Question 1 )

public class q1 {  
  
 public static int factorial(int n) {  
 if (n == 0) {  
 return 1;   
 } else {  
 return n \* *factorial*(n - 1);  
 }  
 }  
  
 public static void main(String[] args) {  
 System.*out*.println(*factorial*(5));  
  
  
 }  
}



Question 2 )

When its run first check ‘b’ does equal to 0 , if does program will end , if not a MOD% by b and out of the first loop will be 60,36 .afte that 36 ,24. Then 24, 12 and after that ‘a’ equal to 12 and 24%12 equal to 0 so loop will end return a so the output will be 12

Question 3)

public class q3 {  
  
 public static int fibonacci(int n) {  
 if (n == 0) {  
 return 0;  
 } else if (n == 1) {  
 return 1;  
 } else {  
 return *fibonacci*(n - 1) + *fibonacci*(n - 2);  
 }  
 }  
  
  
 public static void main(String[] args) {  
  
 System.*out*.println(*fibonacci*(4));  
  
  
 }  
}



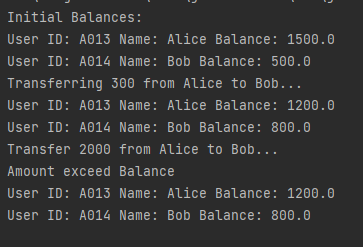
Question 4)

***Account.java***

public class Account {  
  
 String ID;  
 String name;  
 double balance;  
  
 Account(String ID,String name){  
 this.ID=ID;  
 this.name=name;  
 }  
  
 Account(String ID,String name,double balance){  
 this.ID=ID;  
 this.name=name;  
 this.balance=balance;  
 }  
  
 void getID(){  
 System.*out*.println(ID);  
 }  
 void getName(){  
 System.*out*.println(name);  
 }  
 void getBalance(){  
 System.*out*.println(balance);  
 }  
  
  
 double credit(double amount){  
 return balance += amount;  
 }  
  
 void debit(double amount){  
 if (amount <balance){  
 System.*out*.println( balance -= amount);  
 }else{  
 System.*out*.println("Amount exceed Balance");  
 }  
 }  
  
 void transferTo(Account p ,double amount){  
 if (amount <balance){  
 balance -= amount;  
 p.balance += amount;  
  
 }else{  
 System.*out*.println("Amount exceed Balance");  
 }  
 }  
  
 void displayInfo(){  
 System.*out*.println("User ID: "+this.ID+" Name: "+this.name+" Balance: "+this.balance);  
  
 }  
  
}

***TestAccount.java***

public class TestAccount {  
 public static void main(String[] args) {  
 Account account1 = new Account("A013", "Alice", 1500);  
 Account account2 = new Account("A014", "Bob", 500);  
 System.*out*.println("Initial Balances:");  
 account1.displayInfo();  
 account2.displayInfo();  
 System.*out*.println("Transferring 300 from Alice to Bob...");  
 account1.transferTo(account2, 300);  
 account1.displayInfo();  
 account2.displayInfo();  
 System.*out*.println("Transfer 2000 from Alice to Bob...");  
 account1.transferTo(account2, 2000);  
 account1.displayInfo();  
 account2.displayInfo();  
 }  
}



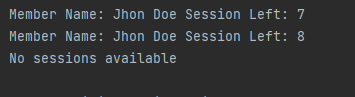
Question 5 )

**GymMember.java**

public class GymMember {  
  
 String memberName;  
 int sessionsLeft;  
  
 GymMember(){  
 this.memberName = null;  
 this.sessionsLeft =0;  
 }  
  
 GymMember(String memberName,int sessionsLeft){  
 this.memberName = memberName;  
 this.sessionsLeft =sessionsLeft;  
 }  
  
 void bookSession(){  
 if (sessionsLeft >0){  
 sessionsLeft -=1;  
 } else{  
 System.*out*.println("No sessions left to book.");  
 }  
 }  
  
 void cancelSession(){  
 sessionsLeft +=1;  
 }  
  
 void displayMemberInfo(){  
 if (sessionsLeft>=1){  
 System.*out*.println("Member Name: "+this.memberName+" Session Left: "+this.sessionsLeft);  
 }else{  
 System.*out*.println("No sessions available");  
 }  
 }  
  
