

```

import java.util.Scanner;

abstract class Shape {
    int a;
    int b;
    abstract void printArea();

    public Shape(int a, int b) {
        this.a = a;
        this.b = b;
    }
}

class Rectangle extends Shape {
    public Rectangle(int a, int b) {
        super(a, b);
    }

    void printArea() {
        System.out.println("Area of rectangle:"+(a*b));
    }
}

class Triangle extends Shape {
    public Triangle(int a, int b) {
        super(a, b);
    }

    void printArea() {
        System.out.println("Area of triangle:"+(a*b));
    }
}

class Circle extends Shape {
    public Circle(int a, int b) {
        super(a, b);
    }

    void printArea() {
        System.out.println("Area of Circle:"+(3.142*a*b));
    }
}

class Area {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter length of rectangle:");
        int l_rec = sc.nextInt();
        System.out.print("Enter breadth of rectangle:");
        int b_rec = sc.nextInt();

        System.out.print("Enter height of triangle:");
        int l_tri = sc.nextInt();
        System.out.print("Enter base of triangle:");
        int b_tri = sc.nextInt();

        System.out.print("Enter radius of circle:");
        int r_cir = sc.nextInt();

        Rectangle r = new Rectangle(l_rec,b_rec);
        Triangle t = new Triangle(l_tri,b_tri);
        Circle c = new Circle(r_cir,r_cir);
        System.out.println("-----");
        r.printArea();
        t.printArea();
        c.printArea();
    }
}

```

```
[masm]
[poojaraghu@Poojas-MacBook-Pro Desktop % open Area.java
[poojaraghu@Poojas-MacBook-Pro Desktop % javac Area.java
[poojaraghu@Poojas-MacBook-Pro Desktop % ls
AREA
Area.class
Area.java
Circle.class
Microsoft_Office_16.41.20091302_HomeStudent_Installer.pkg
Prog5
Rectangle.class
Shape.class
Triangle.class
dosbox.app
masm
[poojaraghu@Poojas-MacBook-Pro Desktop % java Area
Enter length of rectangle:14
Enter breadth of rectangle:6
Enter height of triangle:8
Enter base of triangle:4
Enter radius of circle:5
-----
Area of rectangle:84
Area of triangle:32
Area of Circle:78.55
poojaraghu@Poojas-MacBook-Pro Desktop %
```

Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle & Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea() that prints the area of the given shape.

```
import java.util.Scanner;  
abstract class Shape  
{  
    int a;  
    int b;  
    abstract void printArea();  
    public Shape (int a, int b)  
    {  
        this.a = a;  
        this.b = b;  
    }  
    void printArea()  
    {  
        System.out.println("Area of " + name + " is " + (a * b));  
    }  
}  
  
class Rectangle extends Shape  
{  
    public Rectangle (int a, int b)  
    {  
        super(a, b);  
    }  
    void printArea()  
    {  
        System.out.println("Area of rectangle is " + (a * b));  
    }  
}  
  
class Triangle extends Shape  
{  
    public Triangle (int a, int b)  
    {  
        super(a, b);  
    }  
}
```

```
void printArea() does not return a value
{
    System.out.println("Area of Rectangle:" + (a * b));
}

class Circle extends Shape
{
    public Circle(int a, int b)
    {
        super(a, b);
    }

    void printArea()
    {
        System.out.println("Area of Circle:" + (3.142 * a * b));
    }
}

class Area
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter length of rectangle:");
        int l-rec = sc.nextInt();
        System.out.print("Enter breadth of rectangle:");
        int b-rec = sc.nextInt();
        System.out.print("Enter height of triangle:");
        int l-tri = sc.nextInt();
        System.out.print("Enter base of triangle:");
        int b-tri = sc.nextInt();
        System.out.print("Enter radius of circle:");
        int r-cir = sc.nextInt();

        Rectangle r = new Rectangle(l-rec, b-rec);
        Triangle t = new Triangle(l-tri, b-tri);
        Circle c = new Circle(r-cir, r-cir);
        System.out.println("-----");
    }
}
```

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IBML9 CS135

classmate

Date \_\_\_\_\_  
Page \_\_\_\_\_

r.printArea();

t.printArea();

C.printArea();

