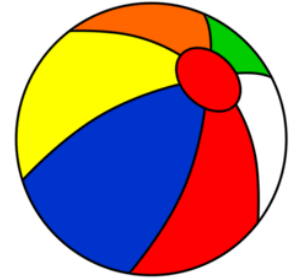


Problem Set 4 Exercise #29: Balls

Reference: Lecture 10 OOP Unit 3 notes

Learning objectives: Object-oriented programming; An array of objects

Estimated completion time: 45 minutes



Problem statement:

Let's create a class called **Ball**. A ball has two attributes, *colour* (a string) and *radius* (a double). The **Ball** class supports the following operations:

- `Ball (String colour, double radius) // create a ball`
- `getColour()` and `getRadius()` // return data of a ball
- `equals(Ball another) // this ball equals to another ball?`
- `toString() // return e.g. "[colour = Red, radius = 5]"`

In the user program,

- i. Create an array of 3 balls with given colour and radius.
- ii. Check whether any two balls are the same (i.e. have the same radius and colour ignoring case).
- iii. Print out the radius of the biggest ball.

Sample run #1:

```
Enter colour and radius of ball 1: yellow 22
Enter colour and radius of ball 2: blue 20
Enter colour and radius of ball 3: yellow 21
Three balls are all different
The largest radius is: 22.0
```

Sample run #2:

```
Enter colour and radius of ball 1: red 11.5
Enter colour and radius of ball 2: green 11.5
Enter colour and radius of ball 3: red 11.5
1st and 3rd balls are the same
The largest radius is: 11.5
```

Sample run #3:

```
Enter colour and radius of ball 1: Black 15  
Enter colour and radius of ball 2: Pink 15  
Enter colour and radius of ball 3: Pink 15  
2nd and 3rd balls are the same  
The largest radius is: 15.0
```

Sample run #4:

```
Enter colour and radius of ball 1: rainbow 32.1  
Enter colour and radius of ball 2: Rainbow 32.1  
Enter colour and radius of ball 3: RAINBOW 32.1  
Three balls are all the same  
The largest radius is: 32.1
```

Note:

Have you noticed that the parameters taken by the constructor of the **Ball** class happens to have the same names as the attributes of that class? In this case, the parameters will shadow the attributes inside the constructor. The way out is to use “**this**” keyword to explicitly refer to the attributes where necessary.