

Driver.java

```
1 package class16;
2
3 import java.util.ArrayList;
4
5 public class Driver {
6
7     public static void main(String[] args) {
8         Professor me = new Professor("Jeff", "Hill", "B012345ABC");
9         System.out.println(me);
10        System.out.println(me.doQuiz());
11
12        Student you = new Student("Grace", "Hopper", "B0987654ZYX");
13        System.out.println(you);
14        System.out.println(you.doQuiz());
15
16        Human studentOne = new Student("Steve", "Jobs", "B123456QWR");
17        System.out.println(studentOne.breathe());
18        System.out.println(me.breathe());
19        System.out.println(you.breathe());
20
21        System.out.println(studentOne);
22        System.out.println(studentOne.doQuiz());
23
24        System.out.println("***** POLYMORPHIC COLLECTION DEMO
*****");
25        ArrayList<Human> roster = new ArrayList();
26        roster.add(me);
27        roster.add(you);
28        roster.add(studentOne);
29
30        for (Human eachOne: roster) {
31            System.out.println(eachOne.toString());
32            System.out.println(eachOne.doQuiz());
33            System.out.println(eachOne.breathe());
34        } // end for
35    } // end main
36 } // end Driver
```

Human.java

```
1 package class16;
2
3 public abstract class Human {
4     private final String fName;
5     private final String lName;
6     private final String bearID;
7
8     public Human(String fName, String lName, String bearID) {
9         this.fName = fName;
10        this.lName = lName;
11        this.bearID = bearID;
12    } // end ctor
13
14    @Override
15    public abstract String toString();
16
17    public abstract String doQuiz();
18
19    public String breathe() {
20        return this + " breathes.";
21    } // end breathe
22
23    public String getBearID() {
24        return this.bearID;
25    } // end getBearID
26
27    public String getfName() {
28        return this.fName;
29    } // end getfName
30
31    public String getlName() {
32        return this.lName;
33    } // end getlName
34
35 } // end Human
```

Student.java

```
1 package class16;
2
3 public class Student extends Human {
4
5     public Student(String fName, String lName, String bearID) {
6         super(fName, lName, bearID);
7     } // end ctor
8
9     @Override
10    public String doQuiz() {
11        return "My answer is: " + Math.random();
12    } // end takeQuiz
13
14    @Override
15    public String toString() {
16        return "This student named " + this.getfName() + " " + this.getlName() +
17            " Bear ID #: " + this.getBearID();
18    } // end toString
19 } // end Student
```

Professor.java

```
1 package class16;
2
3 public class Professor extends Human {
4
5     public Professor(String fName, String lName, String bearID) {
6         super(fName, lName, bearID);
7     } // end ctor
8
9     @Override
10    public String doQuiz() {
11        return "What is the square root of PI?";
12    } // end giveQuiz
13
14    @Override
15    public String toString() {
16        return "This professor named " + this.getfName() + " " + this.getlName() +
17            " Bear ID #: " + this.getBearID();
18    } // end toString
19 } // end Professor
```