3

3

java.awt.Window

Swing

3

java.awt.Container

Storage

3

java.awt.Component

String

input output

Scanning

Output

Printing

Display

Input

Storage

Control

Execution

Memory

Processor

System

```

import java.util.Scanner;
class Account{
    private String name;
    private int accountNumber;
    private String type;
    public Account(String name,int accountNumber,String type){
        this.name=name;
        this.accountNumber=accountNumber;
        this.type=type;
    }
    public void setName(String name){
        this.name=name;
    }
    public void setAccountNumber(int accountNumber){
        this.accountNumber=accountNumber;
    }
    public void setType(String type){
        this.type=type;
    }
    public String getName(){
        return this.name;
    }
    public int getAccountNumber(){
        return this.accountNumber;
    }
    public String getType(){
        return this.type;
    }
}
class Curr_acct extends Account{
    private double balance;
    private boolean checkBook;
    private static double minBalance;
    private static double serviceCharge;
    public static double getServiceCharge(){
        return serviceCharge;
    }
    public Curr_acct(String name,int accountNumber,String type,boolean checkBook){
        super(name,accountNumber,type);
        this.checkBook=checkBook;
        this.balance=0;
    }
    static{
        minBalance=1000.00;
        serviceCharge=5.00;
    }
    public double getBalance(){
        return this.balance;
    }
    public void deposit(double amt){
        this.balance+=amt;
    }
    public int withdraw(double amt){
        if(this.balance-amt<minBalance && this.balance-amt>0){
            this.balance-=serviceCharge*0.01*amt;
            this.balance-=amt;
            return 1;
        }if(this.balance-amt<0){
            return -1;
        }
        this.balance-=amt;
        return 2;
    }
}
class Sav_acct extends Account{
    private double balance;
    private static double interestRate;
    public Sav_acct(String name,int accountNumber,String type){
        super(name,accountNumber,type);
        this.balance=0;
    }
    static{
        interestRate=8.0;
    }
    public double getBalance(){
        return this.balance;
    }
    public void deposit(double amt){
        this.balance+=amt;
    }
    public int withdraw(double amt){
        if(this.balance-amt<0){
            return -1;
        }
        this.balance-=amt;
        return 2;
    }
}

```

```

        return -1;
    }
    this.balance-=amt;
    return 2;
}
}
class Sav_acct extends Account{
    private double balance;
    private static double interestRate;
    public Sav_acct(String name,int accountNumber,String type){
        super(name,accountNumber,type);
        this.balance=0;
    }
    static{
        interestRate=8.0;
    }
    public double getBalance(){
        return this.balance;
    }
    public void deposit(double amt){
        this.balance+=amt;
    }
    public int withdraw(double amt){
        if(this.balance-amt<0){
            return -1;
        }
        this.balance-=amt;
        return 2;
    }
    public double calculateInterest(){
        double amt=(this.balance*(1.0+(interestRate*0.01)));
        double interest=amt-this.balance;
        this.balance=amt;
        return interest;
    }
}
class BankMain{
    public static void main(String args[]){
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the name");
        String name=s.next();
        System.out.println("Enter the account number");
        int accountNumber=s.nextInt();
        System.out.println("Enter the type");
        System.out.println("1.Savings");
        System.out.println("2.Current");
        int type=s.nextInt();
        if(type==2){
            System.out.println("Do you want a check book ?? y or n");
            String checkBookString=s.next();
            boolean checkBook;
            if(checkBookString=="y")
                checkBook=true;
            else
                checkBook=false;
            Curr_acct curr_acct=new Curr_acct(name,accountNumber,"Current",checkBook);
            int c;
            do{
                displayMenu(false);
                c=s.nextInt();
                double amt;
                switch(c){
                    case 1:
                        System.out.println("The balance in account is "+curr_acct.getBalance());
                        break;
                    case 2:
                        System.out.println("Enter the amount to deposit");
                        amt=s.nextDouble();
                        curr_acct.deposit(amt);
                        System.out.println("The balance in account is "+curr_acct.getBalance());
                        break;
                }
            }while(c!=3);
        }
    }
}

