



ADVANCE JAVA TDD with Spring Boot





Somkiat Puisungnoen

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When did you work at Opendream? X

... 22 Pending Items

Intro

Software Craftsmanship

Software Practitioner at สยามชัมนาภิกิจ พ.ศ. 2556

Agile Practitioner and Technical at SPRINT3r

Post Photo/Video Live Video Life Event

What's on your mind?

Public Post

Somkiat Puisungnoen 15 mins · Bangkok · ⚙️

Java and Bigdata



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Agenda

- Test-Driven Develop (TDD)
- Object-Oriented Design
- SOLID
- Working with Spring Boot
- Workshop



Build tools

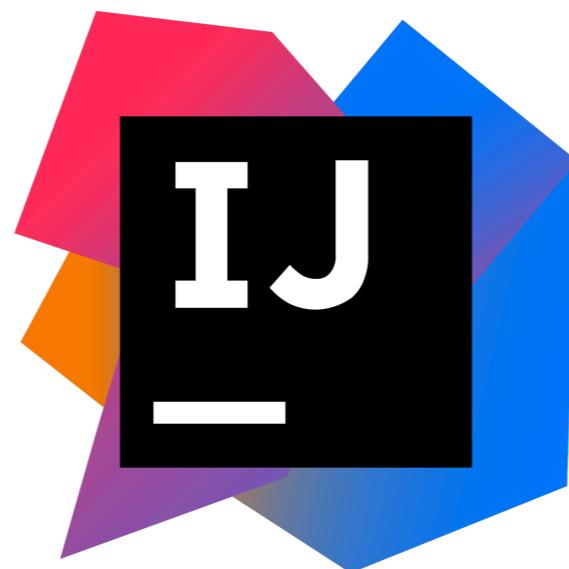


Maven™

 gradle

The Gradle logo consists of a green hexagonal icon with a white center, followed by the word "gradle" in a large, dark green, lowercase, sans-serif font.

IDE WARs



Trust in your code ?



Write Unit tests

JUnit



Hello with Unit testing



Avoid nested if and loop !!

```
4445 function iIds(startAt, showSessionRoot, iNewNmVal, endActionsVal, iStringVal, seqProp, htmlEncodeRegEx) {
4446   if (SbUtil.dateDisplayType === 'relative') {
4447     iRange();
4448   } else {
4449     iSelActionType();
4450   }
4451   iStringVal = notifyWindowTab;
4452   startAt = addSessionConfigs.sbRange();
4453   showSessionRoot = addSessionConfigs.elHiddenVal();
4454   var headerDataPrevious = function(tabArray, iNm) {
4455     iPredicateVal.SBDB.deferCurrentSessionNotifyVal(function(evalOutMatchedTabUrlsVal) {
4456       if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4457         iPredicateVal.SBDB.normalizeTabList(function(appMsg) {
4458           if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4459             iPredicateVal.SBDB.detailTxt(function(evalOrientationVal) {
4460               if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4461                 iPredicateVal.SBDB.neutralizeWindowFocus(function(iTokenAddedCallback) {
4462                   if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4463                     iPredicateVal.SBDB.evalSessionConfig2(function(sessionNm) {
4464                       if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4465                         iPredicateVal.SBDB.iWindow2TabIdx(function(iURLsStringVal) {
4466                           if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4467                             iPredicateVal.SBDB.idx7Val(undefined, iStringVal, function(getWindowIndex) {
4468                               if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4469                                 addTabList(getWindowIndex.rows, iStringVal, showSessionRoot && showSessionRoot.length > 0 ? showSessionRoot : startAt, endActionsVal);
4470                               if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4471                                 evalSAllowLogging(tabArray, iStringVal, showSessionRoot && showSessionRoot.length > 0 ? showSessionRoot : startAt, endActionsVal);
4472                               if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4473                                 BrowserAPI.getAllWindowsAndTabs(function(iSession1Val) {
4474                                   if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4475                                     SbUtil.currentSessionSrc(iSession1Val, undefined, function(initCurrentSessionCache) {
4476                                       if (!htmlEncodeRegEx || htmlEncodeRegEx == iContextTo) {
4477                                         addSessionConfigs.render(matchText(iSession1Val, iStringVal, evalRateActionQualifier, undefined, seqProp));
4478                                         id: -13,
4479                                         unfilteredWindowCount: initCurrentSessionCache,
4480                                         filteredWindowCount: iCtrl,
4481                                         unfilteredTabCount: parseTabConfig,
4482                                         filteredTabCount: evalRegisterValue5Val
4483                                       }) : [],
4484                                       cacheSessionWindow, evalRateActionQualifier, undefined,
4485                                       if (seqProp) {
4486                                         seqProp();
4487                                       }
4488                                     });
4489                                   });
4490                                 });
4491                               });
4492                             });
4493                           });
4494                         });
4495                       });
4496                     });
4497                   }, showSessionRoot && showSessionRoot.length > 0 ? showSessionRoot : startAt ? [startAt] : []);
4498                 });
4499               });
4500             });
4501           });
4502         });
4503       });
4504     });
4505   });
4506 }
```



Avoid nested if and loop !!

```
function register()
{
    if (empty($_POST)) {
        $msg = '';
        if (!$_POST['user_name']) {
            if (!$_POST['user_password_new']) {
                if (!$_POST['user_password_repeat']) {
                    if (strlen($_POST['user_password_new']) == $_POST['user_password_repeat']) {
                        if (strlen($_POST['user_password_new']) > 5) {
                            if (strlen($_POST['user_name']) < 6 || strlen($_POST['user_name']) > 24) {
                                if (preg_match('/[a-zA-Z]{2,64}!@/i', $_POST['user_name'])) {
                                    $user = read_user($_POST['user_name']);
                                    if (!check($user['user_name'])) {
                                        if (!$_POST['user_email']) {
                                            if (strlen($_POST['user_email']) < 65) {
                                                if (filter_var($_POST['user_email'], FILTER_VALIDATE_EMAIL)) {
                                                    create_user();
                                                    $SESSION['msg'] = 'You are now registered so please login';
                                                    header('Location: ' . SERVER('PHP_SELF'));
                                                    exit();
                                                } else $msg = 'You must provide a valid email address';
                                            } else $msg = 'Email must be less than 64 characters';
                                        } else $msg = 'Email cannot be empty';
                                    } else $msg = 'Username already exists';
                                } else $msg = 'Username must be only a-z, A-Z, 0-9';
                            } else $msg = 'Username must be between 2 and 64 characters';
                        } else $msg = 'Password must be at least 6 characters';
                    } else $msg = 'Passwords do not match';
                } else $msg = 'Empty Password';
            } else $msg = 'Empty Username';
        }
        $SESSION['msg'] = $msg;
    }
    return register_form();
}
```



icompile.eladkarako.com



Trust in your code ?

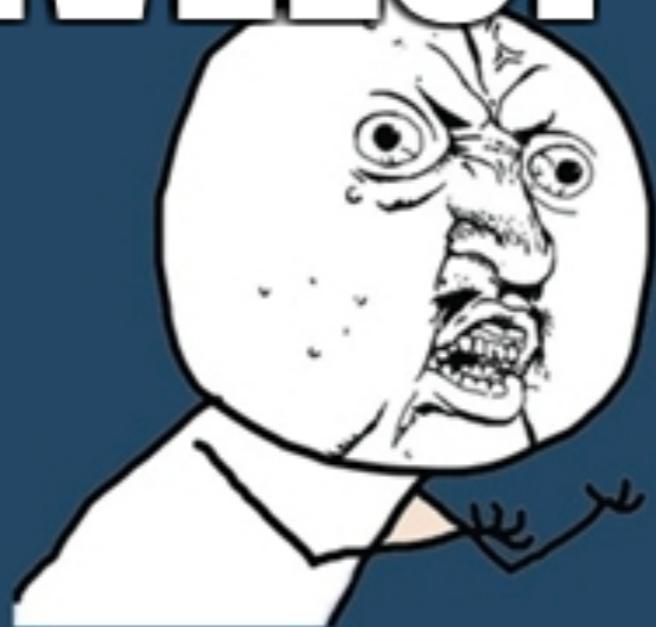


Your code not break anything ?



