



Test Doubles



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What's a Test Double?

Any kind of pretend object that is used in place of a real object for testing purposes.

- Name coined by Gerard Meszaros.
- Comes from the notion of Stunt Doubles in movies.



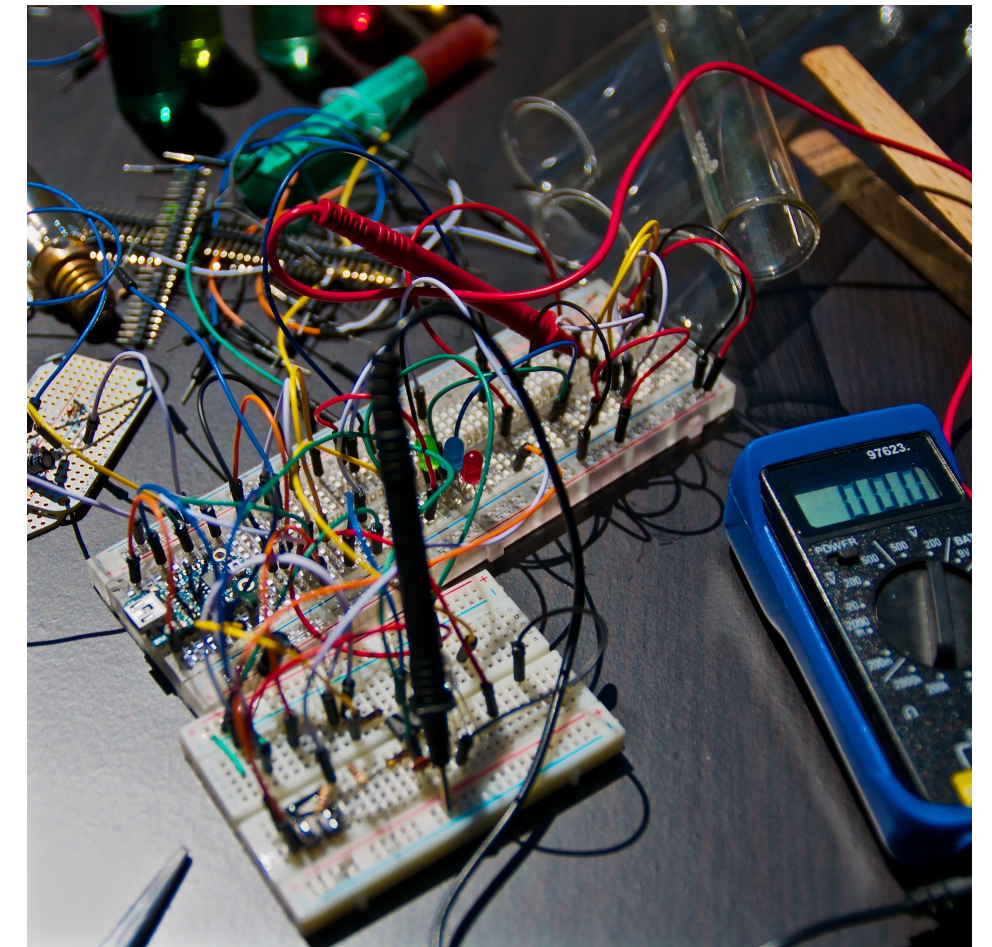
Bobby Holland Hanton and Chris Hemsworth. Instagram/@bobbydazzler84

Tests in TDD

Should be fast, isolated, specific, deterministic.

Shouldn't depend on data or other fixtures outside the control of each test case.