```

```

System.out.println("Do you want a check book ?? y or n");
String checkBookString=s.next();
boolean checkBook;
if(checkBookString=="y")
    checkBook=true;
else
    checkBook=false;
Curr_acct curr_acct=new Curr_acct(name,accountNumber,"Current",checkBook);
int c;
do{
    displayMenu(false);
    c=s.nextInt();
    double amt;
    switch(c){
        case 1:
            System.out.println("The balance in account is "+curr_acct.getBalance());
            break;
        case 2:
            System.out.println("Enter the amount to deposit");
            amt=s.nextDouble();
            curr_acct.deposit(amt);
            System.out.println("The balance in account is "+curr_acct.getBalance());
            break;
        case 3:
            System.out.println("Enter the amount to withdraw");
            amt=s.nextDouble();
            int exp=curr_acct.withdraw(amt);
            if(exp==1)
                System.out.println("A service charge of "+(curr_acct.getServiceCharge()*0.01*amt)+" was deducted");
            else if(exp==-1)
                System.out.println("Insufficient Balance");
            System.out.println("The balance in account is "+curr_acct.getBalance());
            break;
        case 5:
            break;
        default:
            System.out.println("Please enter valid choice");
    }
}while(c!=5);
}else if(type==1){
    Sav_acct sav_acct=new Sav_acct(name,accountNumber,"Savings");
    int c;
    do{
        displayMenu(true);
        c=s.nextInt();
        double amt;
        switch(c){
            case 1:
                System.out.println("The balance in account is "+sav_acct.getBalance());
                break;
            case 2:
                System.out.println("Enter the amount to deposit");
                amt=s.nextDouble();
                sav_acct.deposit(amt);
                System.out.println("The balance in account is "+sav_acct.getBalance());
                break;
            case 3:
                System.out.println("Enter the amount to withdraw");
                amt=s.nextDouble();
                int exp=sav_acct.withdraw(amt);
                if(exp==1)
                    System.out.println("Insufficient Balance");
                System.out.println("The balance in account is "+sav_acct.getBalance());
                break;
            case 4:
                System.out.println("The interest amount is "+sav_acct.calculateInterest());
                System.out.println("The balance in account is "+sav_acct.getBalance());
                break;
            case 5:
                break;
            default:
                System.out.println("Please enter valid choice");
        }
    }while(c!=5);
}
public static void displayMenu(boolean isSavingsAccount){
    System.out.println("1.Check balance");
    System.out.println("2.Deposit Cash");
    System.out.println("3.Withdraw Cash");
    if(isSavingsAccount)
        System.out.println("4.Calculate Interest");
    System.out.println("5.Exit");
    System.out.println("Enter your choice");
}
}

```

```
Triangle.class
dosbox.app
masm
[poojaragh@Poojas-MacBook-Pro Desktop % java BankMain
Enter the name
Pooja
Enter the account number
465
Enter the type
1.Savings
2.Current
1
1.Check balance
2.Deposit Cash
3.Withdraw Cash
4.Calculate Interest
5.Exit
Enter your choice
2
Enter the amount to deposit
3000
The balance in account is 3000.0
1.Check balance
2.Deposit Cash
3.Withdraw Cash
4.Calculate Interest
5.Exit
Enter your choice
3
Enter the amount to withdraw
1200
The balance in account is 1800.0
1.Check balance
2.Deposit Cash
3.Withdraw Cash
4.Calculate Interest
5.Exit
Enter your choice
4
The interest amount is 144.0000000000023
The balance in account is 1944.000000000002
1.Check balance
2.Deposit Cash
3.Withdraw Cash
4.Calculate Interest
5.Exit
Enter your choice
```

```
import java.util.Scanner;  
class Account {  
    private String name;  
    private int accountNumber;  
    private String type;  
    public Account (String name, int accountNumber, String type)  
    {  
        this.name = name;  
        this.accountNumber = accountNumber;  
        this.type = type;  
    }  
    public void setName (String name)  
    {  
        this.name = name;  
    }  
    public void setAccountNumber (int accountNumber)  
    {  
        this.accountNumber = accountNumber;  
    }  
    public void setType (String type)  
    {  
        this.type = type;  
    }  
    public String getName ()  
    {  
        return this.name;  
    }  
    public int getAccountNumber ()  
    {  
        return this.accountNumber;  
    }  
    public String getType ()  
    {  
        return this.type;  
    }  
    class Curr_acct extends Account {  
        private double balance;
```

```
private boolean checkBook;           { is null }  
private static double minBalance;    {  
private static double serviceCharge; { no }  
public static double getServiceCharge() { string  
return serviceCharge; }  
{ }  
public Current (String name, int accountNumber, String type,  
boolean checkBook) { (input, accountNumber, name) type  
{ }  
super (name, accountNumber, type);  
this . CheckBook = checkBook;           { is false }  
this . balance = 0;                   { 0.8 - true }  
{ }  
static {  
minBalance = 1000.00;                { created with value }  
serviceCharge = 5.00;                 { true }  
{ }  
public double getBalance() {  
return this . balance; }  
{ }  
public void deposit (double amt) { 1 - neither }  
{ }  
this . balance += amt;                { true = - unmodified. both }  
{ }  
public int withdraw (double amt) {  
if (this . balance - amt < minBalance && this . balance - amt > 0) {  
{ }  
this . balance -= serviceCharge * 0.01 * amt; {  
this . balance -= amt; }  
return 1; }  
{ }  
if (this . balance - amt < 0) { 1 - truth neither }  
{ }  
return -1; }  
{ }  
this . balance -= amt; { (true) new from either value }  
{ }  
{ }  
{ }  
{ }
```

```
Section 2; 3

class Sav-Acc extends Account {
    private double balance;
    private static double interestRate;
    public Sav-Acc (String name, int accountNumber, String type) {
        super (name, accountNumber, type);
        this.balance = 0;
    }
    static {
        interestRate = 8.0;
    }
    public double getBalance() {
        return this.balance;
    }
    public void deposit (double amt) {
        this.balance += amt;
    }
    public int withdraw (double amt) {
        if (this.balance - amt < 0) {
            return -1;
        }
        this.balance -= amt;
        return 2;
    }
    public double calculateInterest () {
        double amt = (this.balance * (1.0 + (interestRate * 0.01)));
        double interest = amt - this.balance;
        this.balance = amt;
        return interest;
    }
}

class BankMain {
    public static void main (String args[]) {
        Scanner s = new Scanner (System.in);
    }
}
```

```
System.out.println("Enter the name"); String name = s.next();  
String name = s.next();  
System.out.println("Enter the account number"); int accountNumber = s.nextInt();  
System.out.println("Enter the type"); String type = s.next();  
System.out.println("1. Savings");  
System.out.println("2. Current"); int type = s.nextInt();  
if (type == 2) {  
    System.out.println("Do you want a check book? (y/n)");  
    String checkBookString = s.next();  
    boolean checkBook; if (checkBookString == "y") {  
        checkBook = true; } else {  
        checkBook = false; }  
    CurrAcct currAcct = new CurrAcct(name, accountNumber,  
        "Current", checkBook);  
    int c; do {  
        displayMenu(false);  
        c = s.nextInt();  
        double amt;  
        switch (c) {  
            case 1:  
                System.out.println("The balance in account is " + currAcct.getBalance());  
                break; // get balance be executed after  
            case 2:  
                System.out.println("Enter the amount to deposit");  
                amt = s.nextDouble();  
                currAcct.deposit(amt);  
                System.out.println("The balance in account is " + currAcct.getBalance());  
                break; // get balance be executed after  
            case 3:
```

