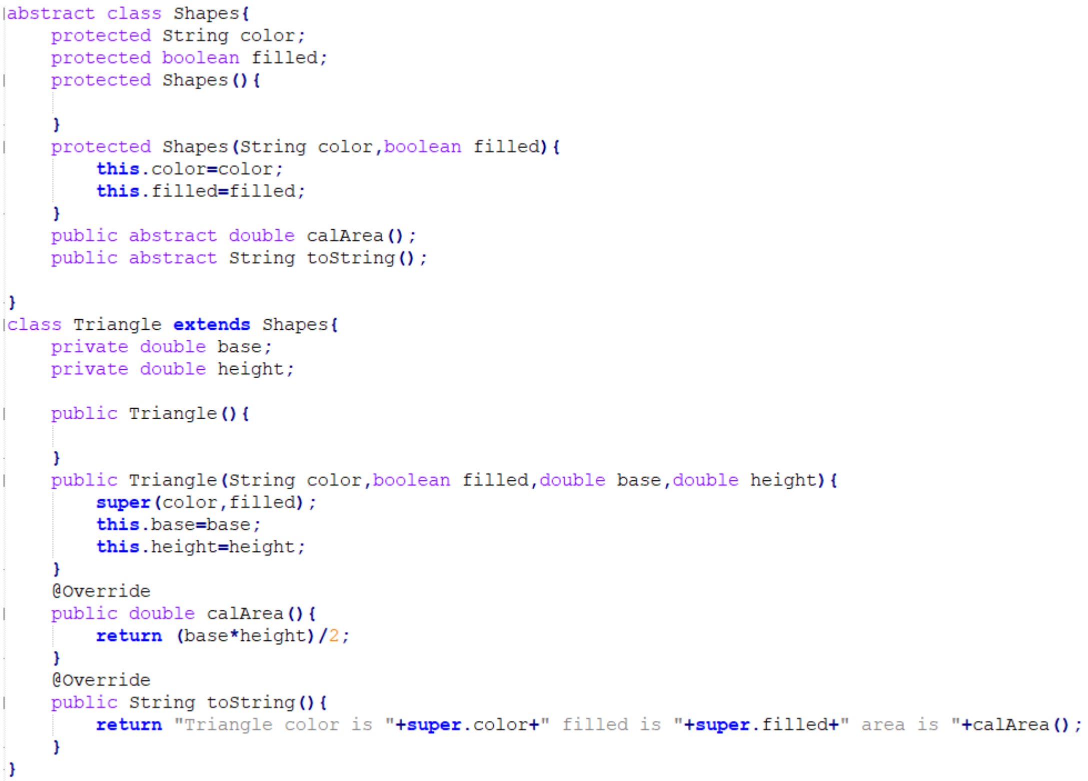
Rapid Application Development 2020

Activity 9

