Task-II

1.Create a class person with properties (name and age)

Class Person:

package OOP;  
  
public class Person {  
 //Private properties(Encapsulation)  
 private String name;  
 private int age;  
 public Person(String name) {  
 this.name = name;  
 this.age = 18; //Default age  
 }  
 //Method to display the name of person  
 public void display(){  
 System.*out*.println("Persons Name:"+name);  
 System.*out*.println("Age:"+age);  
 }  
  
}

Class Main:

package OOP;  
  
public class Main {  
 public static void main(String[]args){  
 // Creating a person object with default age 18  
 Person person1=new Person("Arun");  
 person1.display();  
 Person person2=new Person("Selvi");  
 person2.display();  
 }  
}

Output:

"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\lib\idea\_rt.jar=55981:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\bin" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath C:\Users\AAA\IdeaProjects\Helloworld\out\production\Helloworld OOP.Main

Persons Name:Arun

Age:18

Persons Name:Selvi

Age:18

Process finished with exit code 0

**Explanation:**

1.Encapsulation: The name and age properties are private to restrict direct access

2.Constructors: The constructor sets a default age of 18 when only a name is provided

3.Method:display() prints the persons name and age .

2.Create a class product with parameterized constructor.

**Product.java**

package OOP;  
  
public class Product {  
 int pid;  
 double price;  
 int quantity;  
 //Parameterized constructor  
 public Product(int pid,double price,int quantity){  
 this.pid=pid;  
 this.price=price;  
 this.quantity=quantity;  
 }  
}

**ProductMain.java**

package OOP;  
  
  
import java.util.Scanner;  
  
public class ProductMain {  
 //method to find productid of the highest priced product  
 public static int getHighestPriceProduct(Product[] products) {  
 int highestPricepid = products[0].pid;  
 double highestprice = products[0].price;  
 for (int i = 1; i < products.length; i++) {  
 if (products[i].price > highestprice) {  
 highestprice = products[i].price;  
 highestPricepid = products[i].pid;  
 }  
 }  
 return highestPricepid;  
 }  
 //method to calculate the total amount spent on all products  
 public static double calculateTotalAmountSpent(Product[] products) {  
 double TotalAmount = 0;  
 for (Product p : products) {  
 TotalAmount += p.price \* p.quantity;  
 }  
 return TotalAmount;  
 }  
  
 public static void main(String[] args) {  
 Scanner scanner = new Scanner(System.*in*);  
 Product[] products = new Product[5];  
 //Accept 5 product from user  
 for (int i = 0; i<5; i++) {  
 System.*out*.println("enter productId,Price,quantity for product" + (i + 1) + ":");  
 int pid = scanner.nextInt();  
 double price = scanner.nextDouble();  
 int quantity = scanner.nextInt();  
 products[i] = new Product(pid, price, quantity);  
 }  
 // finding the productid with highest price  
 int highestPricepid = *getHighestPriceProduct*(products);  
 System.*out*.println("The productid with the highest price:" + highestPricepid);  
 double TotalAmountSpent = *calculateTotalAmountSpent*(products);  
 System.*out*.println("Total amount spent on all product:" + TotalAmountSpent);  
 }  
}

**Output:**

**C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\lib\idea\_rt.jar=49907:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\bin" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath C:\Users\AAA\IdeaProjects\Helloworld\out\production\Helloworld OOP.ProductMain**

**enter productId,Price,quantity for product1:**

**101 50.0 2**

**enter productId,Price,quantity for product2:**

**102 60.0 3**

**enter productId,Price,quantity for product3:**

**103 72.0 5**

**enter productId,Price,quantity for product4:**

**104 85.0 6**

**enter productId,Price,quantity for product5:**

**105 90.0 7**

**The productid with the highest price:105**

**Total amount spent on all product:1780.0**

**Process finished with exit code 0**

**Explanation:**

* Class product stores productid,price and quantity
* Has the parameterized constructor
* Product Main class accept 5 products from user and stores them in an array
* Method was been used to calculate the total amount spent and the highest price

3.Create a class name account with data member balance

**Account.java**

package OOP;  
  
public class Account {  
 private double balance;  
  
 //Default constructor(no argument)  
 public Account() {  
 this.balance = 0.0;  
 }  
  
 //constructor with initial balance(with argument)  
 public Account(double initialBalance) {  
 if (initialBalance >= 0) {  
 this.balance = initialBalance;  
 } else {  
 System.*out*.println("Initial balance cannot be negative.");  
 this.balance = 0.0;  
 }  
 }  
  
 //Method to deposit the amount  
 public void deposit(double amount) {  
 if (amount > 0) {  
 balance += amount;  
 System.*out*.println("Deposited:" + amount);  
 } else {  
 System.*out*.println("Deposit amount must be positive.");  
 }  
 }  
  
 public void withdraw(double amount) {  
 if (amount > 0 && amount <= balance) {  
 balance -= amount;  
 System.*out*.println("Withdraw:" + amount);  
 } else if (amount > balance) {  
 System.*out*.println("Insufficient Balance.");  
 } else {  
 System.*out*.println("Withdraw amount must be positive.");  
 }  
 }  
  
 //method to display  
 public void displayBalance() {  
 System.*out*.println("Current Balance" + balance);  
 }  
  
 public static void main(String[] args) {  
 Account acc1 = new Account();  
 Account acc2 = new Account(200);  
 acc1.deposit(1000);  
 acc1.withdraw(200);  
 acc1.displayBalance();  
 acc2.deposit(300);  
 acc2.withdraw(600);  
 acc2.displayBalance();  
 }  
}

**Output**

"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\lib\idea\_rt.jar=50079:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.3\bin" -Dfile.encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-8 -classpath C:\Users\AAA\IdeaProjects\Helloworld\out\production\Helloworld OOP.Account

Deposited:1000.0

Withdraw:200.0

Current Balance800.0

Deposited:300.0

Insufficient Balance.

Current Balance500.0

Process finished with exit code 0

4.Create a base class and sub class

Baseclass:

package OOP;  
  
//Base class  
 class Person1 {  
 String name;  
 int age;  
 //Constructor for Person1  
 public Person1(String name,int age){  
 this.name=name;  
 this.age=age;  
 }  
 //Method to display person details  
 public void displayPersonInfo(){  
 System.*out*.println("Name"+name);  
 System.*out*.println("Age:"+age);  
 }  
}

Subclass

package OOP;  
  
public class Employee extends Person1 {  
 int employeeId;  
 double salary;  
 public Employee(String name, int age,int employeeId,double salary) {  
 super(name, age);  
 this.employeeId = employeeId;  
 this.salary = salary;  
 }  
 public void displayEmployeeInfo(){  
 displayPersonInfo();  
 System.*out*.println("EmployeeId:"+employeeId);  
 System.*out*.println("Salary:"+salary);  
 }  
 }  
 public static void main(String[] args) {  
 Employee emp =new Employee("Arun,20,101,60000.0");  
 emp.displayEmployeeInfo();  
 }