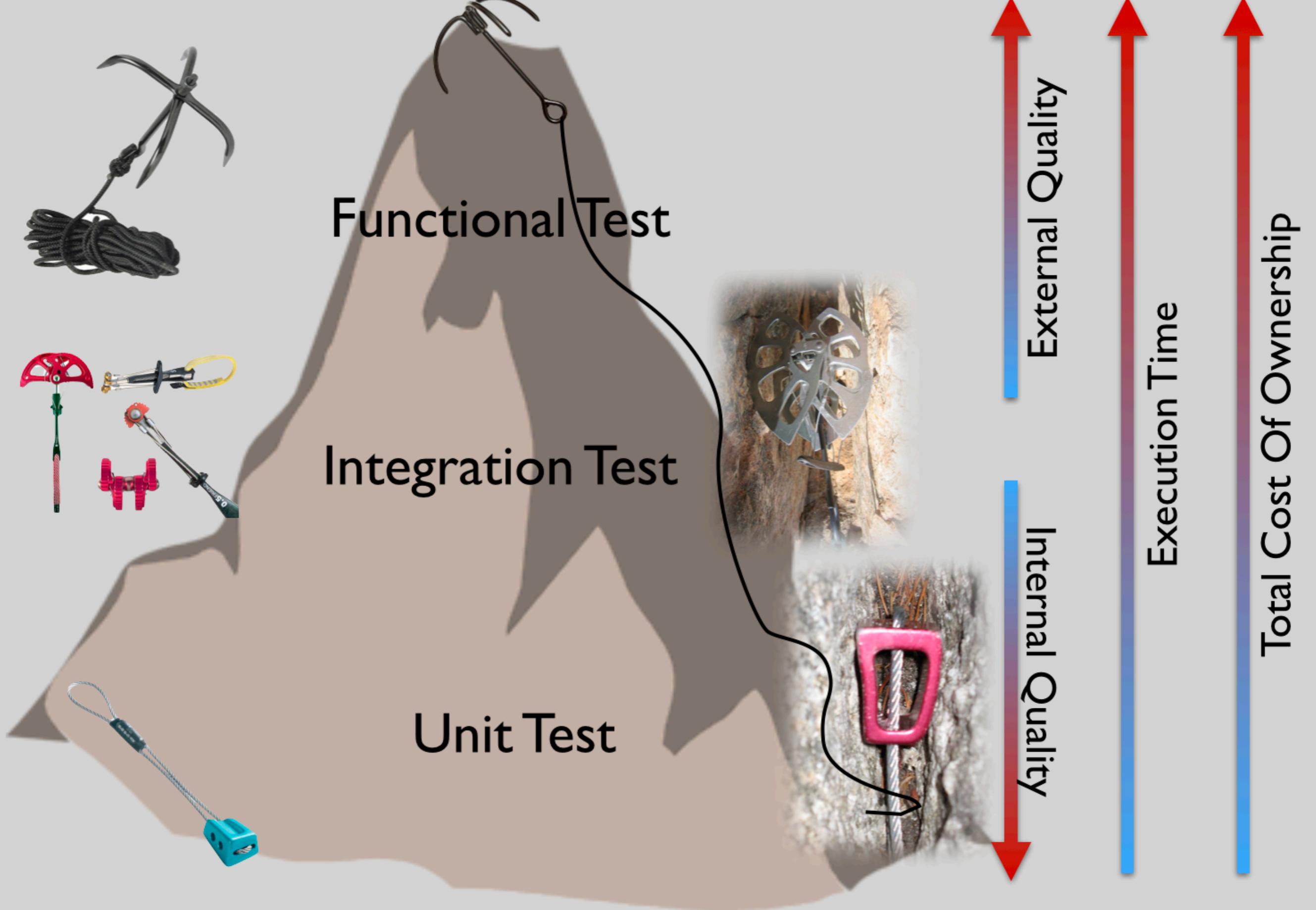


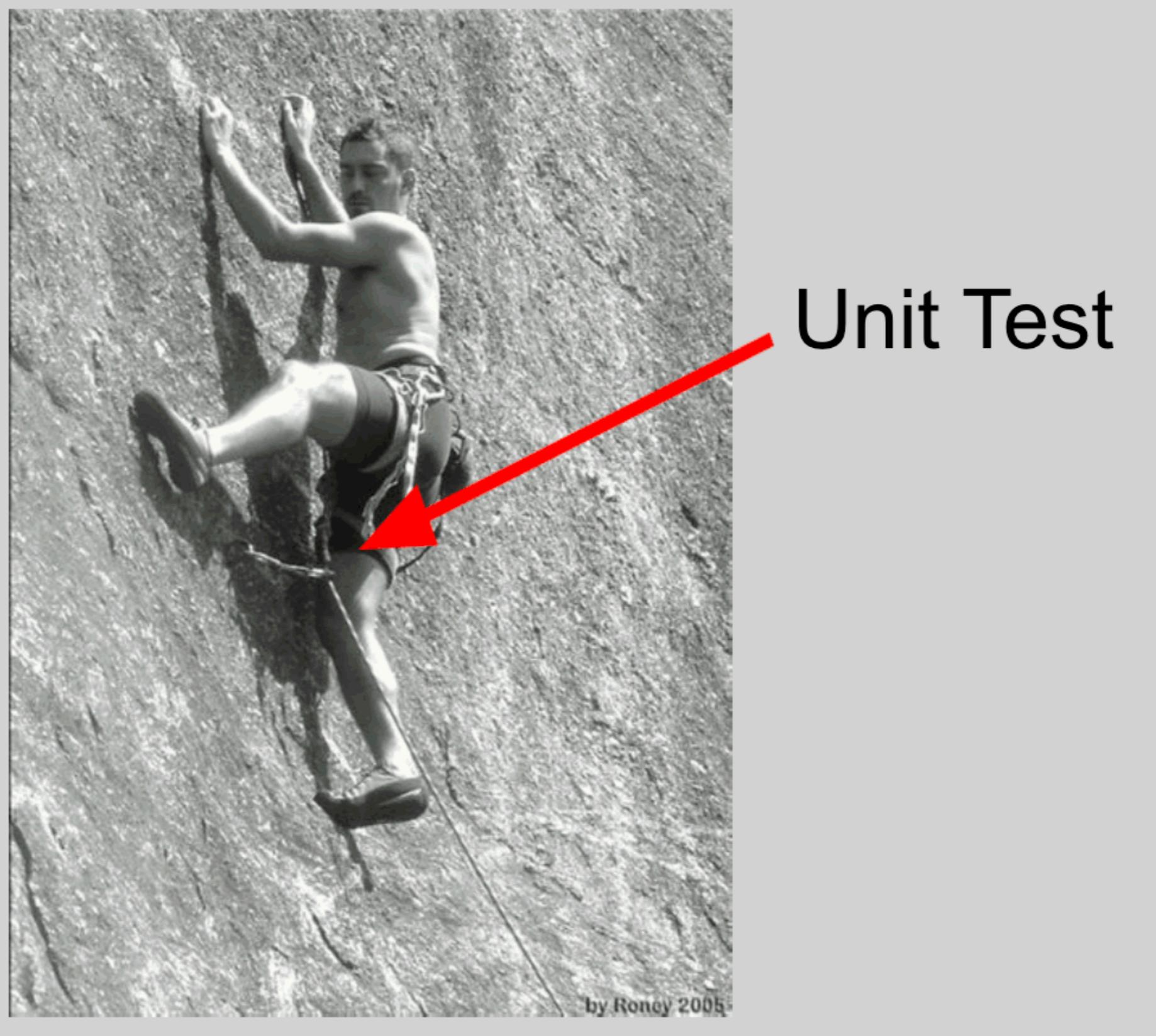
DEVELOPER



Y U NO WRITE TESTS?