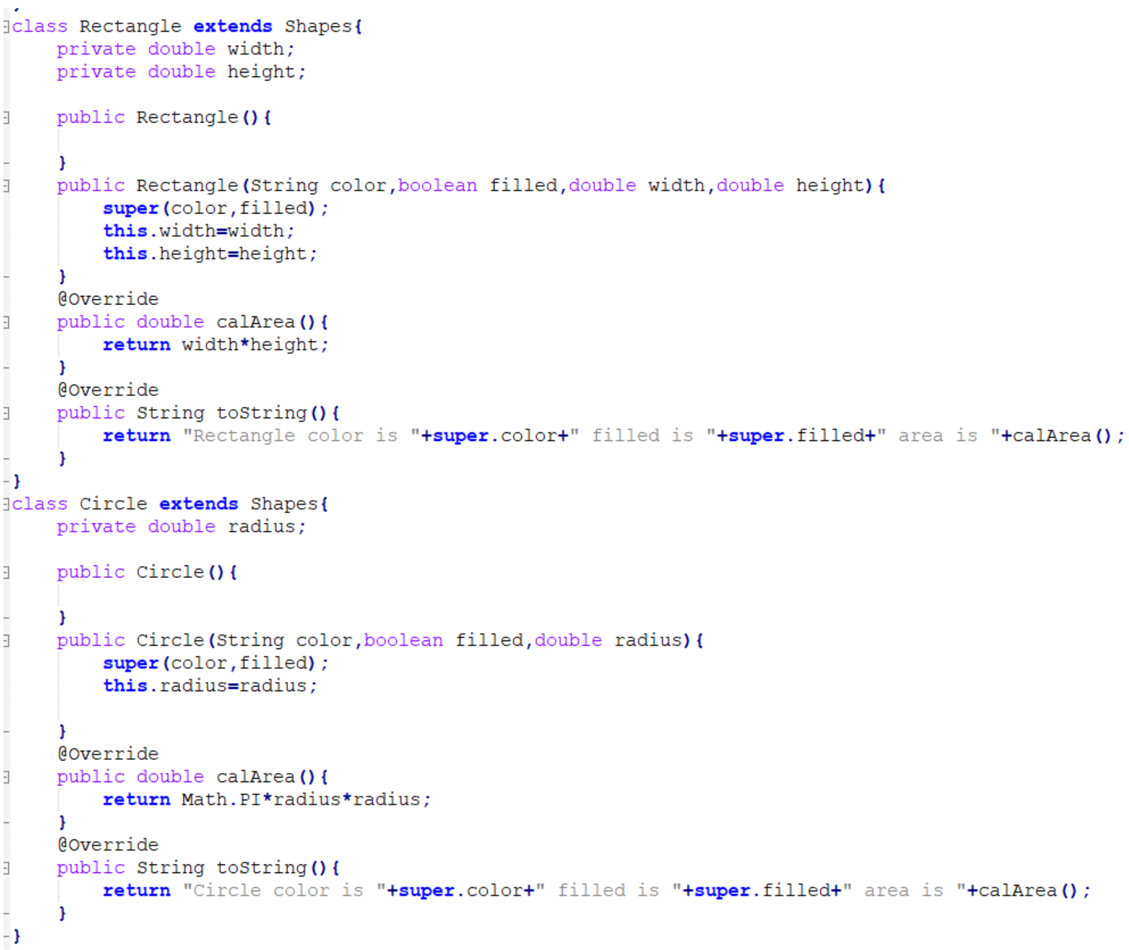
W.H.M.Gunathilaka

18020275

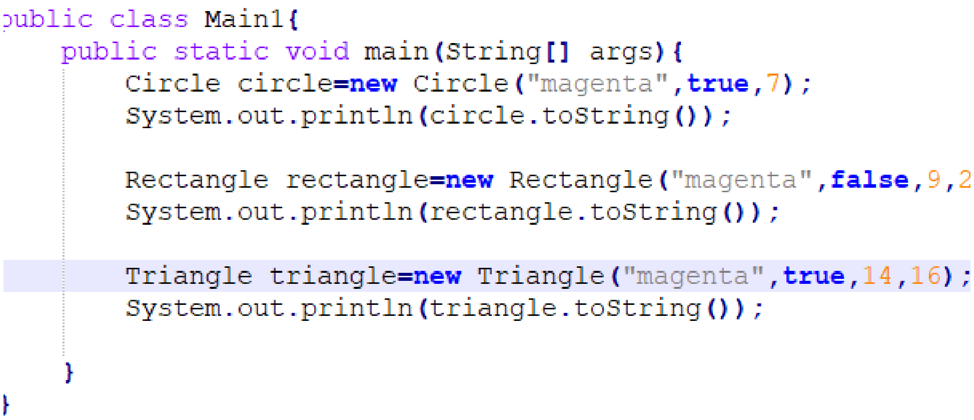
Q1.



