A.STEFANCHUK IT STEP

UNIT TESTING

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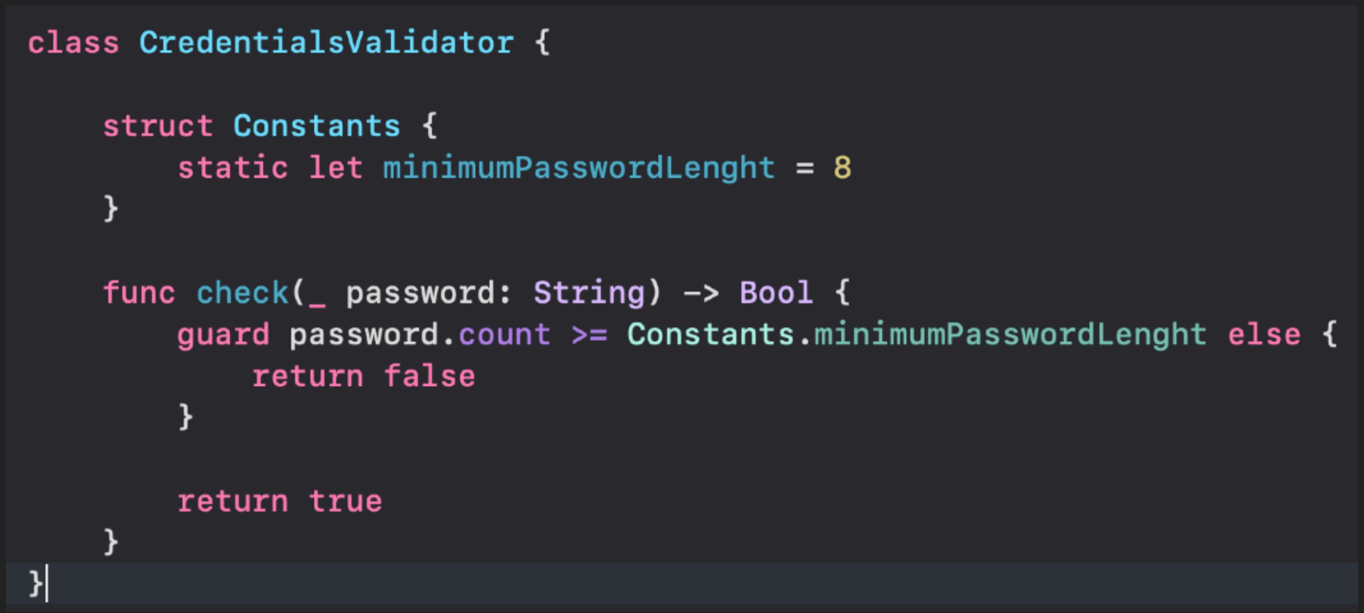
- Unit tests are executed very quickly (in milliseconds)
- We test units of code in isolation - if class is dependent on some other classes -> we will control that (about that later)
- Failing unit test should clearly point out the problem in code