Unit Test

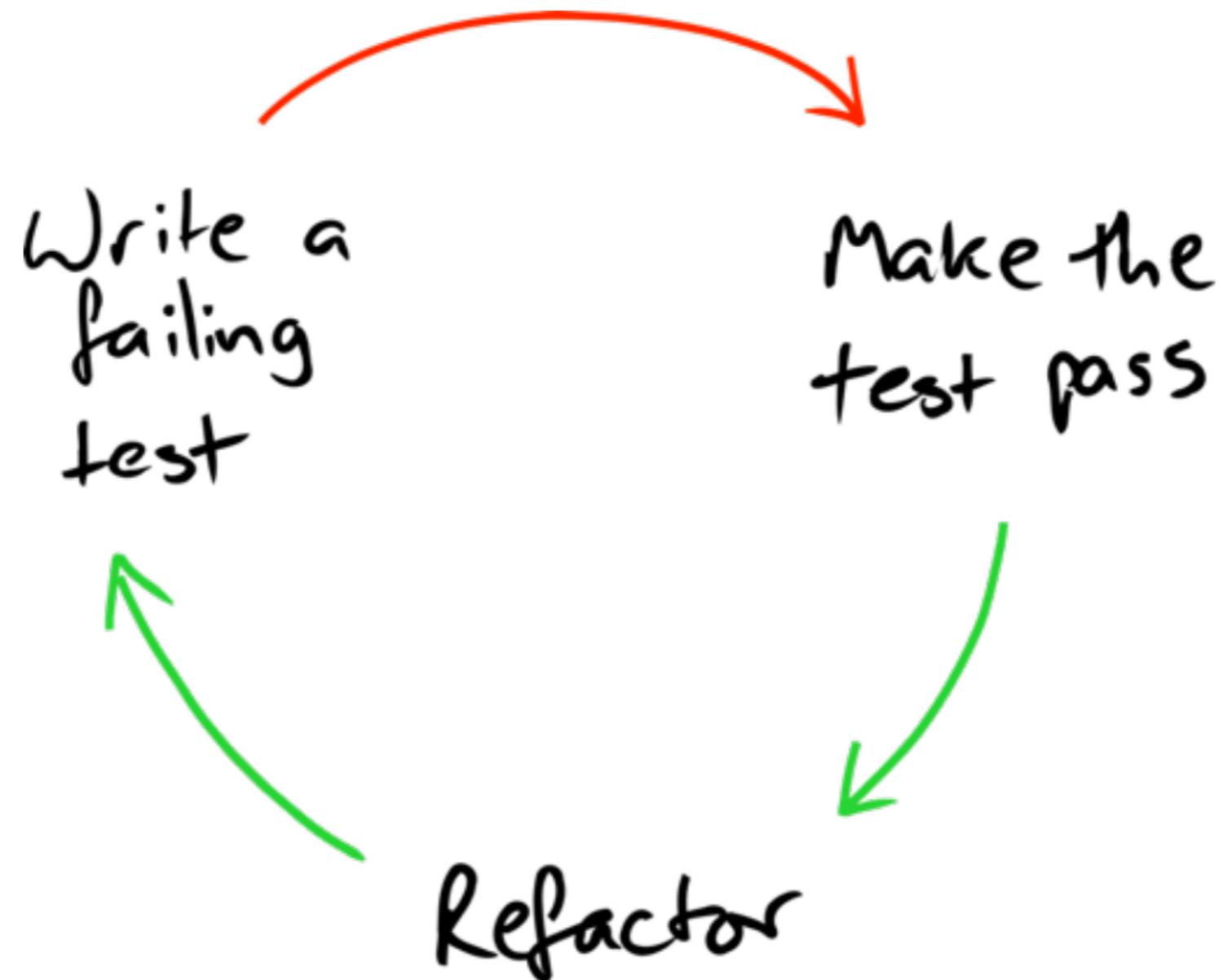


Good Unit Test

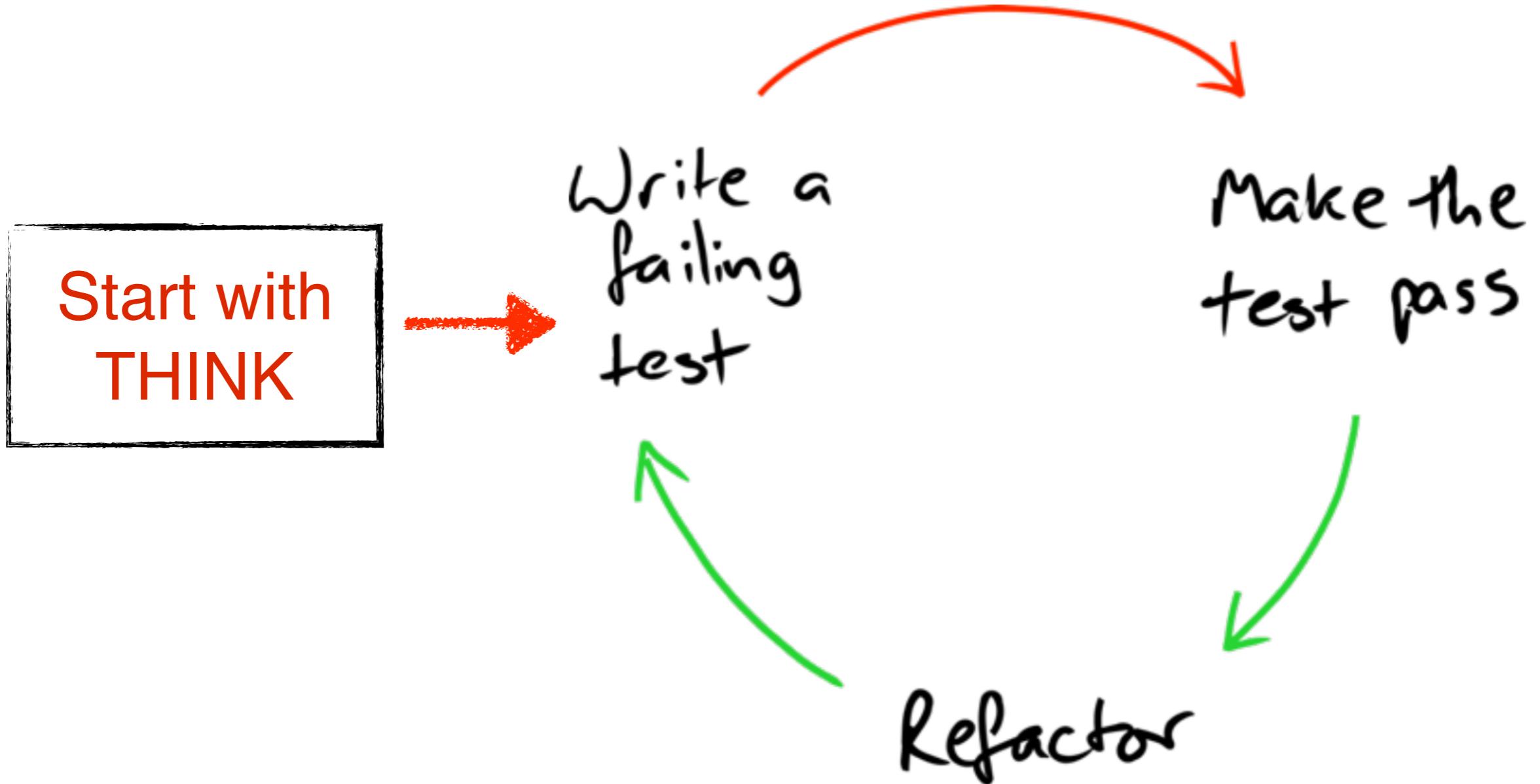
Fast
Isolated
Repeatable
Self-validating
Timely



