***********************************WEEK-

7************************************* ROLL NO:230701236

1) create an interface Playable with a method play() that takes no arguments and returns void. Create three classes Football, Volleyball, and Basketball that implement the Playable interface and override the play() method to play the respective sports.

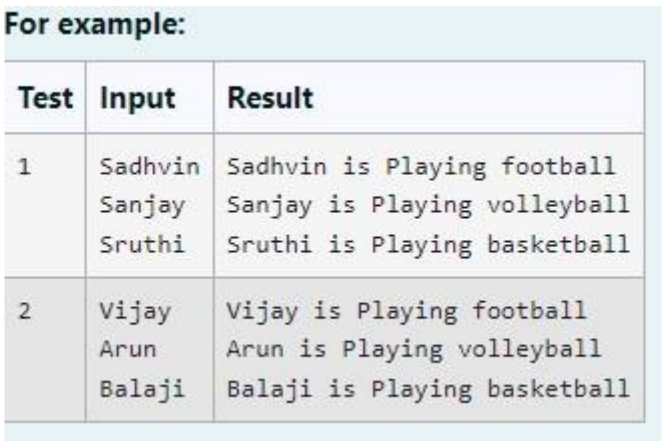
```
interface Playable {
void play();
}
```

```
class Football implements Playable {    String
name;
   public Football(String name){
this.name=name;
   }
  public void play() {
   System.out.println(name+" is Playing football");
  }
}
```

Similarly, create Volleyball and Basketball classes.

Sample output:

Sadhvin is Playing football
Sanjay is Playing volleyball
Sruthi is Playing basketball



For example:

Test	Input	Result
1	Sadhvin Sanjay Sruthi	Sadhvin is Playing football Sanjay is Playing volleyball Sruthi is Playing basketball
2	Vijay Arun Balaji	Vijay is Playing football Arun is Playing volleyball Balaji is Playing basketball

CODE:

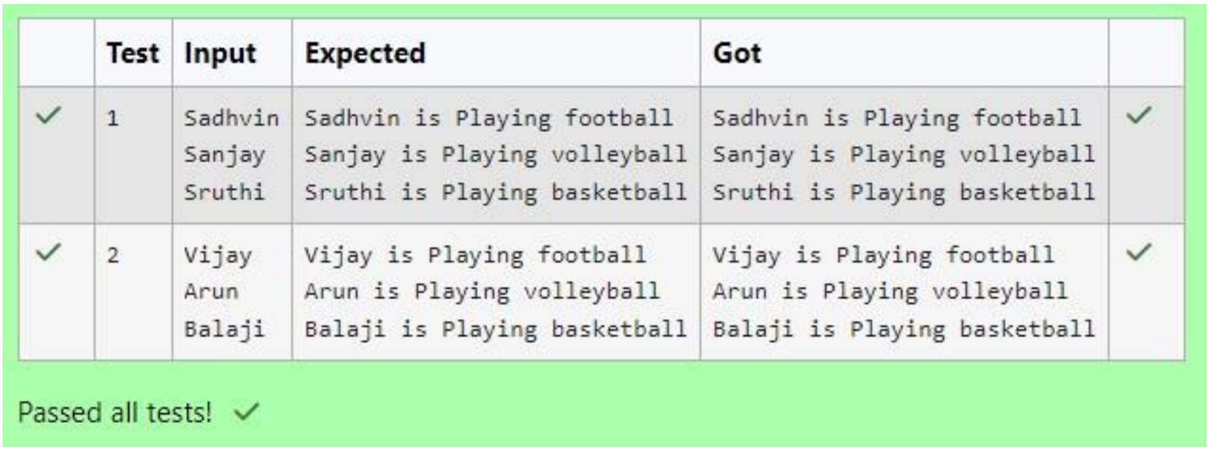
```
import java.util.Scanner;
```

```
// Define the Playable interface interface
Playable {
   // Abstract method to play the respective sport
void play();
}

// Football class implementing Playable interface class
Football implements Playable {
   String name;

   // Constructor     public
Football(String name) {
this.name = name;
   }

   // Override the play method
public void play() {
       System.out.println(name + " is Playing football");
   }
}

// Volleyball class implementing Playable interface class
Volleyball implements Playable {
   String name;
```

```
  // Constructor     public
Volleyball(String name) {
this.name = name;

  }


  // Override the play method
public void play() {
     System.out.println(name + " is Playing volleyball");
  }
}


// Basketball class implementing Playable interface class
Basketball implements Playable {
  String name;


  // Constructor     public
Basketball(String name) {
this.name = name;
  }


  // Override the play method
public void play() {
     System.out.println(name + " is Playing basketball");
  }
}
```

```
// Main class to test the functionality public
class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Input for Football player

        String footballPlayerName = scanner.nextLine();
        Football footballPlayer = new Football(footballPlayerName);

        // Input for Volleyball player

        String volleyballPlayerName = scanner.nextLine();
        Volleyball volleyballPlayer = new Volleyball(volleyballPlayerName);

        // Input for Basketball player

        String basketballPlayerName = scanner.nextLine();
        Basketball basketballPlayer = new Basketball(basketballPlayerName);

        // Call the play method for each player
footballPlayer.play();        volleyballPlayer.play();
basketballPlayer.play();

        scanner.close();
    }
}
```