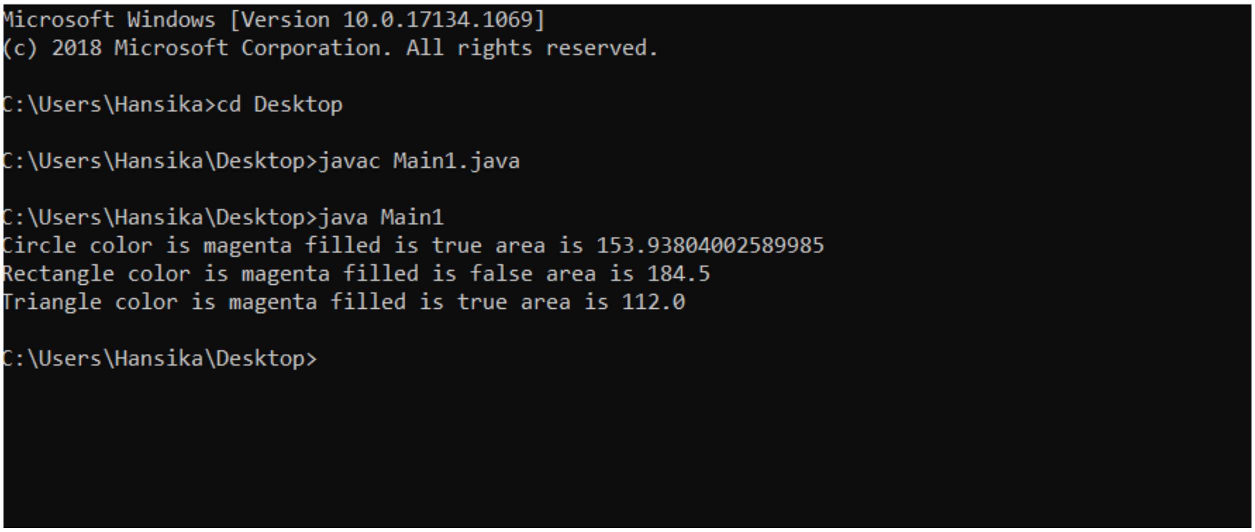
```
abstract class Shapes{
    protected String color;
    protected boolean filled;
    protected Shapes(){

    }
    protected Shapes(String color,boolean filled){
        this.color=color;
        this.filled=filled;
    }
    public abstract double calArea();
    public abstract String toString();

}
class Triangle extends Shapes{
    private double base;
    private double height;

    public Triangle(){

    }
    public Triangle(String color,boolean filled,double base,double height){
        super(color,filled);
        this.base=base;
        this.height=height;
    }
    @Override
    public double calArea(){
        return (base*height)/2;
    }
    @Override
    public String toString(){
        return "Triangle color is "+super.color+" filled is "+super.filled+" area is "+calArea();
    }
}
```



```java
class Rectangle extends Shapes{
    private double width;
    private double height;

    public Rectangle(){

    }
    public Rectangle(String color,boolean filled,double width,double height){
        super(color,filled);
        this.width=width;
        this.height=height;
    }
    @Override
    public double calArea(){
        return width*height;
    }
    @Override
    public String toString(){
        return "Rectangle color is "+super.color+" filled is "+super.filled+" area is "+calArea();
    }
}
class Circle extends Shapes{
    private double radius;

    public Circle(){

    }
    public Circle(String color,boolean filled,double radius){
        super(color,filled);
        this.radius=radius;

    }
    @Override
    public double calArea(){
        return Math.PI*radius*radius;
    }
    @Override
    public String toString(){
        return "Circle color is "+super.color+" filled is "+super.filled+" area is "+calArea();
    }
}
```



```java
public class Main1{
    public static void main(String[] args){
        Circle circle=new Circle("magenta",true,7);
        System.out.println(circle.toString());

        Rectangle rectangle=new Rectangle("magenta",false,9,2
        System.out.println(rectangle.toString());

        Triangle triangle=new Triangle("magenta",true,14,16);
        System.out.println(triangle.toString());

    }
}
```



```
Microsoft Windows [Version 10.0.17134.1069]
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C:\Users\Hansika>cd Desktop

C:\Users\Hansika\Desktop>javac Main1.java

C:\Users\Hansika\Desktop>java Main1
Circle color is magenta filled is true area is 153.93804002589985
Rectangle color is magenta filled is false area is 184.5
Triangle color is magenta filled is true area is 112.0

C:\Users\Hansika\Desktop>
```

2a.

```
abstract class BankAccount{
   protected int accNumber;
   protected String accountType;
   protected String accHoldersName;
   protected static String branch="Kandy";
   protected static boolean isActiveAccount=true;
   protected double currentBalance;
```

2b.