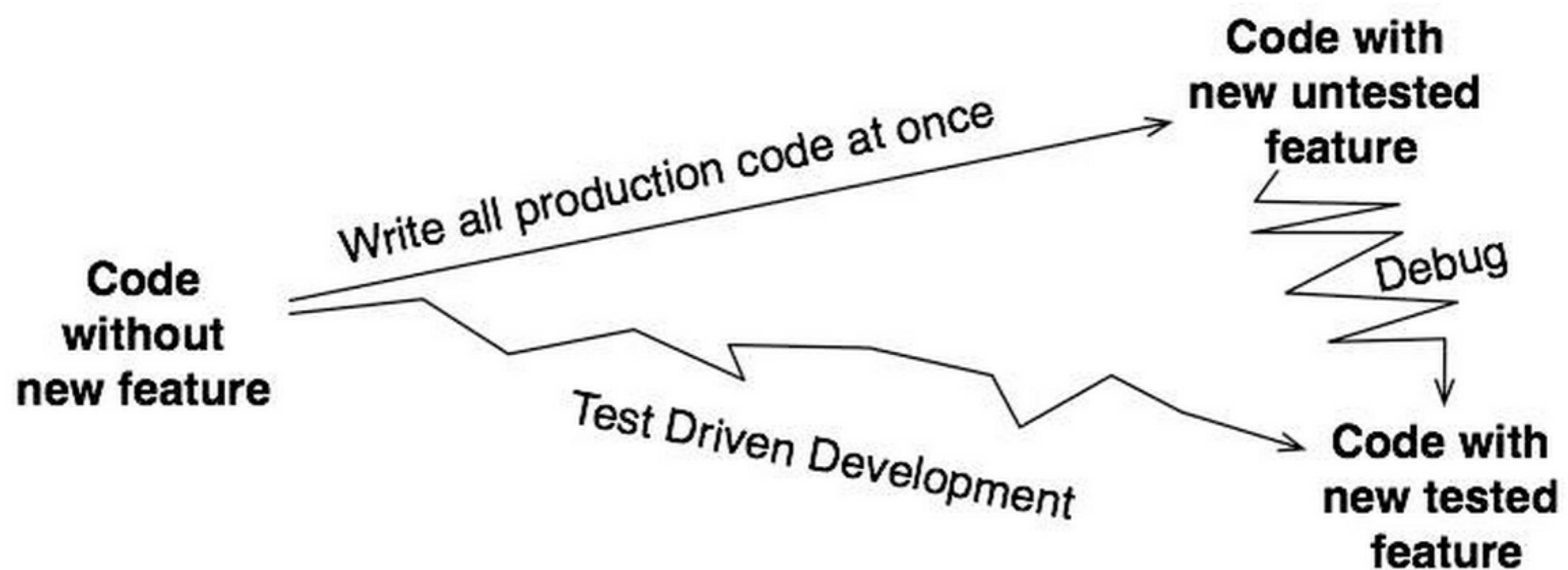
TDD



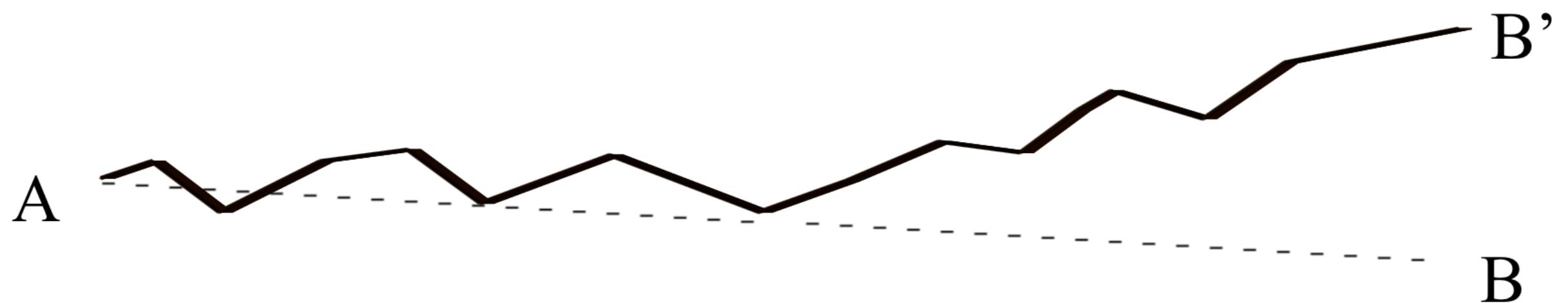
TDD



TDD vs DLP



Start with small step



Workshop

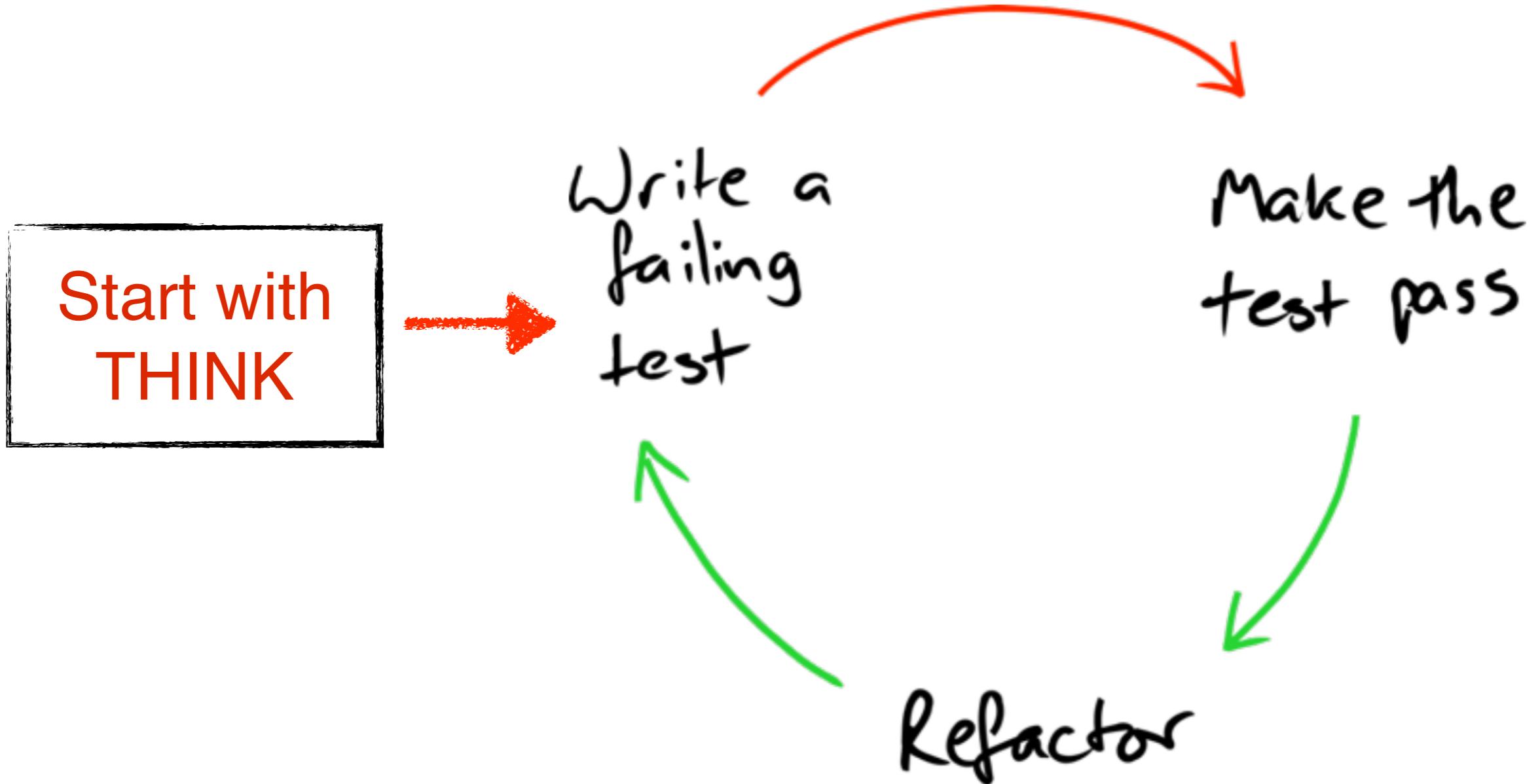
Circular Buffer



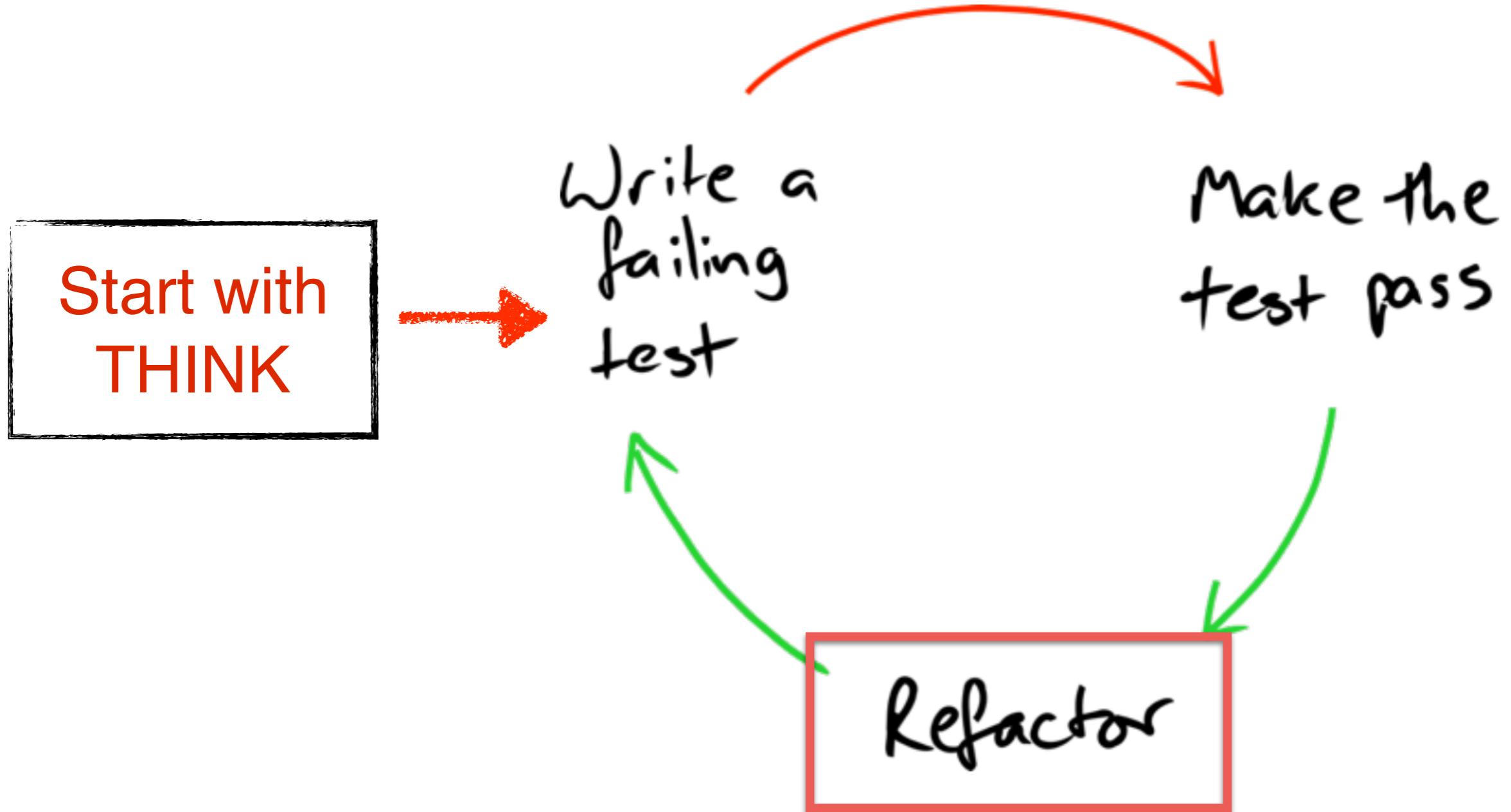
Workshop Range



TDD



Refactor



Code Smell & Refactoring

<https://sourcemaking.com/refactoring/smells>



Code Smell



Code Smell



Code Smell Workshop