UNIT TEST EXAMPLE



```
class CredentialsValidator {

    struct Constants {
        static let minimumPasswordLenght = 8
    }

    func check(_ password: String) -> Bool {
        guard password.count >= Constants.minimumPasswordLenght else {
            return false
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        return true
    }
}
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Class to be tested

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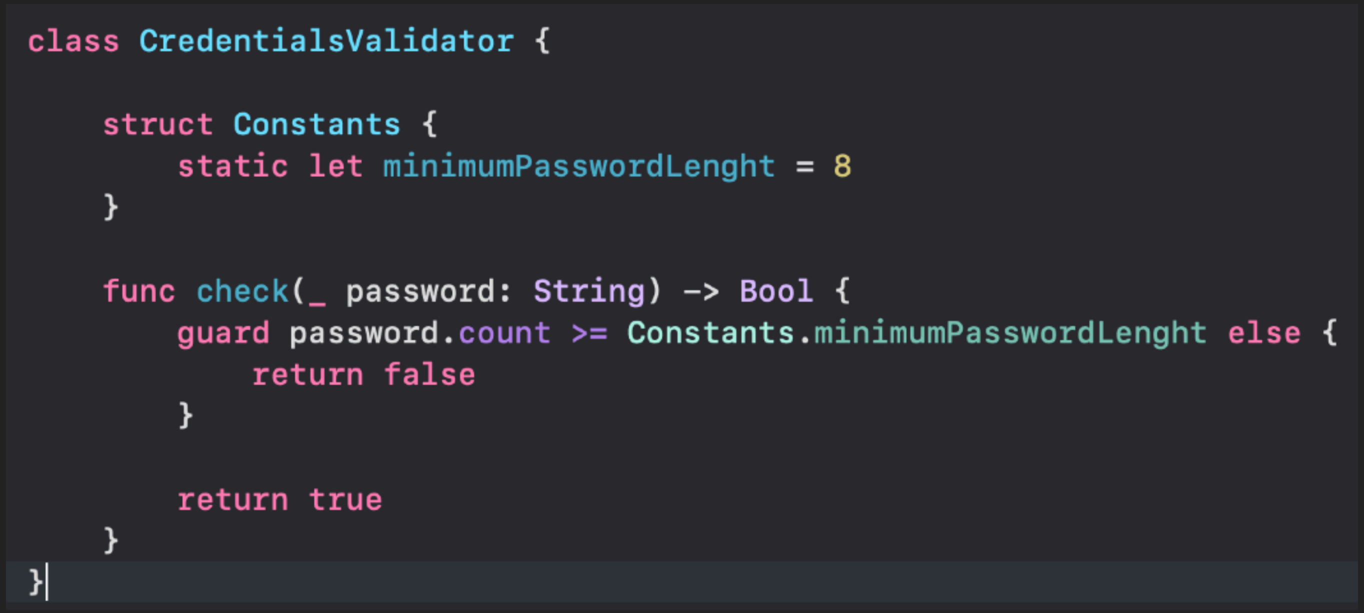

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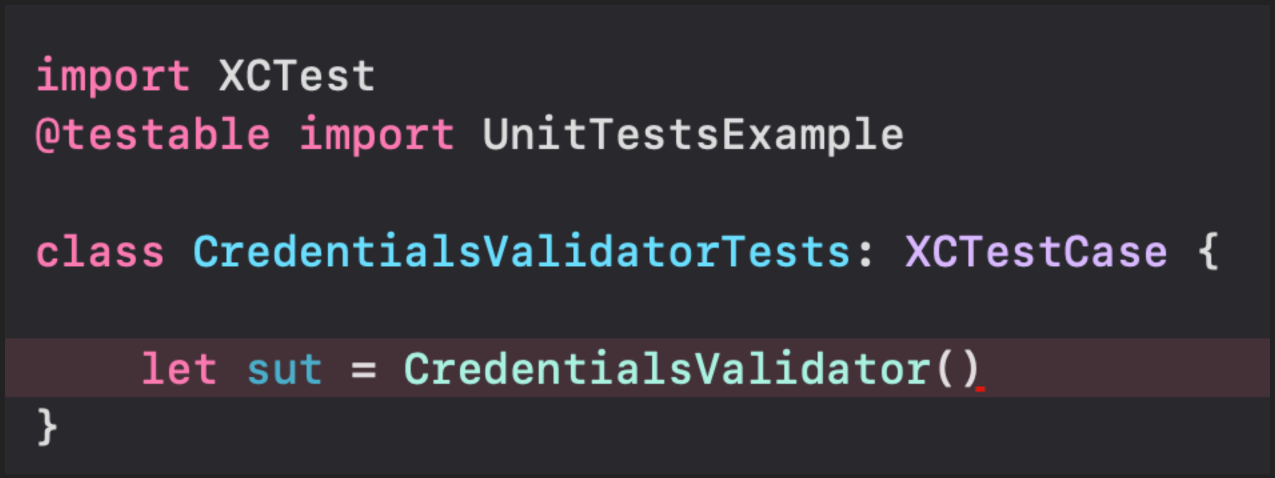


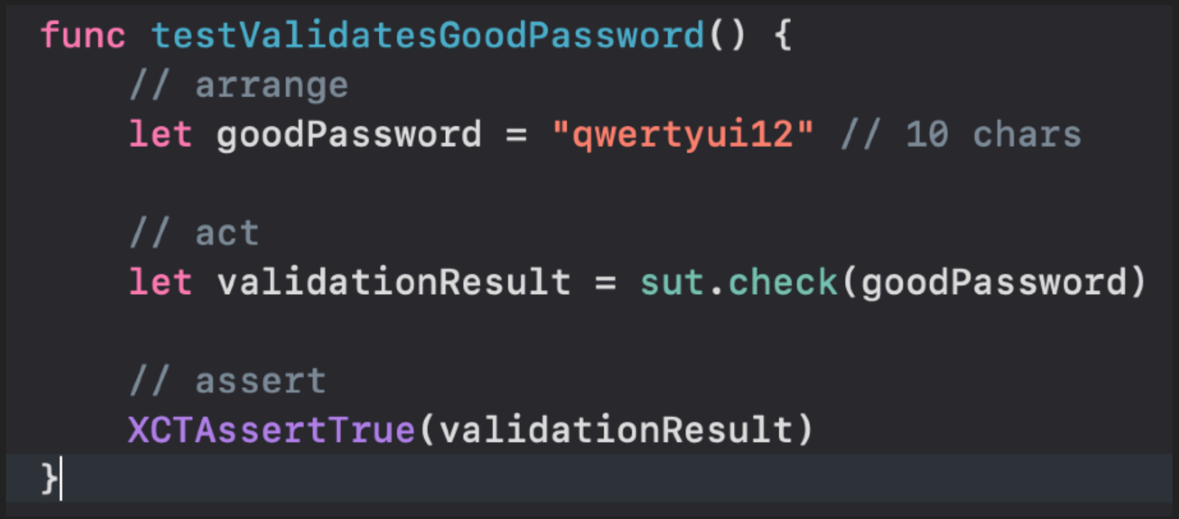
```swift
import XCTest
@testable import UnitTestsExample

