







```
1 // Harini. R 192324108
2 //JP section-2_3 question-3,4,5
3 package interfacePractice;
4
5 interface BikeParts1 {
6     String MAKE = "Oracle Bikes";
7     String getHandleBars();
8     void setHandleBars(String newValue);
9     String getTyres();
10    void setTyres(String newValue);
11    String getSeatType();
12    void setSeatType(String newValue);
13 }
14
15 interface MountainParts1 {
16     String TERRAIN = "off_road";
17     String getSuspension();
18     void setSuspension(String newValue);
19     String getType();
20     void setType(String newValue);
21 }
22
23 interface RoadParts1 {
24     String TERRAIN = "track_racing";
25     String getTyreWidth();
26     void setTyreWidth(String newValue);
27     String getPostHeight();
28     void setPostHeight(String newValue);
29 }
30
31 abstract class Bike1 implements BikeParts1 {
32     private String handleBars;
33     private String tyres;
34     private String seatType;
35
36     @Override
37     public String getHandleBars() {
38         return handleBars;
39     }
39 }
```



```
77     public String getSuspension() {
78         return suspension;
79     }
80
81     @Override
82     public void setSuspension(String newValue) {
83         this.suspension = newValue;
84     }
85
86     @Override
87     public String getType() {
88         return type;
89     }
90
91     @Override
92     public void setType(String newValue) {
93         this.type = newValue;
94     }
95
96     @Override
97     public String toString() {
98         return super.toString() + ", Suspension: " + suspension + ", Type: " + type;
99     }
100 }
101
102 class RoadBike1 extends Bike1 implements RoadParts1 {
103     private String tyreWidth;
104     private String postHeight;
105
106     @Override
107     public String getTyreWidth() {
108         return tyreWidth;
109     }
110
111     @Override
112     public void setTyreWidth(String newValue) {
113         this.tyreWidth = newValue;
114     }
115 }
```

```
115
116● @Override
117 public String getPostHeight() {
118     return postHeight;
119 }
120
121● @Override
122 public void setPostHeight(String newValue) {
123     this.postHeight = newValue;
124 }
125
126● @Override
127 public String toString() {
128     return super.toString() + ", TyreWidth: " + tyreWidth + ", PostHeight: " + postHeight;
129 }
130 }
131
132 public class BikeDriver1 {
133● public static void main(String[] args) {
134     MountainBike1 mountainBike = new MountainBike1();
135     RoadBike1 roadBike = new RoadBike1();
136
137     mountainBike.setHandleBars("Flat Bars");
138     mountainBike.setTyres("Knobby Tyres");
139     mountainBike.setSeatType("Racing Seat");
140     mountainBike.setSuspension("Full Suspension");
141     mountainBike.setType("Trail Bike");
142
143     roadBike.setHandleBars("Drop Bars");
144     roadBike.setTyres("Thin Tyres");
145     roadBike.setSeatType("Comfortable Seat");
146     roadBike.setTyreWidth("23mm");
147     roadBike.setPostHeight("22");
148
149     System.out.println(mountainBike);
150     System.out.println("Initial RoadBike Post Height: " + roadBike.getPostHeight());
151     roadBike.setPostHeight("20");
152     System.out.println("Updated RoadBike Post Height: " + roadBike.getPostHeight());
```

```
153         System.out.println(roadBike);  
154     }  
155 }  
156
```

 Problems  Javadoc  Declaration  Console  Coverage  Error Log

<terminated> BikeDriver1 [Java Application] C:\Users\harin\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_22.0.1.v20240426-1149\jre\bin\javaw.exe (2

HandleBars: Flat Bars, Tyres: Knobby Tyres, SeatType: Racing Seat, Suspension: Full Suspension, Type: Trail Bike
Initial RoadBike Post Height: 22
Updated RoadBike Post Height: 20
HandleBars: Drop Bars, Tyres: Thin Tyres, SeatType: Comfortable Seat, TyreWidth: 23mm, PostHeight: 20

```
1 // Harini. R 192324108
2 //JP section-2_3 question-6(a)
3 public class Main {
4     public static void main(String[] args) {
5         Animal animal = new Animal();
6         animal.makeNoise();
7         Dog dog = new Dog();
8         dog.makeNoise();
9         Animal animaldog = new Dog();
10        animaldog.makeNoise();
11    }
12 }
13 class Animal {
14     public void makeNoise() {
15         System.out.println("talk");
16     }
17 }
18 class Dog extends Animal {
19     @Override
```



```
1 // Harini. R 192324108
2 //JP section-2_3 question-6(a)
3 public class Main {
4     public static void main(String[] args) {
5         Animal animal = new Animal();
6         animal.makeNoise();
7         Dog dog = new Dog();
8         dog.makeNoise();
9         Animal animaldog = new Dog();
10        animaldog.makeNoise();
11    }
12 }
13 class Animal {
14     public void makeNoise() {
15         System.out.println("talk");
16     }
17 }
18 class Dog extends Animal {
19     @Override
20     public void makeNoise() {
21         System.out.println("Bark");
22     }
23 }
24
```



input

talk
Bark
Bark

```

1 // Harini. R 192324108
2 //JP section-2_3 question-6(b)
3 public class Main {
4     public static void main(String[] args) {
5         Animal animal = new Animal();
6         animal.makeNoise();
7         Dog dog = new Dog();
8         dog.makeNoise();
9         Animal animaldog = new Dog();
10        animaldog.makeNoise();
11        if (animal instanceof Animal)
12            System.out.println("animal is Animal");
13        if (dog instanceof Animal)
14            System.out.println("dog is Animal");
15        if (animaldog instanceof Animal)
16            System.out.println("animaldog is Animal");
17        if (animal instanceof Dog)
18            System.out.println("animal is Dog");
19    }
20 }
21 class Animal {
22     public void makeNoise() {
23         System.out.println("talk");
24     }
25 }
26 class Dog extends Animal {
27     @Override
28     public void makeNoise() {
29         System.out.println("Bark");
30     }
31 }

```

```

talk
Bark
Bark
animal is Animal
dog is Animal
animaldog is Animal

```

input