<https://github.com/emilybache/Tennis-Refactoring-Kata>



Object-Oriented Design



SOLID principle



SOLID principle



SOLID

Software development is not a Jenga game.



1. Single Responsibility Principle



Single Responsibility Principle

Just because you *can* doesn't mean you *should*.



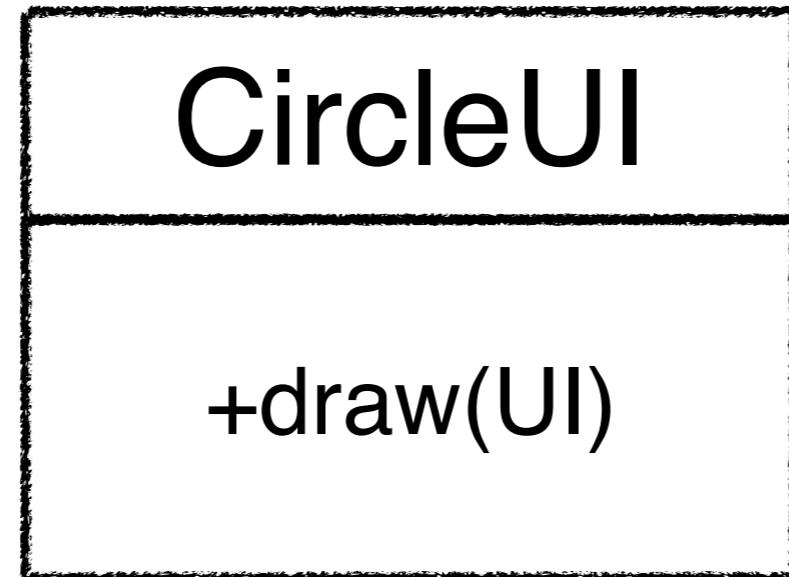
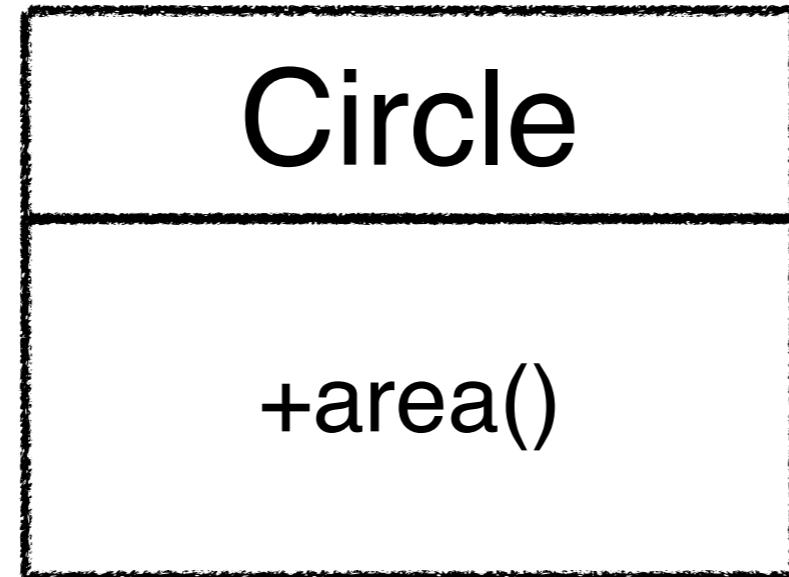
Example

Circle

+area()
+draw(UI)