class CredentialsValidatorTests: XCTestCase {

    let sut = CredentialsValidator()
}
```

Unit test base

UNIT TEST EXAMPLE



```swift
func testValidatesGoodPassword() {
    // arrange
    let goodPassword = "qwertyui12" // 10 chars

    // act
    let validationResult = sut.check(goodPassword)

    // assert
    XCTAssertTrue(validationResult)
}
```

Happy path test

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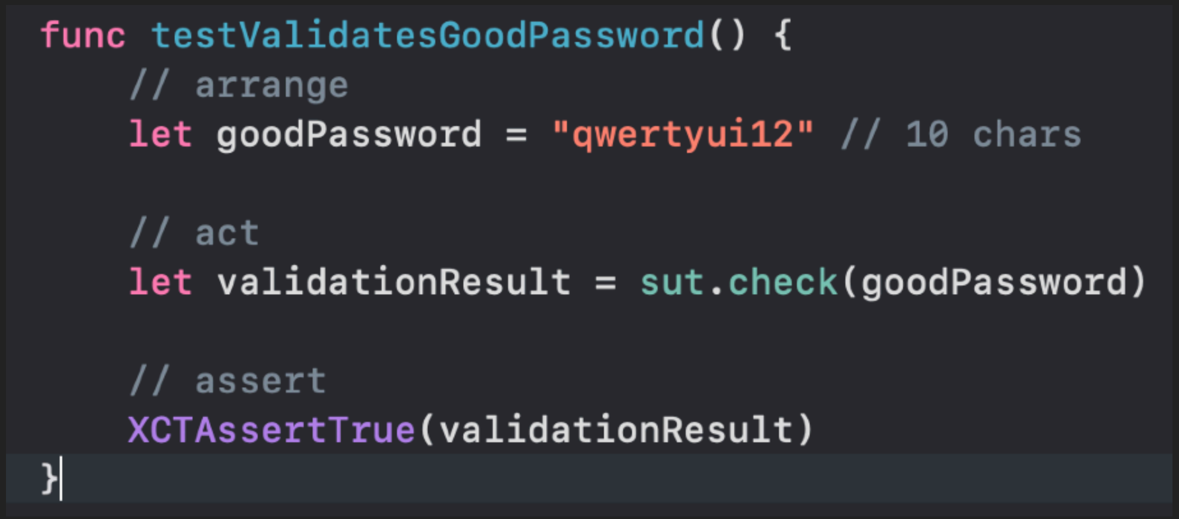

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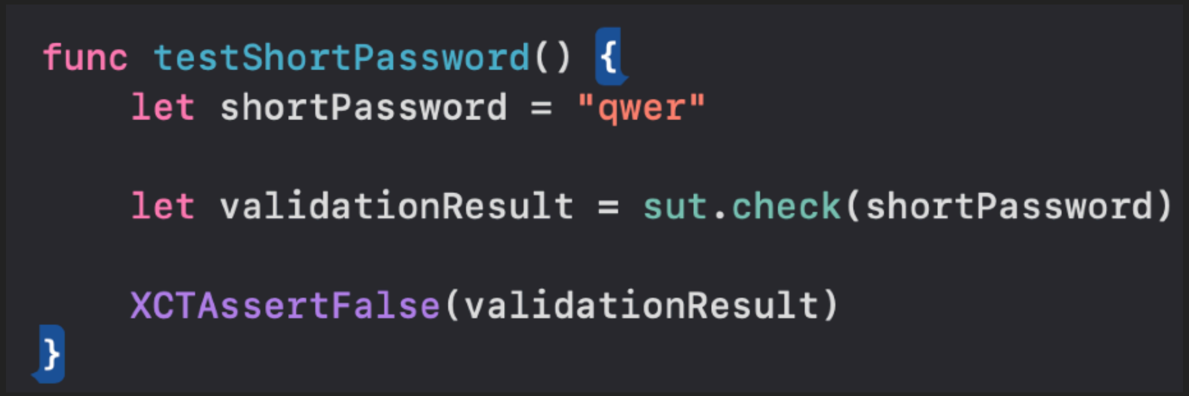

```swift
func testShortPassword() {
    let shortPassword = "qwer"

    let validationResult = sut.check(shortPassword)

    XCTAssertFalse(validationResult)
}
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Negative test

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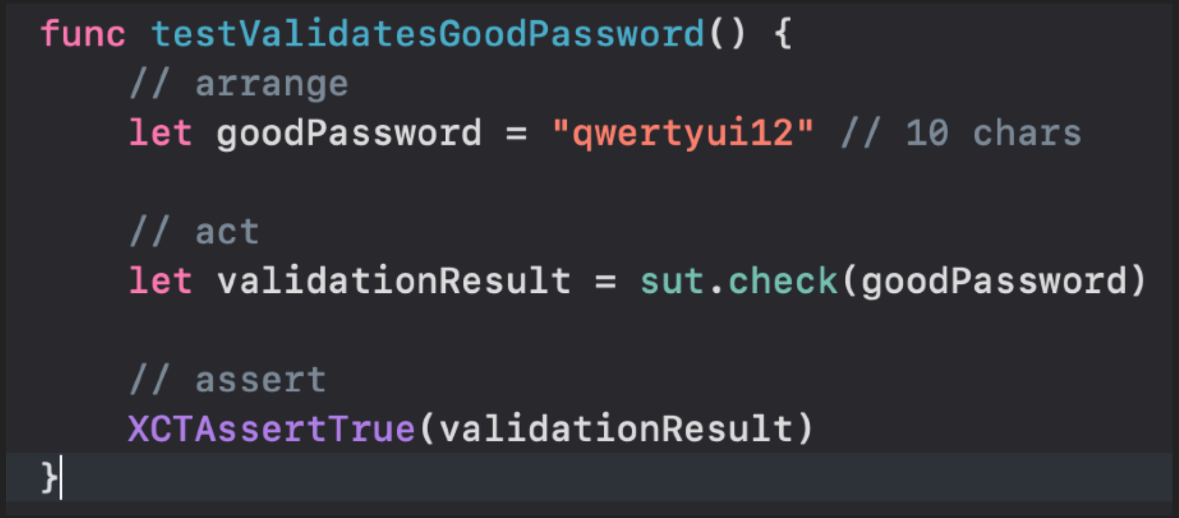