```
   public double getBalance(){
       return currentBalance;
   }
   public double cashDeposit(double depositAmount){
       currentBalance=currentBalance+depositAmount;
       return currentBalance;
   }
   public abstract double calInterest();
   public abstract String toString();
}
```

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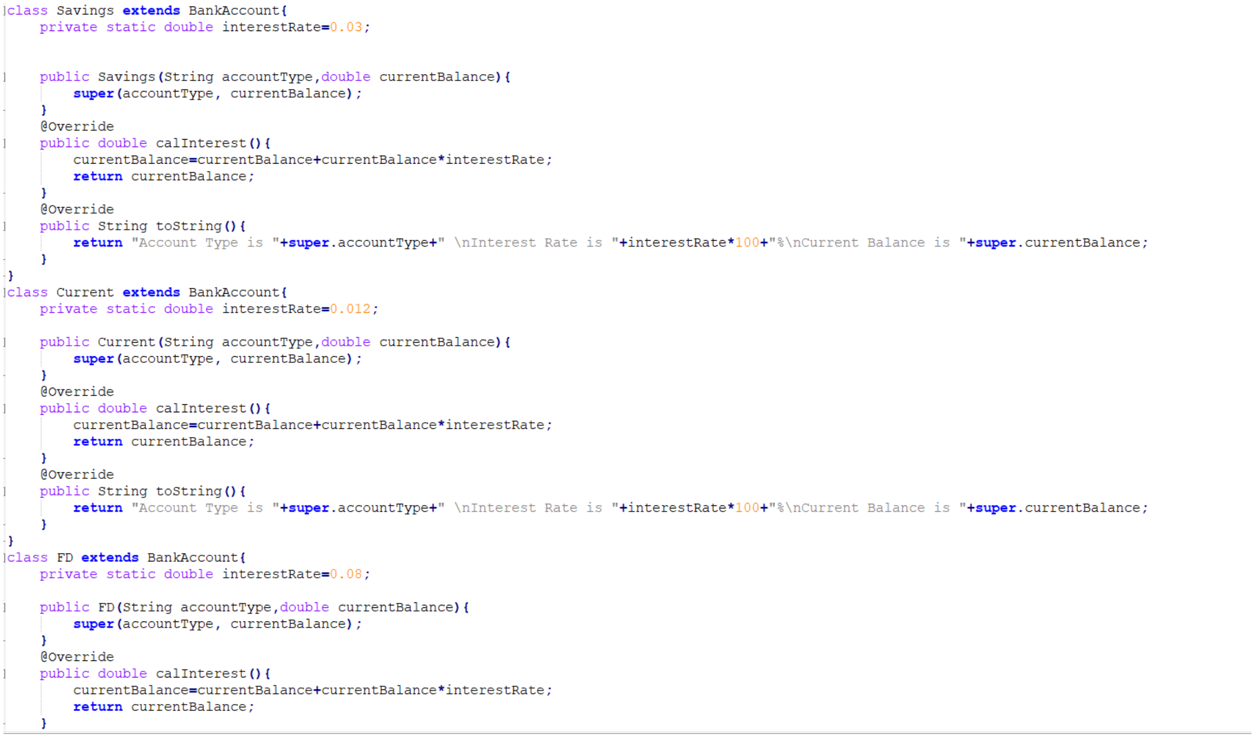


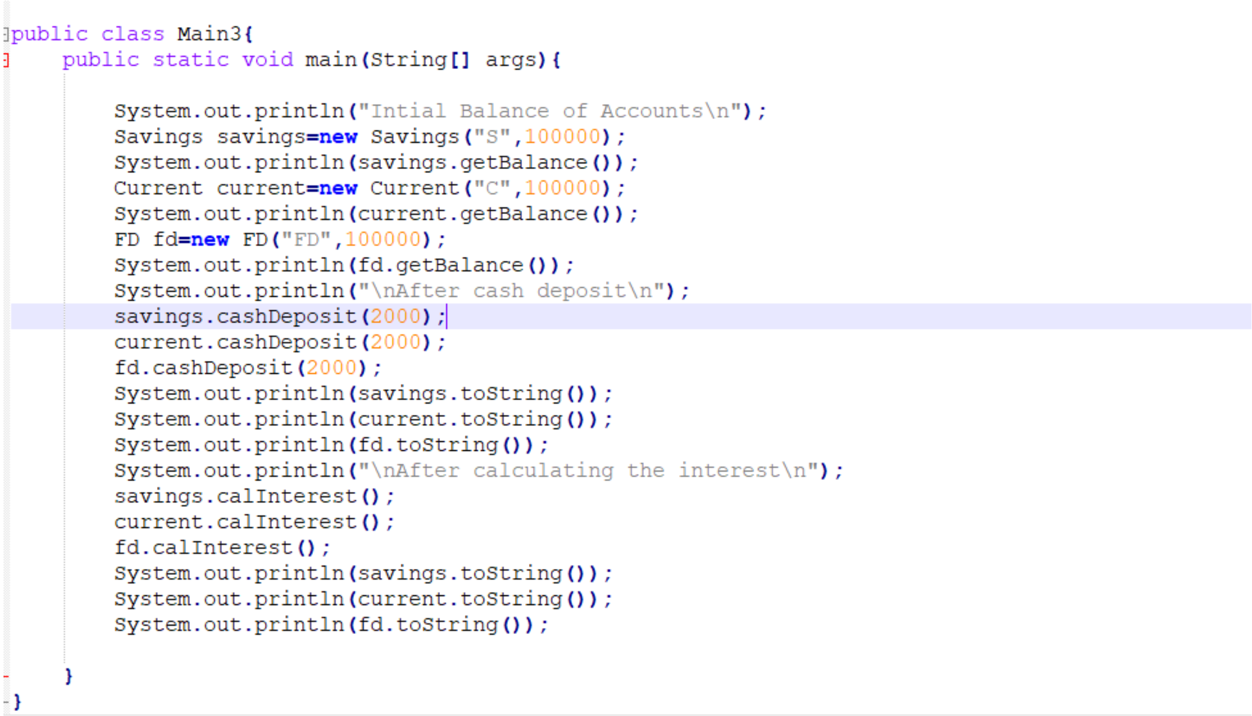
```java
class Savings extends BankAccount{
    private static double interestRate=0.03;


    public Savings(String accountType,double currentBalance){
        super(accountType, currentBalance);
    }
    @Override
    public double calInterest(){
        currentBalance=currentBalance+currentBalance*interestRate;
        return currentBalance;
    }
    @Override
    public String toString(){
        return "Account Type is "+super.accountType+" \nInterest Rate is "+interestRate*100+"%\nCurrent Balance is "+super.currentBalance;
    }
}
class Current extends BankAccount{
    private static double interestRate=0.012;

    public Current(String accountType,double currentBalance){
        super(accountType, currentBalance);
    }
    @Override
    public double calInterest(){
        currentBalance=currentBalance+currentBalance*interestRate;
        return currentBalance;