Example



2. Open-Closed Principle



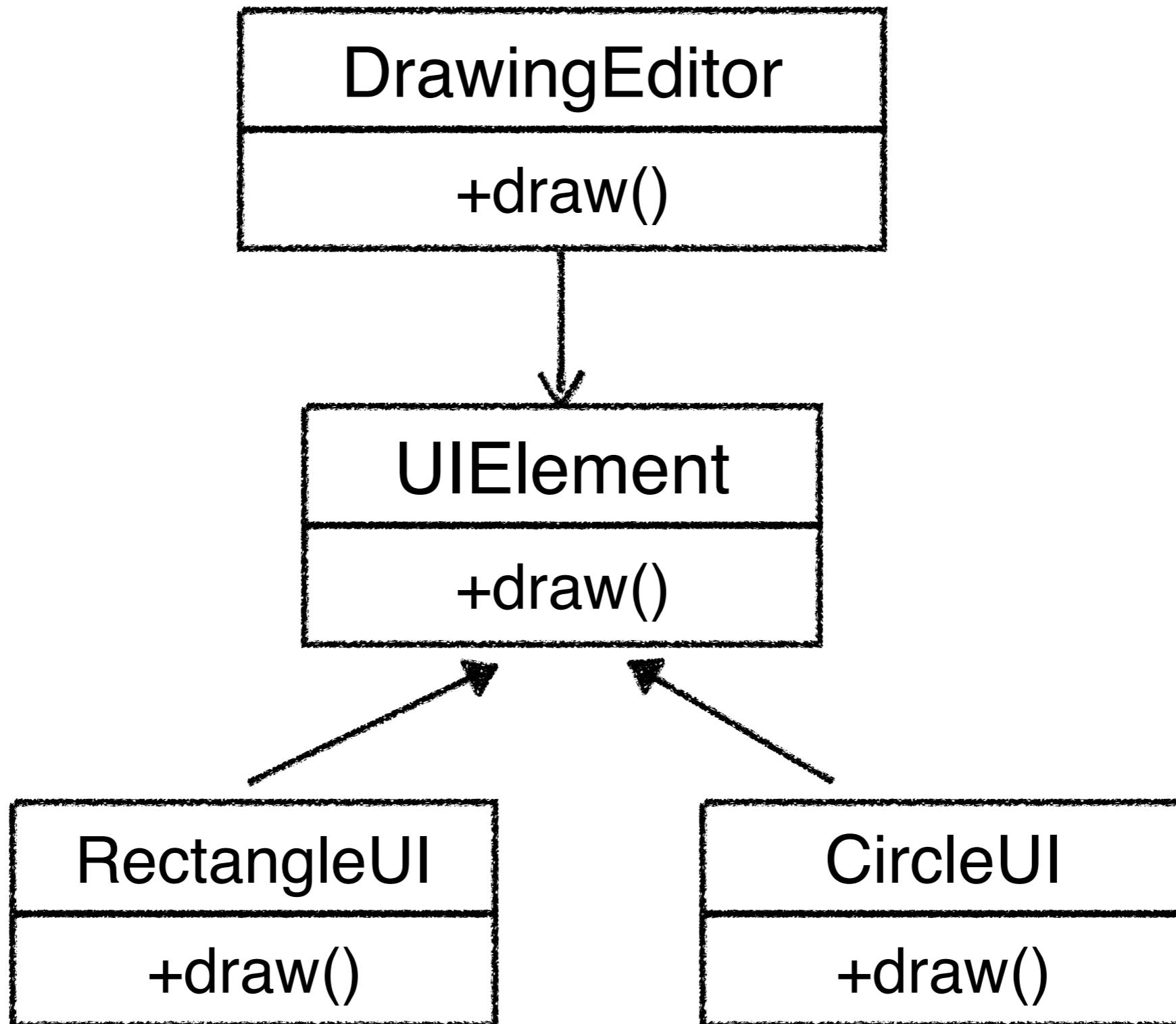
Example

DrawingEditor

```
+draw()  
-drawCircle()  
-drawRectangle()
```



Example



Workshop



FizzBuzz

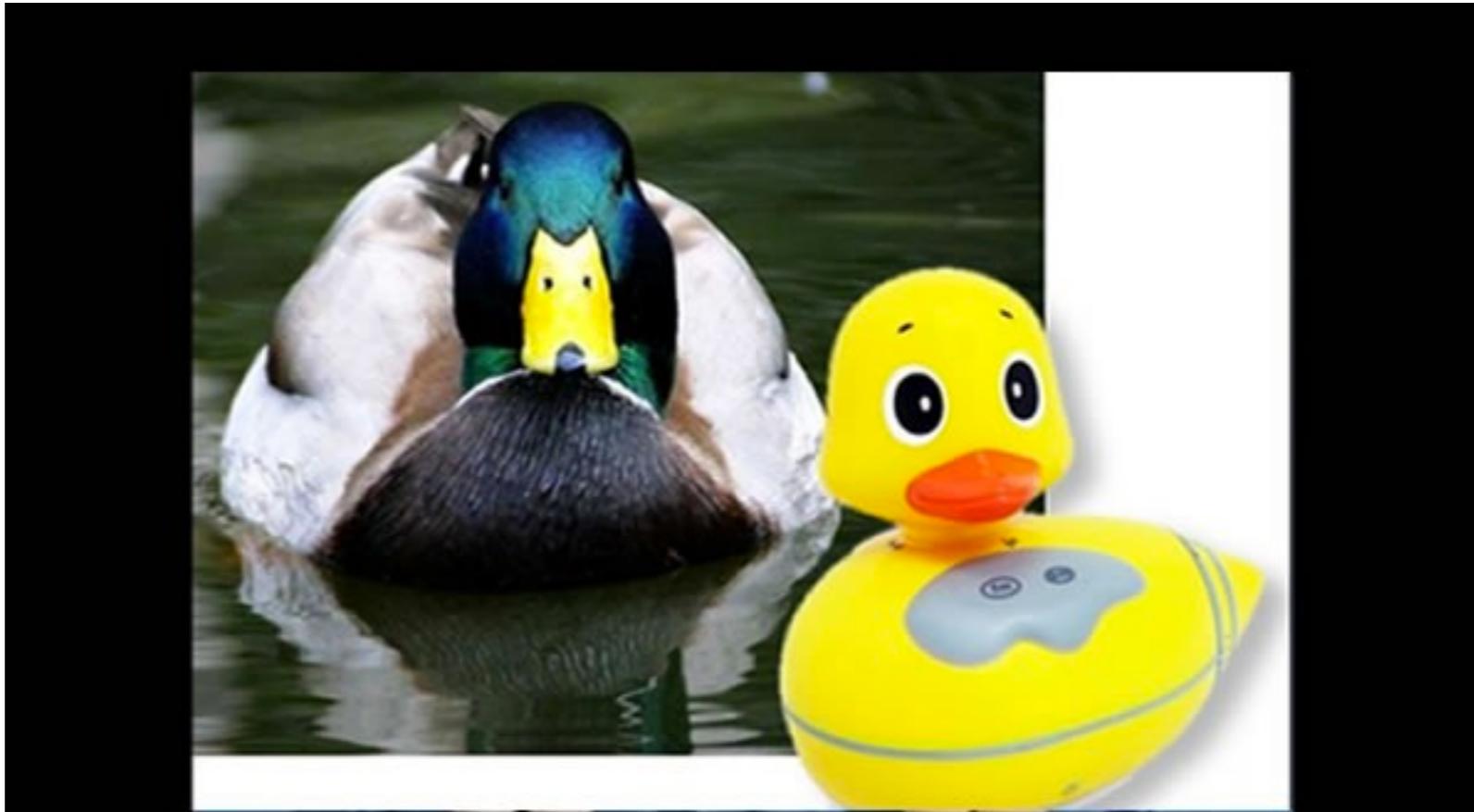
Input	Expected Result
1	1
2	2
3	Fizz
4	4
5	Buzz
6	Fizz
7	7
8	8
9	Fizz
10	Buzz
15	FizzBuzz



7 => HELLO



3. Liskov Substitution Principle

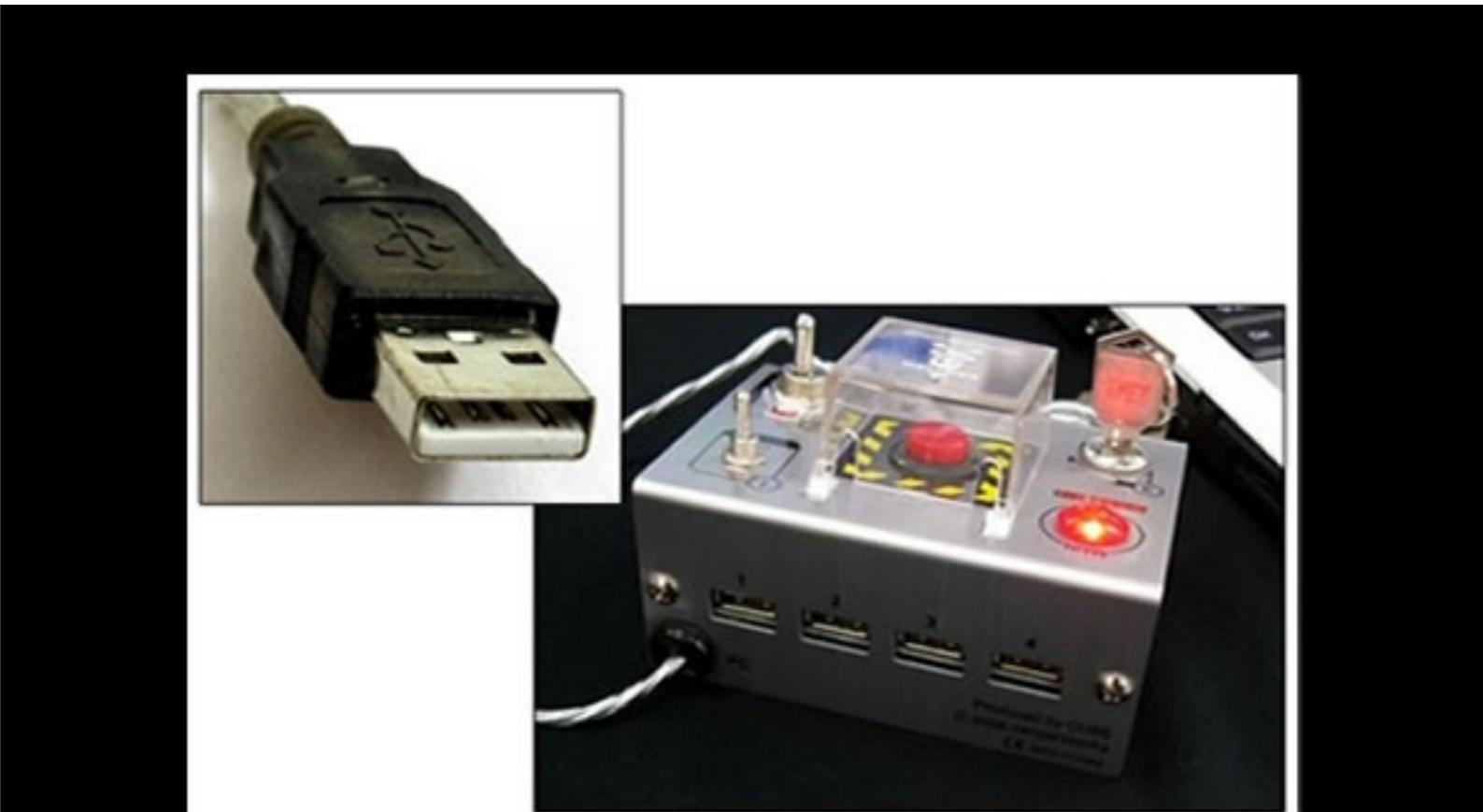


Liskov Substitution Principle

If it looks like a duck and quacks like a duck but needs batteries,
you probably have the wrong abstraction.



