

Rectangle

Rectangle

- **Authors:** Rudd Fawcett
- **Program:** `Rectangle.java`, `RectangleTest.java`
- **Due:** 1/08/2016

`java RectangleTest.java`

```
Java - RectangleTest.java:26 ⚠️
Square:
Rectangle: width=1, height=1

Rectangle:
Rectangle: width=4, height=16

Square?
Rectangle: width=8, height=8
Exception in thread "main" java.lang.IllegalArgumentException: You can't have a rectangle with a zero side length!
    at Rectangle.<init>(Rectangle.java:38)
    at RectangleTest.main(RectangleTest.java:19)
[Finished in 0.592s]
```

`Rectangle.java`

```

1  /**
2   * Rectangle
3   * Constructs a rectangle.
4   */
5   * @author   Rudd Fawcett
6   * @course   Period 6 AP CS, Ms. Litvin
7   * @due      2015-12-07
8   */
9   public class Rectangle {
10    /**
11     * The width of the rectangle.
12     */
13     private int width;
14    /**
15     * The height of the rectangle.
16     */
17     private int height;
18
19    /**
20     * Constructs a 1x1 square.
21     */
22     public Rectangle() {
23         this(1, 1);
24     }
25
26    /**
27     * Constructs a square with a given side length.
28     */
29     public Rectangle(int s) {
30         this(s, s);
31     }
32
33    /**
34     * Constructs a rectangle with a width and height.
35     */
36     public Rectangle(int w, int h) {
37         if (w <= 0 || h <= 0) {
38             throw new IllegalArgumentException("You can't have a rectangle with a zero side length!");
39         }
40
41         this.width = w;
42         this.height = h;
43     }
44
45    /**
46     * Returns whether the rectangle is a square.
47     */
48     public boolean isSquare() {
49         return width == height;
50     }
51
52    /**
53     * Makes the rectangle into a square with roughly the same area.
54     */
55     public void quadratize() {
56         int area = width * height;
57         int side = (int) Math.sqrt(area);
58
59         width = side;
60         height = side;
61     }
62
63    /**
64     * Gives the current properties of the rectangle.
65     */
66     public String toString() {
67         return "Rectangle: width=" + width + ", height=" + height;
68     }
69 }
70

```