    }
    @Override
    public String toString(){
        return "Account Type is "+super.accountType+" \nInterest Rate is "+interestRate*100+"%\nCurrent Balance is "+super.currentBalance;
    }
}
class FD extends BankAccount{
    private static double interestRate=0.08;

    public FD(String accountType,double currentBalance){
        super(accountType, currentBalance);
    }
    @Override
    public double calInterest(){
        currentBalance=currentBalance+currentBalance*interestRate;
        return currentBalance;
    }
```

5/6/7/8/9

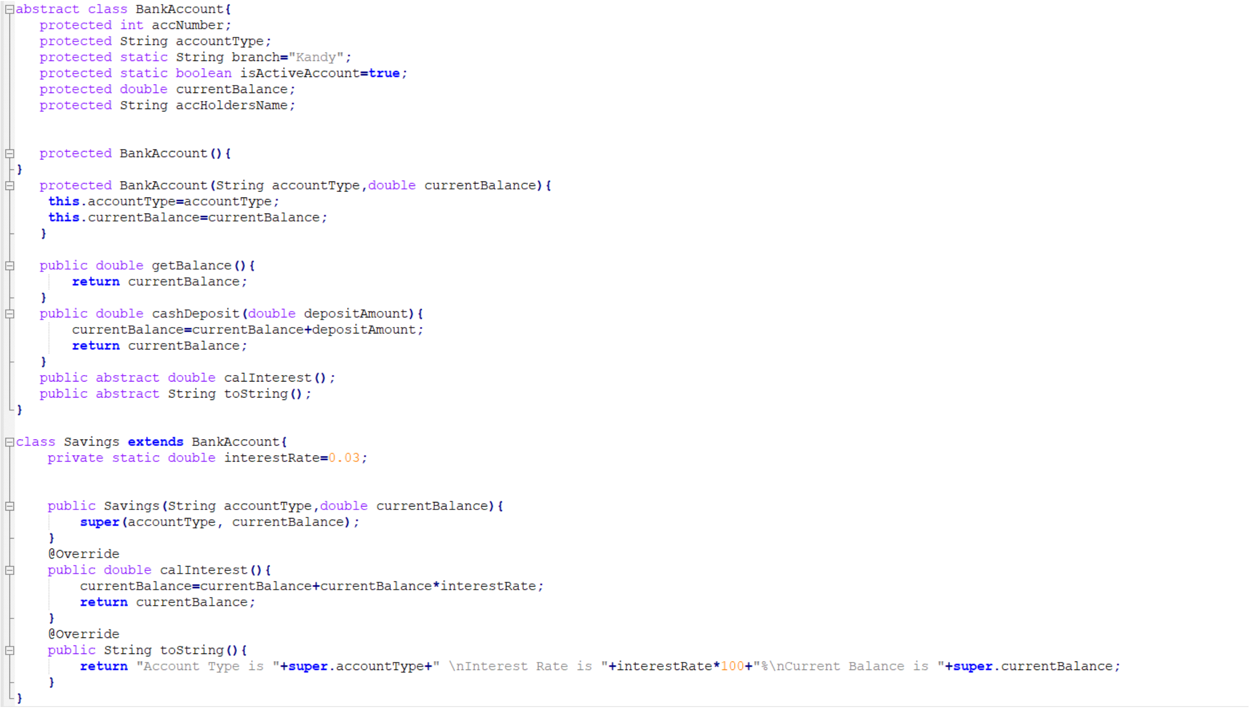


```java
public class Main3{
    public static void main(String[] args){

        System.out.println("Intial Balance of Accounts\n");
        Savings savings=new Savings("S",100000);
        System.out.println(savings.getBalance());
        Current current=new Current("C",100000);
        System.out.println(current.getBalance());
        FD fd=new FD("FD",100000);
        System.out.println(fd.getBalance());
        System.out.println("\nAfter cash deposit\n");
        savings.cashDeposit(2000);
        current.cashDeposit(2000);
        fd.cashDeposit(2000);
        System.out.println(savings.toString());
        System.out.println(current.toString());
        System.out.println(fd.toString());