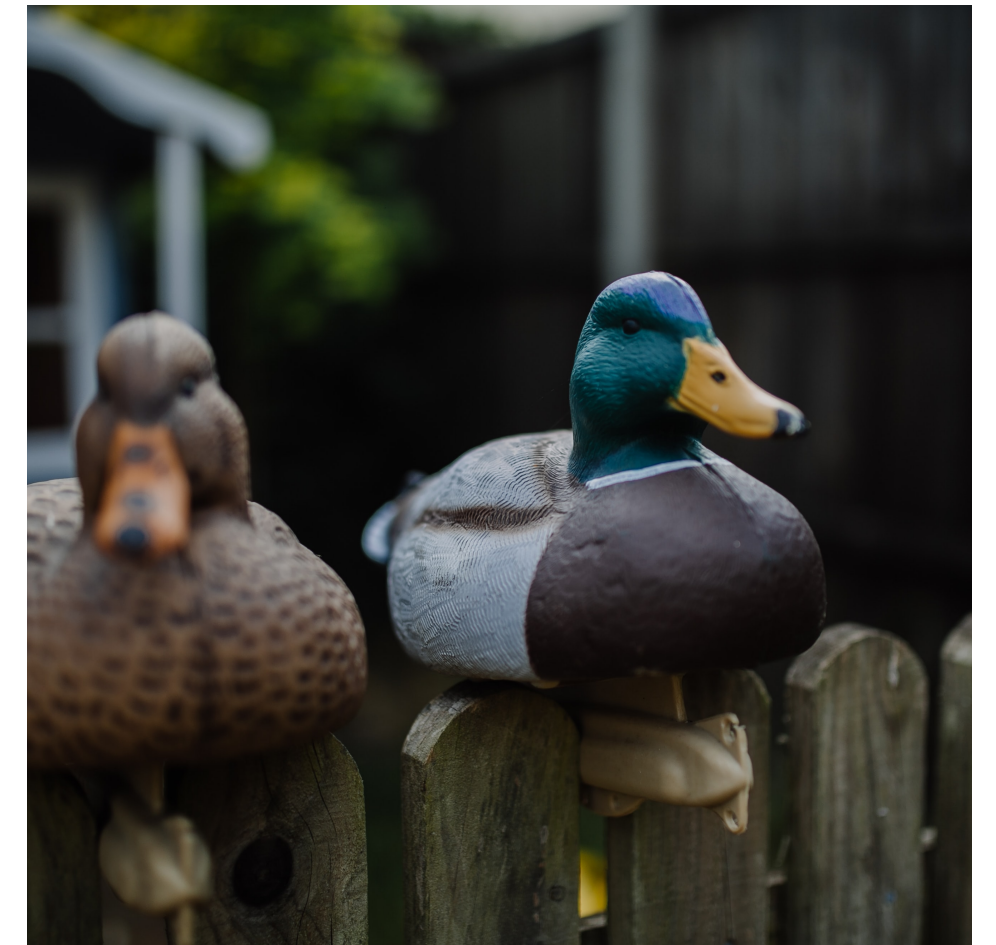
- File system
- Databases
- Network communications
- Hardware systems
- ...



Types of test double

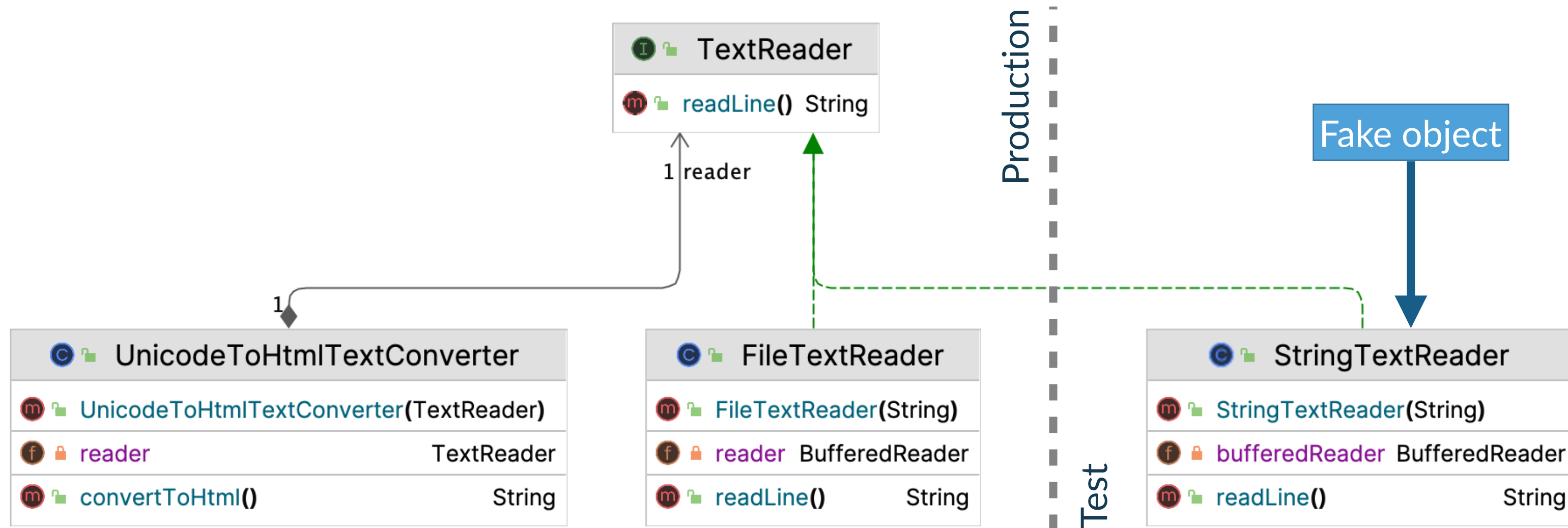
Meszaros defined five particular kinds of double.

