

**Course Title:** CSE110

**Section:** 06

**Semester:** Summer 22

**LAB-06**

**SUBMITTED TO**

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**Date of submission:** 04 August 2022.

(A, B, C)

import java.util.ArrayList;  
import java.util.Scanner;  
import java.util.Random;  
  
class Account  
{  
 private int id;  
 private double balance;  
 private double annualInterestRate;  
  
 public Account(){}  
 public Account(int id, double balance, double annualInterestRate)  
 {  
  
 this.id = id;  
 this.balance = balance;  
 this.annualInterestRate = annualInterestRate;  
 }  
  
void display()  
{  
 System.*out*.println("ID: "+this.id+"\nBalance: "+this.balance+"\nAnnual interest rate: "+this.annualInterestRate);  
}  
 public int getId()  
 {  
 return id;  
 }  
  
 public void setId(int id)  
 {  
 this.id = id;  
 }  
  
 public double getBalance()  
 {  
 return balance;  
 }  
  
 public void setBalance(double balance)  
 {  
 this.balance = balance;  
 }  
  
 public double getAnnualInterestRate()  
 {  
 return annualInterestRate;  
 }  
  
 public void setAnnualInterestRate(double annualInterestRate)  
 {  
 this.annualInterestRate = annualInterestRate;  
 }  
  
 double getMonthlyInterestRate()  
 {  
 double res = (this.annualInterestRate/100)/12;  
 return res;  
 }  
 double getMonthlyInterestAmount(){  
 double res = this.balance\*this.getMonthlyInterestRate();  
 return res;  
 }  
  
 void withdraw(double y)  
 {  
 double x = this.getBalance()-y;  
 this.setBalance(x);  
 }  
  
 void deposit(double y)  
 {  
 double x = this.getBalance()+y;  
 this.setBalance(x);  
 }  
}  
  
class CheckingAccount extends Account  
{  
 double overDraftLimit;  
  
 public CheckingAccount(int id, double balance, double annualInterestRate,double overDraftLimit)  
 {  
 super(id,balance,annualInterestRate);  
 double p=250000;  
 this.overDraftLimit = p;  
 }  
  
 public double getOverDraftLimit()  
 {  
 return this.getBalance();  
 }  
 void display()  
 {  
 System.*out*.println("ID: "+ this.getId() +"\nBalance: "+this.getBalance()+"\nAnnual interest rate: "+this.getAnnualInterestRate()+"\nOver draft limit: "+this.overDraftLimit);  
 }  
}  
  
class SavingsAccount extends Account  
{  
 double creditCard;  
 public SavingsAccount(int id, double balance, double annualInterestRate,double creditCard)  
 {  
 super(id,balance,annualInterestRate);  
 this.creditCard = creditCard;  
  
 }  
  
 void display()  
 {  
 System.*out*.println("ID: "+ this.getId() +"\nBalance: "+this.getBalance()+"\nAnnual interest rate: "+this.getAnnualInterestRate()+"\ncreditCard: "+this.creditCard);  
 }  
}  
  
public class AccountTest {  
  
 public static void main(String[] args)  
 {  
 Scanner in= new Scanner(System.*in*);  
 Random ran= new Random();  
 double p=250000;  
 double y=ran.nextDouble(999999999);  
 ArrayList<Account> account = new ArrayList<Account>();  
  
 /\*  
 account.add (new SavingsAccount(1122, 20000, 4.5, "1234567891111111"));  
 account.add (new CheckingAccount(1123, 25000, 3.5,2000000));  
 account.add (new SavingsAccount(1124, 30000, 2.5,"1234567891111122"));  
 account.add (new SavingsAccount(1125, 35000, 5.5,"1234567891111133"));  
 \*/  
  
 System.*out*.println("How many accounts you want to create:");  
 int n=in.nextInt();  
 for(int i=0;i<n;i++)  
 {  
 System.*out*.println("Press (1) for creating a Checking Account");  
 System.*out*.println("Press (2) for creating a Savings Account");  
 int x=in.nextInt();  
 System.*out*.println("Enter ID:");  
 int a=in.nextInt();  
 System.*out*.println("Enter Balance:");  
 double b=in.nextDouble();  
 System.*out*.println("Enter Annual Interest Rate:");  
 double c=in.nextDouble();  
  
 switch(x)  
 {  
 case 1:  
 account.add(new CheckingAccount( a, b, c, p));  
 break;  
  
 case 2:  
 account.add(new SavingsAccount( a, b, c, y));  
 break;  
 }  
  
 }  
  
 for (int i = 0; i < account.size(); i++)  
 {  
 System.*out*.println("");  
 account.get(i).display();  
 System.*out*.println("");  
 }  
  
 account.get(0).withdraw(2500);  
 System.*out*.println("Balance after withdraw : "+account.get(0).getBalance());  
 account.get(0).deposit(3000);  
 System.*out*.println("Balance after deposit : "+account.get(0).getBalance());  
 }  
}