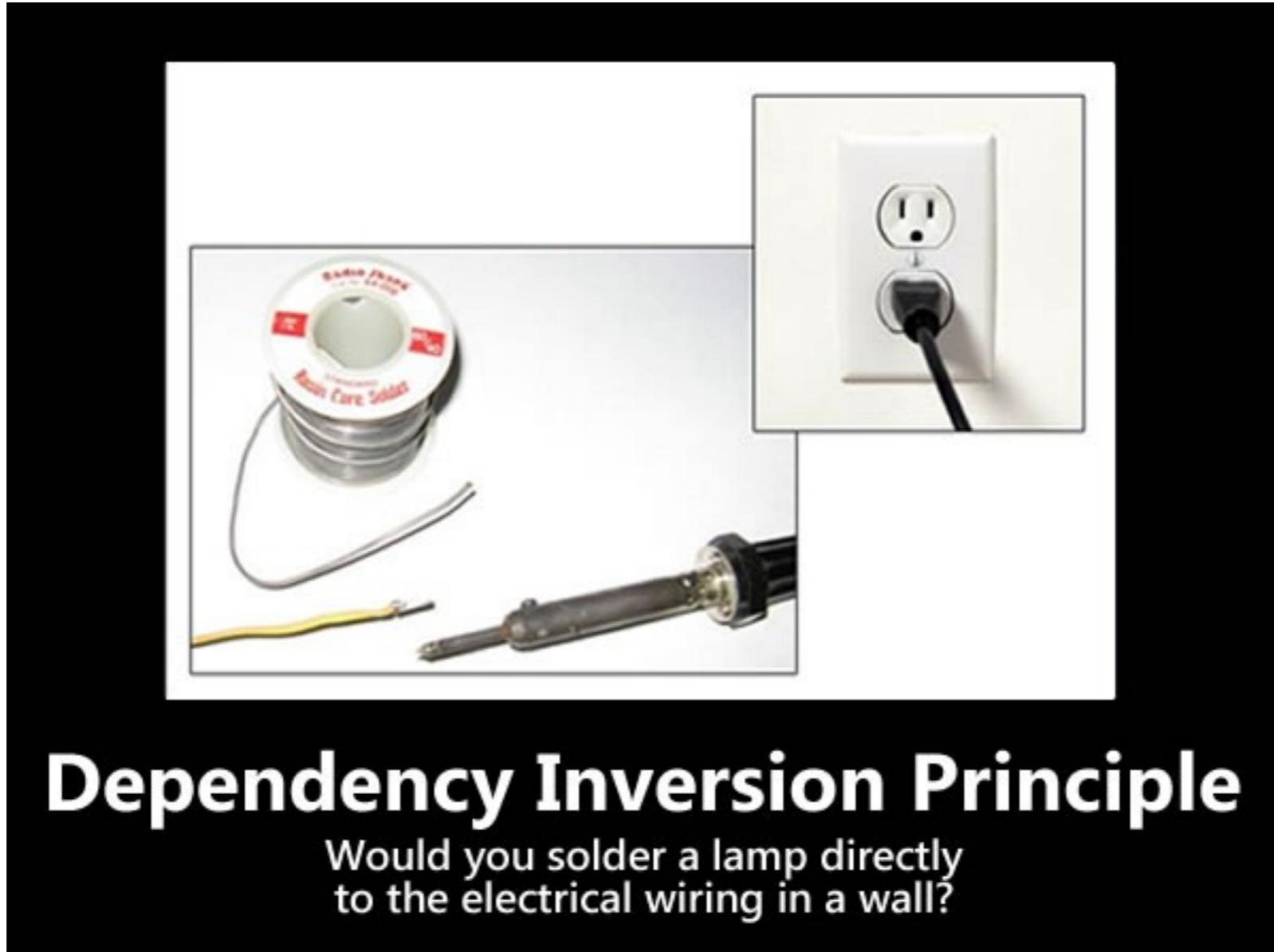
4. Interface Segregation Principle



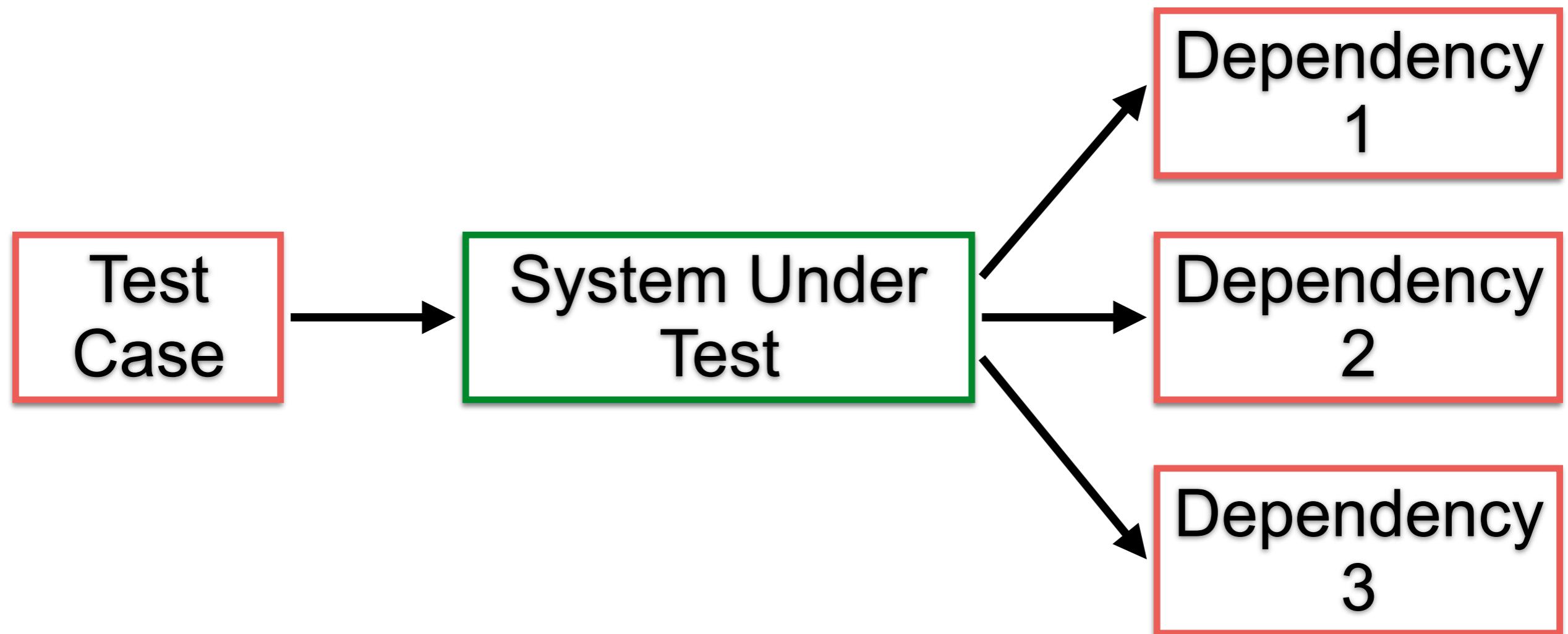
Interface Segregation Principle
You want me to plug this in *where?*