OUTPUT:



	Test	Input	Expected	Got	
✓	1	Sadhvin Sanjay Sruthi	Sadhvin is Playing football Sanjay is Playing volleyball Sruthi is Playing basketball	Sadhvin is Playing football Sanjay is Playing volleyball Sruthi is Playing basketball	✓
✓	2	Vijay Arun Balaji	Vijay is Playing football Arun is Playing volleyball Balaji is Playing basketball	Vijay is Playing football Arun is Playing volleyball Balaji is Playing basketball	✓

Passed all tests! ✓

2) Create interfaces shown below.

interface Sports {
public void setHomeTeam(String name); public
void setVisitingTeam(String name);
}
interface Football extends Sports { public void homeTeamScored(int points);
public void visitingTeamScored(int points);} create a class College that implements the Football interface and provides the necessary functionality to the abstract methods. sample Input:

Rajalakshmi
Saveetha
22 21

Output:

Rajalakshmi 22 scored Saveetha
21 scored
Rajalakshmi is the Winner!

Code:

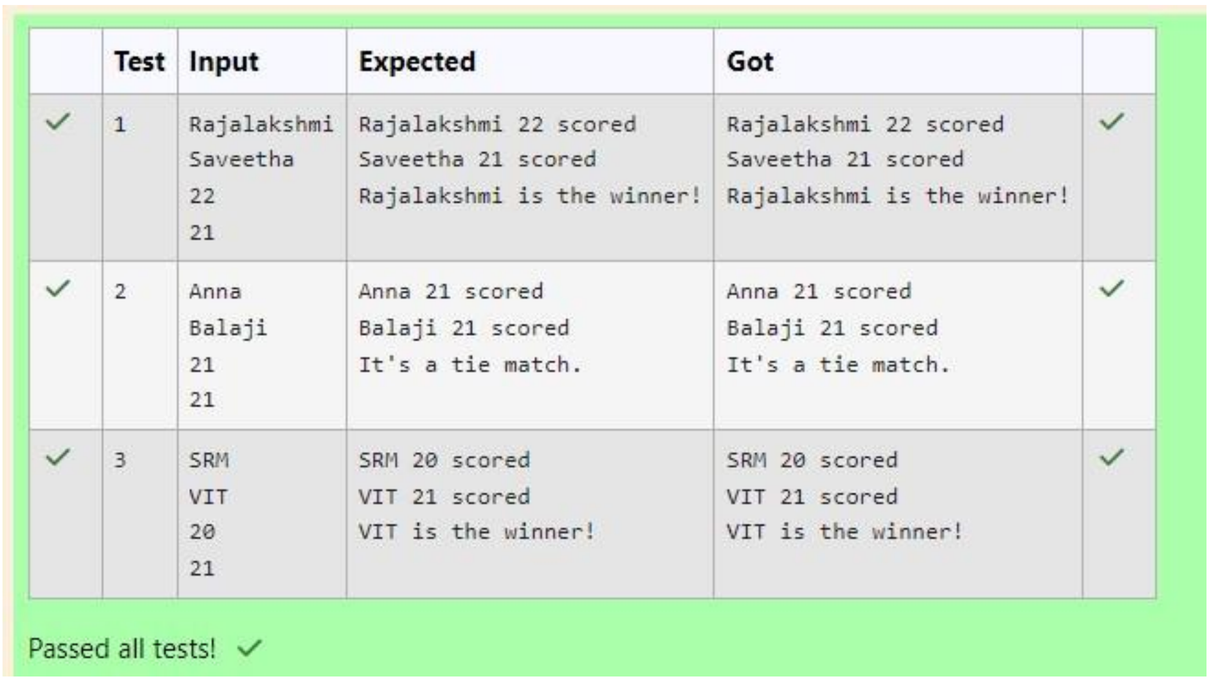
```
import java.util.Scanner;


interface Sports {    void

setHomeTeam(String name);    void

setVisitingTeam(String name);
```

```
}

interface Football extends Sports {     void
homeTeamScored(int points);     void
visitingTeamScored(int points);
}

class College implements Football {
private String homeTeam;     private
String visitingTeam;     private int
homeTeamPoints = 0;     private int
visitingTeamPoints = 0;

   public void setHomeTeam(String name) {
this.homeTeam = name;
   }

   public void setVisitingTeam(String name) {
this.visitingTeam = name;
   }

   public void homeTeamScored(int points) {
homeTeamPoints += points;
       System.out.println(homeTeam + " " + points + " scored");
   }

   public void visitingTeamScored(int points) {        visitingTeamPoints += points;
```

```
        System.out.println(visitingTeam + " " + points + " scored");
    }

    public void winningTeam() {         if
(homeTeamPoints > visitingTeamPoints) {
            System.out.println(homeTeam + " is the winner!");
        } else if (homeTeamPoints < visitingTeamPoints) {
            System.out.println(visitingTeam + " is the winner!");
        } else {
            System.out.println("It's a tie match.");
        }
    }
}

public class Main {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        // Get home team name
        String hname = sc.nextLine();

        // Get visiting team name
        String vteam = sc.nextLine();

        // Create College object
College match = new College();
```

```
match.setHomeTeam(hname);
match.setVisitingTeam(vteam);


        // Get points scored by home team
int htpoints = sc.nextInt();
match.homeTeamScored(htpoints);

        // Get points scored by visiting team
int vtpoints = sc.nextInt();
match.visitingTeamScored(vtpoints);

        // Determine and print the winning team
match.winningTeam();

        sc.close();
    }
}
```