System.out.println("Enter the amount to withdraw");  
amt = s.nextDouble();  
~~curr-acct.deposit(amt);~~ int exp = curr-acct.withdraw(amt);  
System.out.print if (exp == 1)  
System.out.println("As service charge") + (curr-acct.  
getServiceCharge() + 0.01 \* amt) + " was deducted";  
else if (exp == -1)  
System.out.println("Insufficient Balance");  
System.out.println("The balance in account is " + curr-acct.get  
break;  
Case 5:  
break;  
default:  
System.out.println("Please enter valid choice");  
}  
}  
while (c1 == 5);  
} else if (type == 1) {  
Sav-acct sav-acct = new Sav-acct(name, accountNumber, SavType);  
int c;  
do {  
displayMenu(true);  
c = s.nextInt();  
double amt;  
switch (c) {  
case 1: System.out.println("The balance in account is " + sav-acct.getBalance());  
break;  
case 2: System.out.println("Enter the amount to deposit");  
amt = s.nextDouble();  
sav-acct.deposit(amt);  
System.out.println("The balance in account is " + sav-acct.get  
break;

case 3:

```
System.out.println ("Enter the amount to withdraw");
amt = s.nextDouble();
```

```
int cnp = sav acct.withdraw(amt);
if (cnp == -1)
```

```
System.out.println ("Insufficient Balance");
```

```
System.out.println ("The balance in account is " + sav.acct.get
Balance());
```

case 4:

```
System.out.println ("The interest amount is " + sav.acct.calculate
Interest());
System.out.println ("The balance in account is
" + sav.acct.getBalance());
```

case 5:

```
break;
```

```
default:
```

```
System.out.println ("Please enter valid choice");
}
```

```
} else while (c1 == 5);
```

```
}
```

```
public static void displayMenu(boolean isSavingsAccount) {
```

```
System.out.println ("1. Check balance");
```

```
System.out.println ("2. Deposit cash");
```

```
System.out.println ("3. Withdraw cash");
```

```
if (isSavingsAccount)
```

```
System.out.println ("4. Calculate Interest");
```

```
System.out.println ("5. Exit");
```

```
System.out.println ("Enter your choice");
```

```
}
```

```
}
```