

Defining a rectangle's dimensions and calculating its diagonal

Abstract:

The problem I explored in this project was about the measurements of objects, specifically rectangles, and how to calculate their diagonals. This could be applied to architecture or engineering because building physical objects needs very specific and precise measurements, so a program like this could help in a similar situation. To better understand the problem, I created rectangles and then calculated their diagonals. A CS concept I used in this project was that I used arrays from what we learned in class to put all the rectangles into a list to print them. My key findings were of the rectangles and their measurements.

Results:

I only ran Tester.java which used the Rectangle class and Rectangle.java. I had to run it multiple times with a few changes each time because of mistakes.

These are the results I got which confirmed the height and width of a given rectangle with its calculated diagonal. The first four numbers are just to confirm that the correct measurements are there, and then the rest of the data is the given measurements with their diagonals.

```
4.0
5.0
2.2
2.2
Height: 2.2, Width: 2.2, Diagonal: 3.111269904655767
Height: 1.0, Width: 1.0, Diagonal: 1.4142135623730951
Height: 2.0, Width: 2.0, Diagonal: 2.8284271247461903
Height: 3.0, Width: 3.0, Diagonal: 4.242640687119285
Height: 4.0, Width: 4.0, Diagonal: 5.656854249492381
Height: 1.0, Width: 1.0, Diagonal: 1.4142135623730951
Height: 2.0, Width: 2.0, Diagonal: 2.8284271247461903
Height: 3.0, Width: 3.0, Diagonal: 4.242640687119285
Height: 5.0, Width: 5.0, Diagonal: 7.0710678118654755
```

Caption: These are the rectangle measurements and the diagonal measurements from the program.

With the outcome of my project, I can conclude that these rectangles are rectangles and have calculated diagonals.

Extensions:

There were no extensions for this project.

Reflection:

1. Defining a variable is when you give it a type and keyword and modifiers. Initializing a variable is when you give it a value.
2. Overloading a method is when you use the same name to define many methods.
3. Access methods are used to define a class or method with private, public, protected, etc, which controls the visibility.
4. A static method is when they can be called through the class name and don't need to have an object attached but a non-static method is the opposite.
5. You should keep working and go to TA hours to get help with your project and you shouldn't use your late days because you have until Sunday at 10pm to finish your project.
6. Depending on how much of your project you have left, you should use your late days. You should use them if there is a lot of the project left to finish, but if you are almost finished, you should do the report and then just turn it in as it is. If you used all your 10 late days, you should email your professor and explain your situation, but still do the report and turn it in as it is because it is better to get a few points than 0 points.
7. You should go to Tuesday's lab period because as long as you go to one and do the work you can get credit for it. If you can't get to either lab period, you should email your professor and lab instructor and let them know and ask what you should do to still get credit for it.
8. I can go to TA hours on Sunday 4-7pm and 7-10pm, and again on Monday from 4-7pm and 7-10pm. I can go to Professor Harper's office hours from 9-10am on Mondays.

Acknowledgements:

For this project, I worked with Kamalani who is in my class and I also looked at the w3schools java page: <https://www.w3schools.com/java/default.asp>.