        System.out.println("\nAfter calculating the interest\n");
        savings.calInterest();
        current.calInterest();
        fd.calInterest();
        System.out.println(savings.toString());
        System.out.println(current.toString());
        System.out.println(fd.toString());

    }
}
```

Final



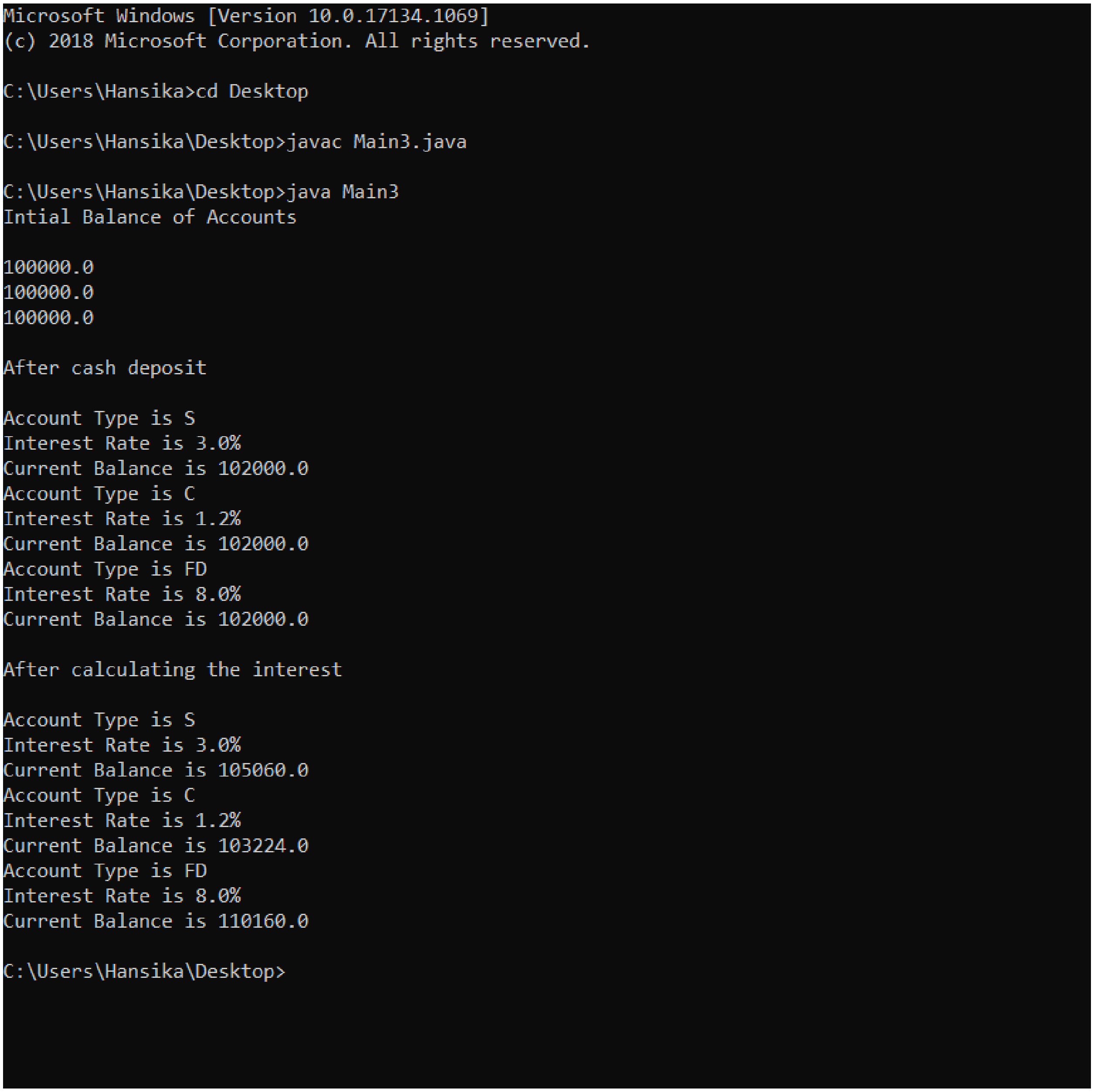
```java
abstract class BankAccount{
   protected int accNumber;
   protected String accountType;
   protected static String branch="Kandy";
   protected static boolean isActiveAccount=true;
   protected double currentBalance;
   protected String accHoldersName;


   protected BankAccount(){
}
   protected BankAccount(String accountType,double currentBalance){
    this.accountType=accountType;
    this.currentBalance=currentBalance;
   }

   public double getBalance(){
       return currentBalance;
   }
   public double cashDeposit(double depositAmount){
       currentBalance=currentBalance+depositAmount;
       return currentBalance;
   }
   public abstract double calInterest();
   public abstract String toString();
}

class Savings extends BankAccount{
    private static double interestRate=0.03;


    public Savings(String accountType,double currentBalance){
        super(accountType, currentBalance);
    }
    @Override
