# Lab: Unit Testing

This document defines the lab for ["Java OOP" course @ Software University](https://softuni.bg/modules/59/java-advanced).

# Part I: Unit Testing Basics

## 1.Test Axe

In test/java folder, create a package called rpg\_tests

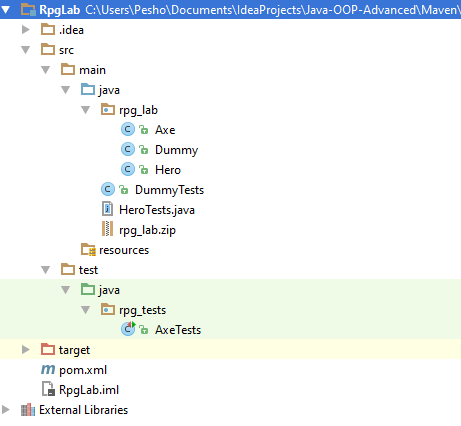
Create a class AxeTests

Create the following tests:

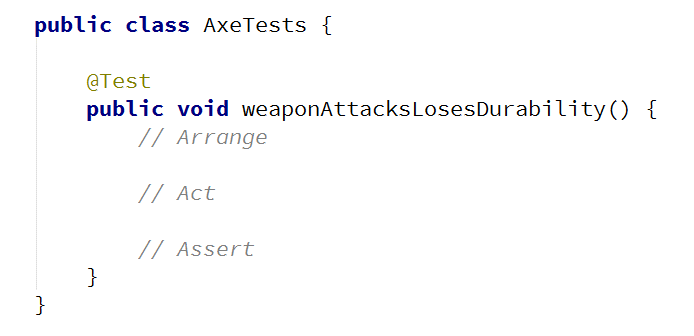
* Test if weapon loses durability after each attack
* Test attacking with a broken weapon

### Solution

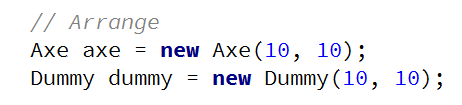
Create the new package rpg\_tests and inside create the class AxeTests



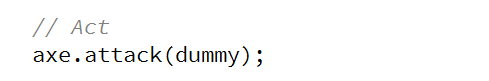
Inside the class create your first test



Arrange preconditions



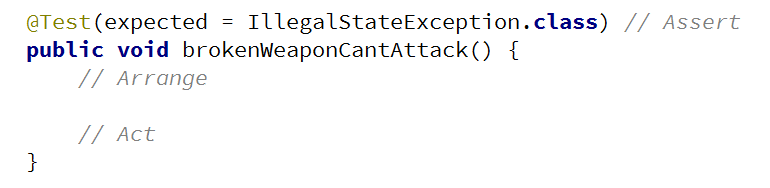
Execute tested behaviour



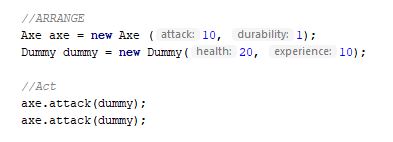
Assert postconditions



Create your second test method



Arrange preconditions and test behaviour



## 2.Test Dummy

Create a class DummyTests

Create the following tests:

* Dummy loses health if attacked
* Dead Dummy throws exception if attacked
* Dead Dummy can give XP
* Alive Dummy can't give XP

### Hints

Follow the logic of the previous problem

# Part II: Dependencies

## 3.Fake Axe and Dummy

Test if hero gains XP when target dies

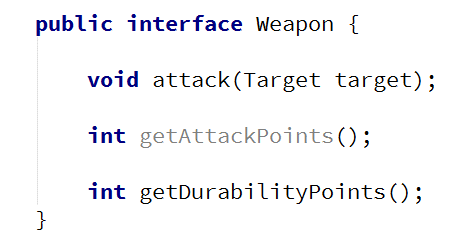
To do this, you need to:

* Make **Hero** class **testable** (use **Dependency Injection**)
* Introduce **Interfaces** for Axe and Dummy
  + Interface Weapon
  + Interface Target

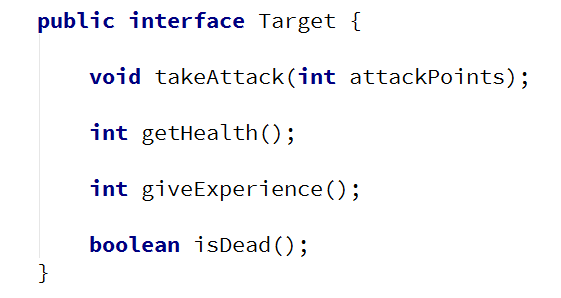
Create fake Weapon and fake Dummy for the test