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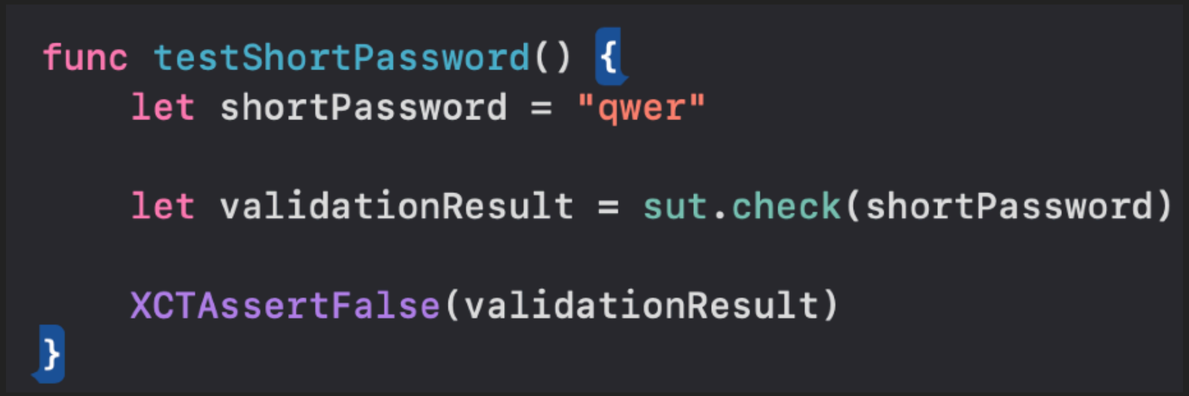

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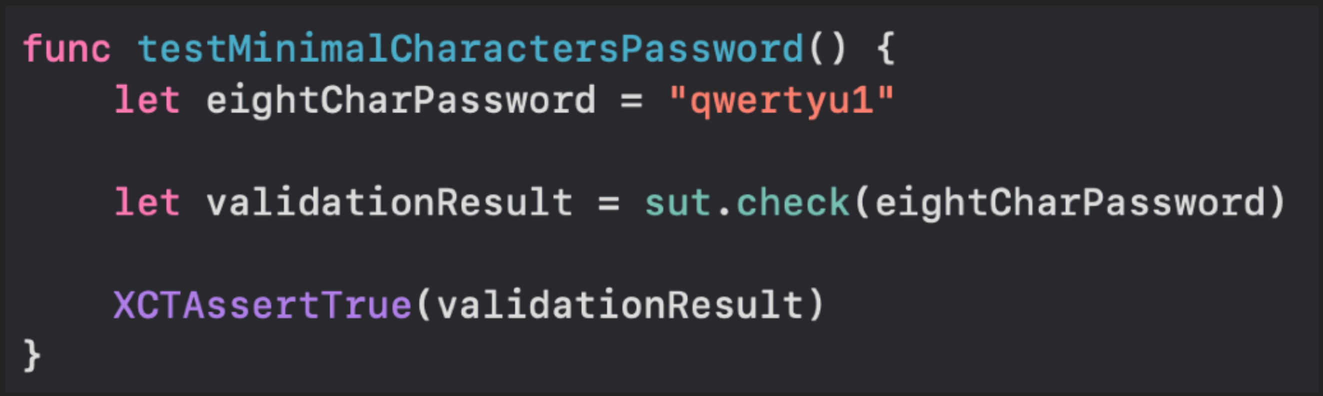

```swift
func testMinimalCharactersPassword() {
    let eightCharPassword = "qwertyu1"

    let validationResult = sut.check(eightCharPassword)

    XCTAssertTrue(validationResult)
}
```

