Part 9: Integration Testing

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After all this unit testing, it's very tempting to assume that good unit tests provide everything you need to ensure your code will work properly. That's a very risky assumption. Even if all the individual elements in your project work, there's always a chance that additional issues will be uncovered when you test the project as a whole. Let's think of a simple example.

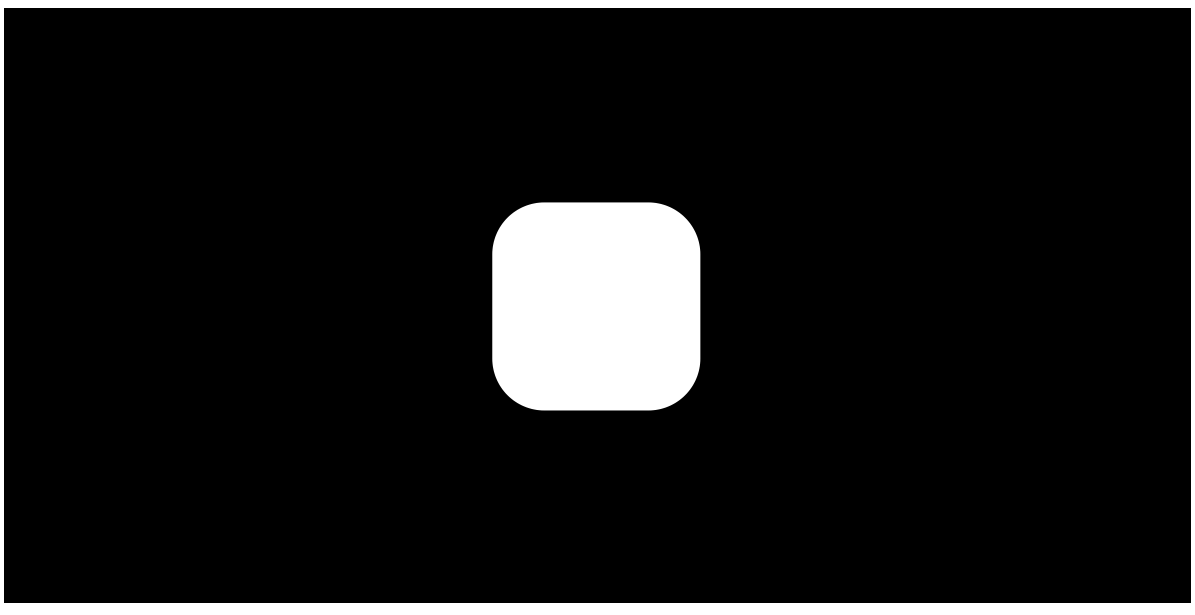
How you measure temperature is sometimes a contentious issue. Imagine you have two developers, working together on a project to read the temperature from a sensor and use that to control a temperature alarm (a very noisy one) that will sound if the temperature detected is too high. One developer is American, he works on the code for the thermal sensor class. The other developer is from England, he is in charge of the alarm control class.

Both developers are very capable and diligent, creating comprehensive unit tests for their respective classes. In the case of the alarm control class, the developer used the Mock library to simulate the input coming from the thermal sensor class. They're both very satisfied that their respective unit tests are passing and decide to do a live test, that is, with their software connected to both the thermal sensor and the alarm. The alarm starts sounding right away and the building has to be evacuated. Oops. What happened?

The American developer coded the sensor class using the Fahrenheit scale, while the English developer has his alarm control class using Celsius. A typical room temperature measurement of 75F would be seen as life-threatening by the alarm control class, since it thinks the sensor is reporting 75C (167F).

For our integration tests, we want to know if all of our code works together, as a whole. To accomplish this, we create a calculation scenario where all of our classes are working together, and confirm that our calculator produces the correct result.

Integration Testing



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Now let's work on integration testing.

What we basically want to know is if, when

we put all the pieces of the module together, when we integrate them,

do they work?

Do they produce the expected results?

Can we accept that the module works as

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