  
  
}

**GymMemberClient.java**

public class GymMemberClient {  
  
 public static void main(String[] args) {  
  
 GymMember member1 = new GymMember("Jhon Doe",10);  
 member1.bookSession();  
 member1.bookSession();  
 member1.bookSession();  
 member1.displayMemberInfo();  
 member1.cancelSession();  
 member1.displayMemberInfo();  
  
 GymMember member2 = new GymMember();  
  
 member2.displayMemberInfo();  
 }  
}



Question 6)

***Room.java***

public class Room {  
 int roomNumber;  
 String roomType;  
 double pricePerNight;  
 boolean isAvailable;  
  
 Room(int roomNumber, String roomType, double pricePerNight, boolean isAvailable) {  
 this.roomNumber = roomNumber;  
 this.roomType = roomType;  
 this.pricePerNight = pricePerNight;  
 this.isAvailable = isAvailable;  
  
 }  
  
 void bookRoom(){  
 if(isAvailable() ){  
 isAvailable = false;  
 System.*out*.println("Room has been booked");  
 }else{  
 System.*out*.println("Room is already booked");  
 }  
 }  
  
 void releaseRoom(){  
 if(isAvailable()){  
 System.*out*.println("Room is already Available");  
 }else{  
 isAvailable = true;  
 System.*out*.println("Room is now Available");  
 }  
 }  
  
 void displayRoomDetails(){  
 System.*out*.println("Room Number: "+roomNumber+  
 " Room type: "+roomType+  
 " Price per night: "+pricePerNight+  
 " Availability: "+isAvailable  
 );  
 }  
  
 boolean isAvailable(){  
 return isAvailable;  
 }  
  
 int getRoomNumber(){  
 return roomNumber;  
 }  
  
}

***Customer.java***

public class Customer {  
 String customerID;  
 String name;  
 Room bookedRoom;  
  
 Customer(String customerID,String name){  
 this.customerID =customerID;  
 this.name =name;  
 this.bookedRoom = null;  
 }  
  
 void bookRoom(Room room){  
 if(room.isAvailable()){  
 room.bookRoom();  
 bookedRoom = room;  
 System.*out*.println(name+" has booked room "+ room.roomNumber);  
 }else{  
 System.*out*.println("Room "+room.roomNumber+" is not available");  
 }  
 }  
  
  
 void displayBookingDetails(){  
 System.*out*.println("Customer ID: "+customerID+" Customer Name: "+ name);  
 if(bookedRoom!=null){  
 bookedRoom.displayRoomDetails();  
 }else{  
 System.*out*.println("No Room is Booked");  
 }  
 }  
}

***RoomCustomer.java***

public class RoomCustomer {  
 public static void main(String[] args) {  
  
 Room room1 = new Room(101,"Single",1500.0,true);  
 Room room2 = new Room(102,"Double",2500.0,true);  
  
 Customer c1 = new Customer("C001","Alice");  
 Customer c2 = new Customer("C002","Bob");  
  
 c1.bookRoom(room1);  
 c1.displayBookingDetails();  
 System.*out*.println(" ");  
  
 c2.displayBookingDetails();  
 System.*out*.println(" ");  
  
 c2.bookRoom(room1);  
  
 c1.bookedRoom.releaseRoom();  
 System.*out*.println(" ");  
  
 c2.bookRoom(room1);  
 System.*out*.println(" ");  
  
 c1.displayBookingDetails();  
 System.*out*.println(" ");  
  
 c2.displayBookingDetails();  
  
  
  
 }  
  
}