Boundary test

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- 2. Call function that you want to test and see its results (act or when part)
- 3. Compare result with expectations and verify that function worked well (assert or then part)

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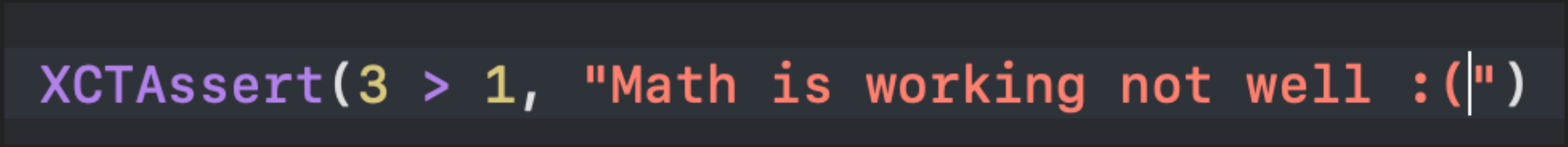

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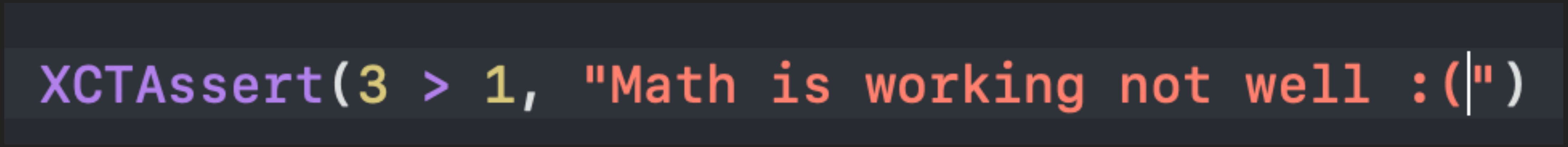

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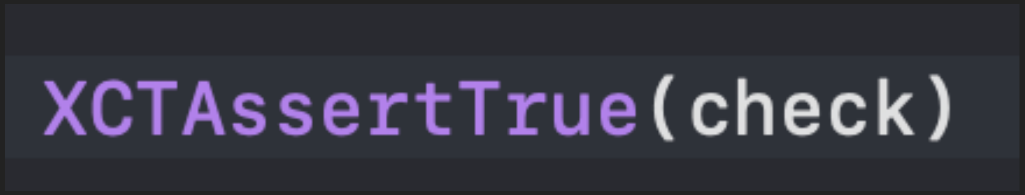

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And others

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- Force us to write code with good quality
- Easy to test a lot of cases and save time on manual testing

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- Isolated / Independent - class should be tested without any external dependencies (such as database, networking and others). Those should be controlled with special techniques. Also order of tests execution shouldn't affect results - each test should have clear state
- Repeatable - test should give same result after each execution and always succeed or fail

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- Thorough - you should test happy path, negative and edge cases, so code behaves well in any conditions

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- It is also connected to “Red->Green->Refactor” scheme

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- You can mock database and use in-memory implementation instead of using writing and reading form file which will slow down unit tests execution a lot
- You can mock networking layer and not make network calls in unit tests only returning predefined responses
- You can not rely on system frameworks and return only predefined values

WHEN NOT TO UNIT TEST?

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- Unit tests are not good idea when you are working in start-up and you want to release your product as soon as possible. In that conditions code quality won’t be the best and will be changing a lot. So you’ll need to rewrite your unit tests every time as well which is total waste of time