    public double calInterest(){
        currentBalance=currentBalance+currentBalance*interestRate;
        return currentBalance;
    }
    @Override
    public String toString(){
        return "Account Type is "+super.accountType+" \nInterest Rate is "+interestRate*100+"%\nCurrent Balance is "+super.currentBalance;
    }
}
```



```
Microsoft Windows [Version 10.0.17134.1069]
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C:\Users\Hansika>cd Desktop

C:\Users\Hansika\Desktop>javac Main3.java

C:\Users\Hansika\Desktop>java Main3
Intial Balance of Accounts

100000.0
100000.0
100000.0

After cash deposit

Account Type is S
Interest Rate is 3.0%
Current Balance is 102000.0
Account Type is C
Interest Rate is 1.2%
Current Balance is 102000.0
Account Type is FD
Interest Rate is 8.0%
Current Balance is 102000.0

After calculating the interest

Account Type is S
Interest Rate is 3.0%
Current Balance is 105060.0
Account Type is C
Interest Rate is 1.2%
Current Balance is 103224.0
Account Type is FD
Interest Rate is 8.0%
Current Balance is 110160.0

C:\Users\Hansika\Desktop>
```

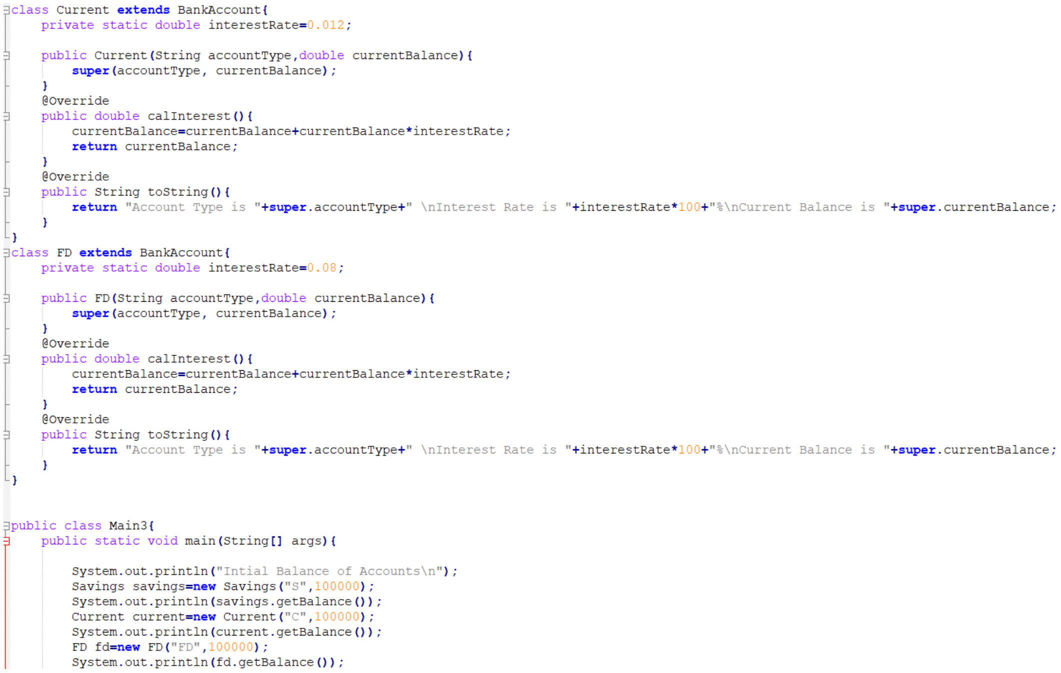

```java
class Current extends BankAccount{
    private static double interestRate=0.012;

    public Current(String accountType,double currentBalance){
        super(accountType, currentBalance);
    }
    @Override
    public double calInterest(){
        currentBalance=currentBalance+currentBalance*interestRate;
        return currentBalance;
    }
    @Override
    public String toString(){
        return "Account Type is "+super.accountType+" \nInterest Rate is "+interestRate*100+"%\nCurrent Balance is "+super.currentBalance;
    }
}
class FD extends BankAccount{
    private static double interestRate=0.08;

    public FD(String accountType,double currentBalance){
        super(accountType, currentBalance);
    }
    @Override
    public double calInterest(){
        currentBalance=currentBalance+currentBalance*interestRate;
        return currentBalance;
    }
    @Override
    public String toString(){
        return "Account Type is "+super.accountType+" \nInterest Rate is "+interestRate*100+"%\nCurrent Balance is "+super.currentBalance;
    }
}


public class Main3{
    public static void main(String[] args){

        System.out.println("Intial Balance of Accounts\n");
        Savings savings=new Savings("S",100000);
        System.out.println(savings.getBalance());
        Current current=new Current("C",100000);
        System.out.println(current.getBalance());
        FD fd=new FD("FD",100000);
        System.out.println(fd.getBalance());
```