Output:



	Test	Input	Expected	Got	
✓	1	Rajalakshmi Saveetha 22 21	Rajalakshmi 22 scored Saveetha 21 scored Rajalakshmi is the winner!	Rajalakshmi 22 scored Saveetha 21 scored Rajalakshmi is the winner!	✓
✓	2	Anna Balaji 21 21	Anna 21 scored Balaji 21 scored It's a tie match.	Anna 21 scored Balaji 21 scored It's a tie match.	✓
✓	3	SRM VIT 20 21	SRM 20 scored VIT 21 scored VIT is the winner!	SRM 20 scored VIT 21 scored VIT is the winner!	✓

Passed all tests! ✓

3) RBI issues all national banks to collect interest on all customer loans.

Create an RBI interface with a variable String parentBank="RBI" and abstract method rateOfInterest().

RBI interface has two more methods default and static method.

default void policyNote() {

System.out.println("RBI has a new Policy issued in 2023.");

}

static void regulations(){

System.out.println("RBI has updated new regulations on 2024.");

}

Create two subclasses SBI and Karur which implements the RBI interface.

Provide the necessary code for the abstract method in two sub-classes.

Sample Input/Output:

RBI has a new Policy issued in 2023
RBI has updated new regulations in 2024.
SBI rate of interest: 7.6 per annum.
Karur rate of interest: 7.4 per annum.

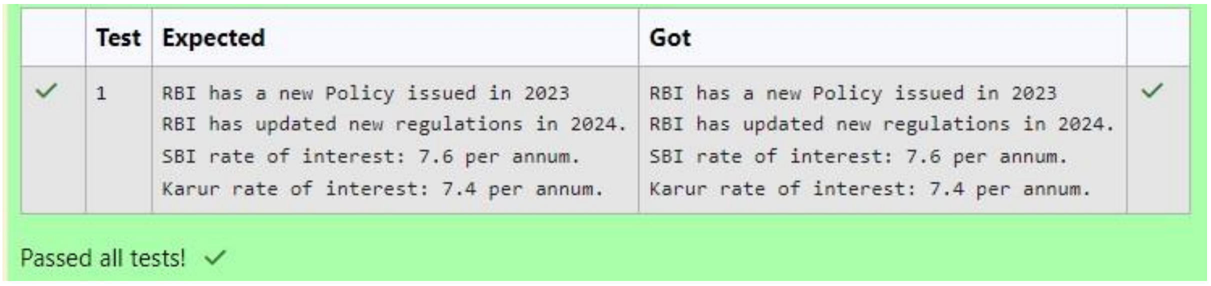
Code:

interface RBI {

```
   String parentBank = "RBI";


   double rateOfInterest();
default void policyNote() {
       System.out.println("RBI has a new Policy issued in 2023");
   }
   static void regulations() {
       System.out.println("RBI has updated new regulations in 2024.");
   }
}


class SBI implements RBI {


   public double rateOfInterest() {
return 7.6;
   }
}
class Karur implements RBI {     public
double rateOfInterest() {        return
7.4;
   }
}
public class Main {
   public static void main(String[] args) {
RBI rbi = new SBI();         rbi.policyNote();
RBI.regulations();
       SBI sbi = new SBI();
```

```
        System.out.println("SBI rate of interest: " + sbi.rateOfInterest() + " per annum.");


        Karur karur = new Karur();
        System.out.println("Karur rate of interest: " + karur.rateOfInterest() + " per annum.");
    }
}
```

Output:



	Test	Expected	Got	
✓	1	RBI has a new Policy issued in 2023 RBI has updated new regulations in 2024. SBI rate of interest: 7.6 per annum. Karur rate of interest: 7.4 per annum.	RBI has a new Policy issued in 2023 RBI has updated new regulations in 2024. SBI rate of interest: 7.6 per annum. Karur rate of interest: 7.4 per annum.	✓

Passed all tests! ✓