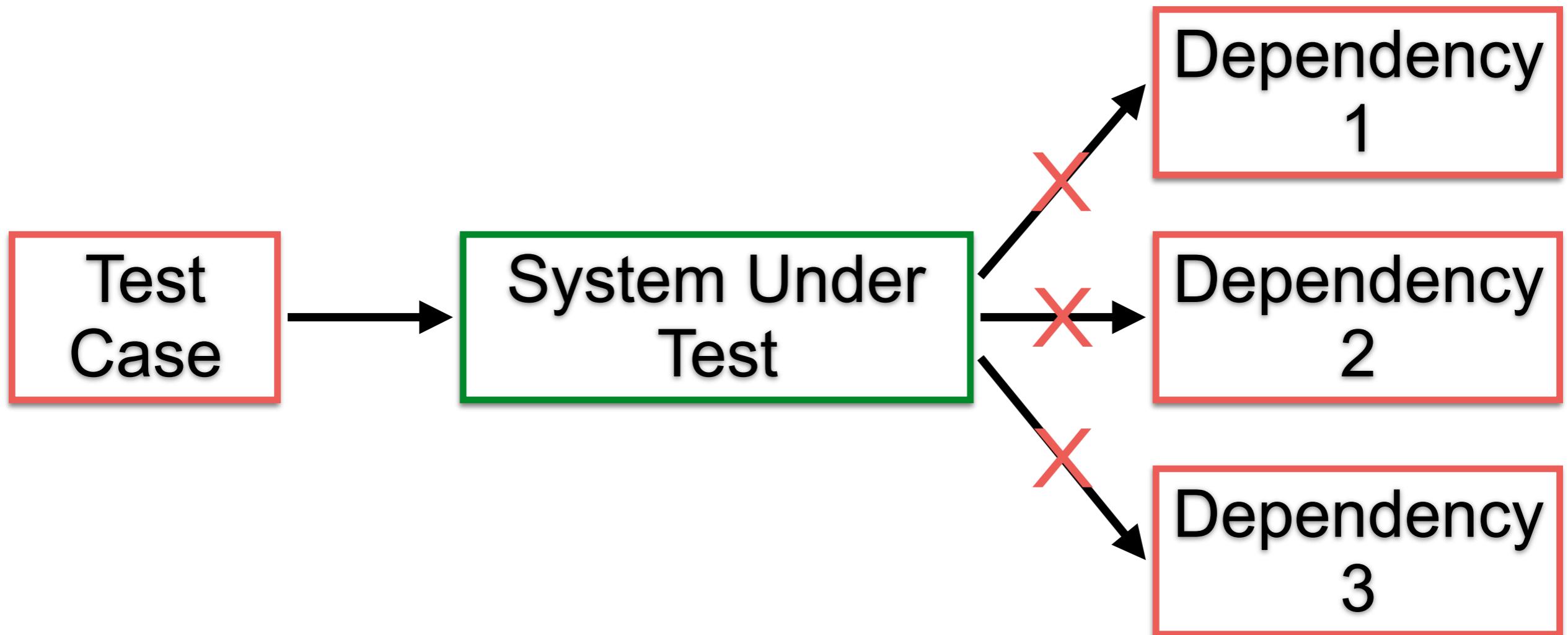
5. Dependency Inversion Principle



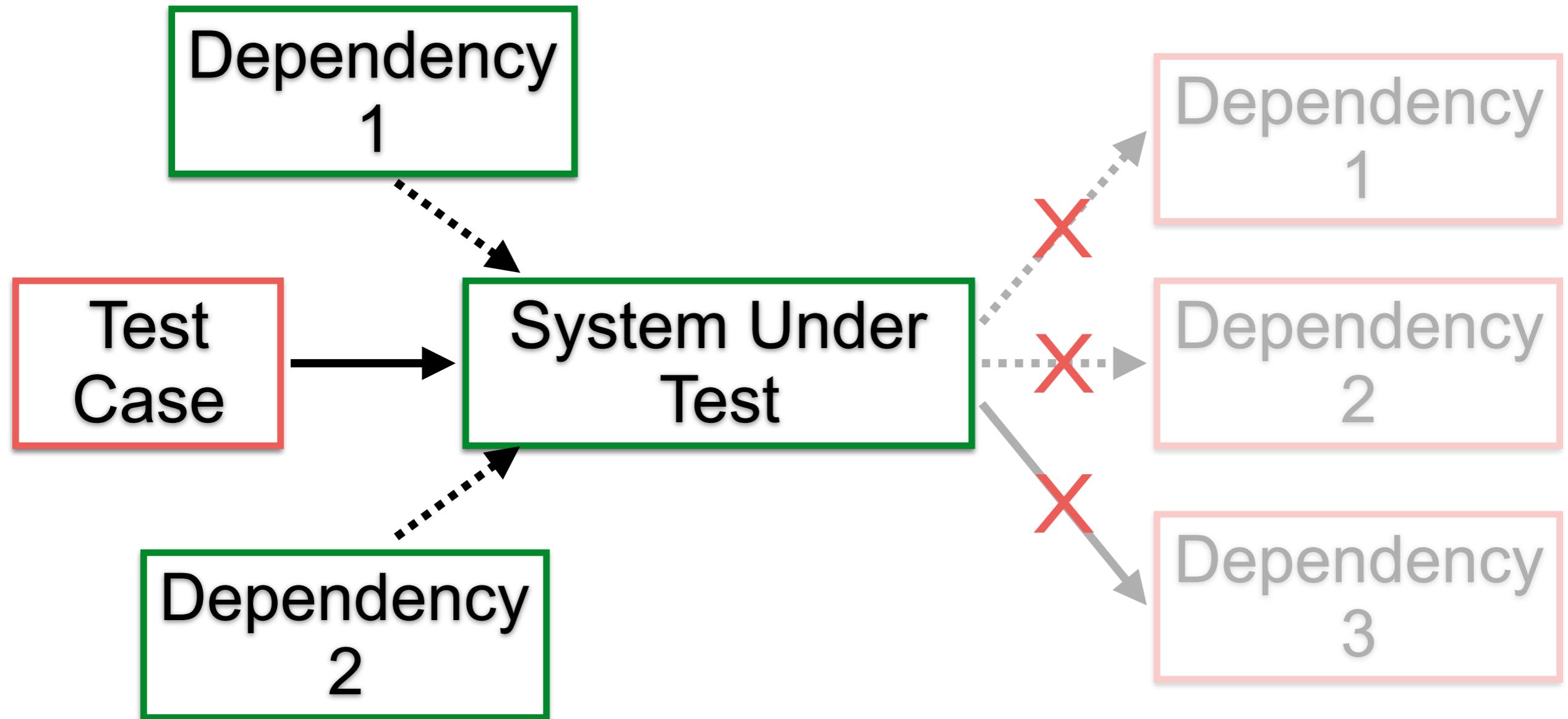
How to test ?



Remove dependencies !!



Inject dependencies !!



Test Double

Dummy

Stub

Spy

Mock

Fake

<http://xunitpatterns.com/Test%20Double.html>



Workshop with Test Double



OOP with Harry Potter



Design

Book

BookItem

Order

PriceCalculator

DiscountCalculator



Properties/Behaviors

Book

BookItem

Order

PriceCalculator

DiscountCalculator



Relationships ?

Book

BookItem

Order

PriceCalculator

DiscountCalculator



Develop



Develop

1. Create book class
2. Create Order class
3. Create BookItem class
4. Create Price Calculator
5. Create Discount Calculator



1. Create Book



How to create instance ?

1. With constructor
2. With Creation Method
3. With Builder pattern



Create Book

```
@Test
```

```
public void createBookWithConstructor() {
```

```
    Book book1 = new Book("H1", 8, 2);
```

```
}
```

```
@Test
```

```
public void createBookWithCreationMethod() {
```

```
    Book book1 = Book.createHarryPotterOne();
```

```
    Book book2 = Book.createHarryPotterTwo();
```

```
}
```

```
@Test
```

```
public void createBookWithBuilderPattern() {
```

```
    Book book1 = new BookBuilder()
```

```
        .setPrice(8)
```

```
        .setName("H1")
```

```
        .build();
```



2. Create Order



Create Order

One order can have 0-N item(s)

Order

BookItem 1

Book 1

BookItem 2

Book 2

BookItem 3

Book 3



Start with Empty Order

```
@Test  
public void createEmptyOrder() {  
    Order order = new Order();  
    order.process();  
    assertEquals(0, order.getBookAmount());  
    assertEquals(0, order.getTotalPrice(), 0.00);  
    assertEquals(0, order.getDiscount(), 0.00);  
    assertEquals(0, order.getNetPrice(), 0.00);  
}
```



Order with 1 item

```
@Test  
public void createOrderWithOneBook() {  
    Book book1 = new Book("H1", 8, 2);  
    BookItem bookItem = new BookItem(book1, 1);  
    Order order = new Order();  
    order.addItem(bookItem);  
    order.process();  
  
    assertEquals(1, order.getBookAmount());  
    assertEquals(8, order.getTotalPrice(), 0.00);  
    assertEquals(0, order.getDiscount(), 0.00);  
    assertEquals(8, order.getNetPrice(), 0.00);  
}
```



Order with 2 item = 5%

```
@Test
```

```
public void createOrderWithTwoBook() {  
    Book book1 = new Book("H1", 8, 2);  
    Book book2 = new Book("H2", 8, 2);  
    BookItem bookItem1 = new BookItem(book1, 1);  
    BookItem bookItem2 = new BookItem(book2, 1);  
    Order order = new Order();  
    order.addItem(bookItem1);  
    order.addItem(bookItem2);  
    order.process();  
  
    assertEquals(2, order.getBookAmount());  
    assertEquals(16, order.getTotalPrice(), 0.00);  
    assertEquals("Discount not correct", 16 * 0.05, order.getDiscount(), 0.00);  
    assertEquals(16 - (16 * 0.05), order.getNetPrice(), 0.00);  
}
```



3. Create BookItem



4. Price Calculation



5. Discount Calculation



Working with Spring Boot



Spring Initializr

The screenshot shows the Spring Initializr web application. It has a sidebar on the left with sections for Project, Language, Spring Boot, Project Metadata, and Dependencies. The main area shows configuration options for a Maven Project in Java, using Spring Boot 2.1.7, with group com.example and artifact demo. A search bar at the bottom allows adding dependencies like Web, Security, JPA, Actuator, Devtools... The right side shows a GitHub link.

Spring Initializr
Bootstrap your application

Github

Project Maven Project Gradle Project

Language Java Kotlin Groovy

Spring Boot 2.2.0 M5 2.2.0 (SNAPSHOT) 2.1.8 (SNAPSHOT) 2.1.7

Project Metadata

Group
com.example

Artifact
demo

Dependencies

Search dependencies to add
Web, Security, JPA, Actuator, Devtools...

Selected dependencies
No dependency selected

<https://start.spring.io/>



Let's start