Q (i)

import java.util.Scanner;

class Person {

String Name;

int Age;

public Person(String N, int A) {

this.Name = N;

this.Age = A;

}

public void display1() {

System.out.println("Name:"+Name+ "\nAge:"+Age);

System.out.println("This is parent class");

}

}

class Student extends Person {

String ID;

public Student(String N, int A, String ID)

{

super(N, A);

this.ID=ID;

}

public void display2()

{

System.out.println("Name:"+Name+ "\nAge:"+Age+"\nID: "+ID);

System.out.println("This is child class");

}

}

public class NewClass1

{

public static void main(String[] args) {

Person p1 = new Person("Alve", 20);

Student s1 = new Student("Shahria", 20, "2021-3-60-016");

p1.display1();

s1.display2();

}

}

Q (ii)

import java.util.Scanner;

class Parent

{

public void display1()

{

System.out.println("This is parent class");

}

}

class Child extends Parent

{

void display2()

{

System.out.println("This is child class");

}

}

public class NewClass1 {

public static void main(String[] args) {

Parent p1 = new Parent();

Child s1 = new Child();

p1.display1();

s1.display2();

s1.display1();

}

}

Q (iii)

class Member

{

String name;

int age;

String phoneNumber;

String address;

int salary;

public Member(){}

public Member(String N, int A, String PN, String Add, int S)

{

this.name = N;

this.age = A;

this.phoneNumber = PN;

this.address = Add;

this.salary = S;

}

void printSalary()

{

System.out.println("Salary is : "+salary);

}

}

class Employee extends Member

{

String specialization;

String department;

public Employee(){}

public Employee(String N, int A, String PN, String Add, int S, String Sp,String Dep)

{

super(N, A, PN, Add, S);

this.specialization = Sp;

this.department = Dep;

}

}

class Manager extends Member

{

String specialization;

String department;

public Manager(){}

public Manager(String N, int A, String PN, String Add, int S, String Sp,String Dep)

{

super(N, A, PN, Add, S);

this.specialization = Sp;

this.department = Dep;

}

}

public class Q3

{

public static void main(String[] args)

{

Employee e1 = new Employee("Alve",20,"012345678","Dhaka",250000,"Computer", "IT");

Manager m1 = new Manager("Shahria", 22,"0123456789","Dhaka",300000,"Management","Accounting");

e1.printSalary();

m1.printSalary();

}

}

Q (iv)

class Rectangle

{

double height;

double breadth;

public Rectangle(){}

public Rectangle(double h, double b){

this.height = h;

this.breadth = b;

}

double area(){

double area = this.height\*this.breadth;

return area;

}

double perimeter(){

double perimeter = 2\*(this.height+this.breadth);

return perimeter;

}

}

class Square extends Rectangle{

public Square(){}

public Square(double h, double b){

super(h,b);

}

}

public class Q4

{

public static void main(String[] args)

{

Rectangle r1 = new Rectangle(3,4);

Square s1 = new Square(2,2);

System.out.println("The area of a rectangle is: "+r1.area());

System.out.println("The perimeter of a rectangle is: "+r1.perimeter());

System.out.println("The area of a square is: "+s1.area());

System.out.println("The perimeter of a square is: "+s1.perimeter());

}

}

Q (V)

package lab6Q5;

import java.util.Scanner;

class Rectangle

{

double height;

double breadth;

public Rectangle(){}

public Rectangle(double h, double b)

{

this.height = h;

this.breadth = b;

}

double area()

{

double area = this.height\*this.breadth;

return area;

}

double perimeter()

{

double perimeter = 2\*(this.height+this.breadth);

return perimeter;

}

}

class Square extends Rectangle{

public Square(){}

public Square(double h, double b)

{

super(h,b);

}

}

public class Q5{

public static void main(String[] args)

{

Scanner in = new Scanner(System.in);

Square[] sArray = new Square[10];

for(int i = 0;i<10;i++)

{

System.out.println("Enter side of Square "+(i+1)+":");

double side = in.nextDouble();

sArray[i] = new Square(side,side);

}

for(int i = 0;i<10;i++)

{

System.out.println("Area of square: "+sArray[i].area());

}

}

}

Q (vi)

package lab6Q6;

class Shape

{

public Shape(){}

void print()

{

System.out.println("This is a shape.");

}

}

class Rectangle extends Shape

{

public Rectangle(){}

void print1()

{

System.out.println("This is rectangular shape");

}

}

class Circle extends Shape

{

public Circle(){}

void print2()

{

System.out.println("This is circular shape");

}

}

class Square extends Rectangle

{

public Square(){}

void print3()

{

System.out.println("Square is a rectangle");

}

}

public class Q6

{

public static void main(String[] args)

{

Square s1 = new Square();

s1.print();

s1.print1();

}

}