

# Test Doubles

- Ensure our unit tests are
  - Isolated
  - Testing a unit
  - Repeatable / Deterministic
  - Stable
- Injected via
  - Constructor
  - Parameter
  - Setter



# Test Doubles

As described by Martin Fowler in his article "[Mocks aren't stubs](#)"



Martin Fowler

## What is a test double?

Test Double is a generic term used to describe any case where you replace a production object for testing purposes. Test doubles come in many forms, for example...



### Dummy

Empty, minimal implementations. Usually just used to fill parameter lists.



### Fake

Have some made-up or simplified implementation used only for testing. (ex: in memory database)



### Stub

Provide pre-canned returns to method calls. (ex: `dice.roll()` always produces a 4)



### Spy

Often calls REAL behavior, but keeps track of how it was called (how many times, by whom, with what params, etc) to test interactions as well as state.



### Mock

Stubbed behavior with pre-programmed expectations for how they'll be called. Interaction-based testing.