- Dummy
- Fake
- Stubs
- Spies
- Mocks



Fake

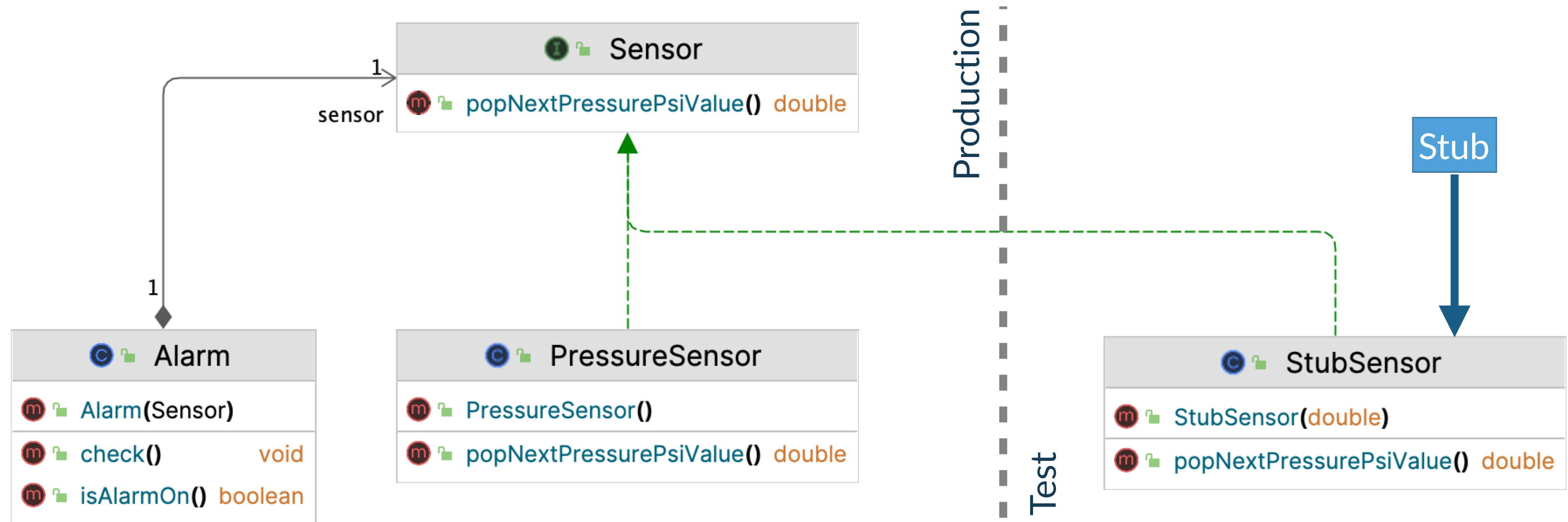
Fake objects actually have working implementations, but usually take some shortcut which makes them not suitable for production.



Example: <https://github.com/dario-campagna/unicode-to-html-text-converter>

Stub

Stubs provide canned answers to calls made during the test, usually not responding at all to anything outside what's programmed in for the test.



Example: <https://github.com/dario-campagna/tire-pressure-monitoring-system>

Mock

Mocks are objects pre-programmed with expectations which form a specification of the calls they are expected to receive.

```
public void testOrderSendsMailIfUnfilled() {  
    Order order = new Order(TOMATO, 51);  
    Mock warehouse = mock(Warehouse.class);  
    Mock mailer = mock(MailService.class);  
    order.setMailer((MailService) mailer.proxy());  
  
    mailer.expects(once()).method("send");  
    warehouse.expects(once()).method("hasInventory")  
        .withAnyArguments()  
        .will(returnValue(false));  
  
    order.fill((Warehouse) warehouse.proxy());  
}
```

Behavior under test (using jMock): we want to send an email message if we fail to fill an order.



References



Mocks Aren't Stubs

<https://martinfowler.com/articles/mocksArentStubs.html>

Growing Object Oriented Software

Steve Freeman and Nat Pryce

<http://www.growing-object-oriented-software.com>