CECS 277 – Lab 11

Ball Selector – Singleton Pattern

Create a program that allows the user to select a Ball object by entering a color. Create the Ball class as a singleton to ensure that there is only one instance of each of the different colors (ie. there is only one 'Red' ball that the user can play with), by using a HashMap with the color as the key, and the corresponding Ball object as the value. The getInstance method should check if that color ball is already in the map, if it is, then return it, otherwise construct it and return it. Once the user chooses a ball, let them choose to bounce or roll the ball. The Ball object keeps track of the number of times the user has bounced and/or rolled that particular color ball.

```
                    Ball
─────────────────────────────────────────
 – static HashMap<String, Ball> colors
 – String color
 – int bounces
 – int rolls
─────────────────────────────────────────
 – Ball( String c )
 + static Ball getInstance( String c )
 + void bounce()
 + void roll()
 + String toString()
```

Example Output:
```
Choose a ball color (q to quit):
Red
1. Roll ball
2. Bounce ball
1

You roll the Red ball.

Red Ball:
--------
Rolls: 1
Bounces: 0

Choose a ball color (q to quit):
Yellow
1. Roll ball
2. Bounce ball
2

You bounce the Yellow ball.

Yellow Ball:
--------
Rolls: 0
Bounces: 1

Choose a ball color (q to quit):
Red
1. Roll ball
2. Bounce ball
1

You roll the Red ball.
```

```
Red Ball:
--------
Rolls: 2
Bounces: 0

Choose a ball color (q to quit):
Red
1. Roll ball
2. Bounce ball
2

You bounce the Red ball.

Red Ball:
--------
Rolls: 2
Bounces: 1

Choose a ball color (q to quit):
Yellow
1. Roll ball
2. Bounce ball
2

You bounce the Yellow ball.

Yellow Ball:
--------
Rolls: 0
Bounces: 2

Choose a ball color (q to quit):
q
```