### Hints

Create **Weapon** interface



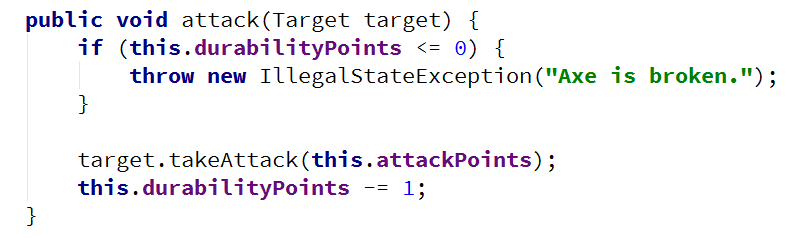
Create **Target** interface



Implement interfaces

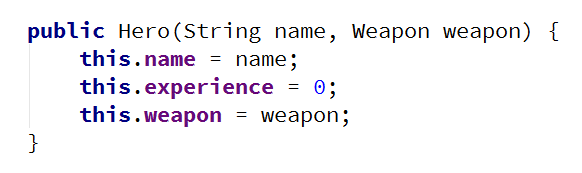


Modify implementation methods to **make use of interfaces**

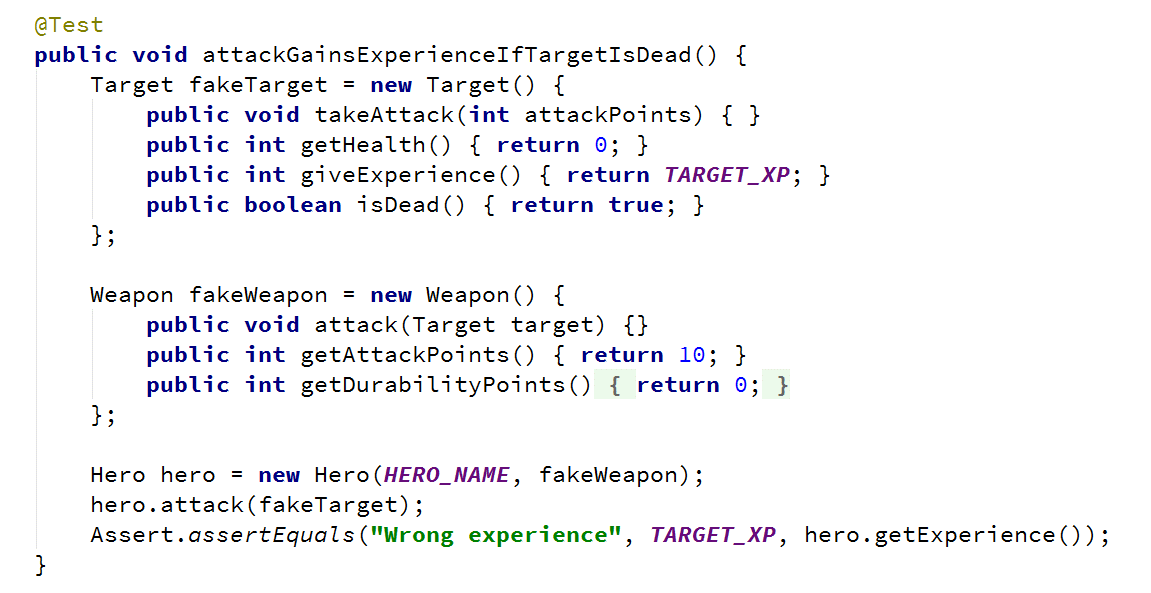


Modify both **Axe** and **Dummy** classes

Use **Dependency Injection** for Hero class



Create HeroTests class and test gaining XP functionality by faking Weapon and Target classes



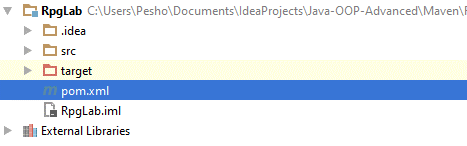
## Mocking

Include Mockito in the project dependencies, then:

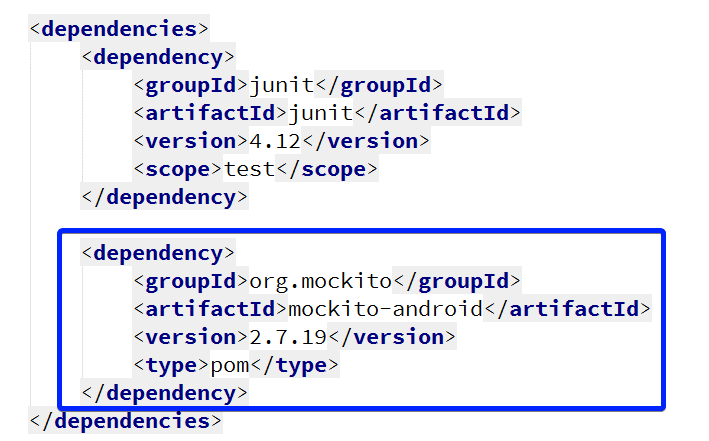
1. Mock fakes from previous problem
2. Implement **Hero Inventory**, holding unequipped weapons
   1. method - Iterable<Weapon> getInventory()
3. Implement Target giving random weapon upon death
   1. field - private List<Weapon> possibleLoot
4. Test Hero killing a target getting loot in his inventory

### Hints

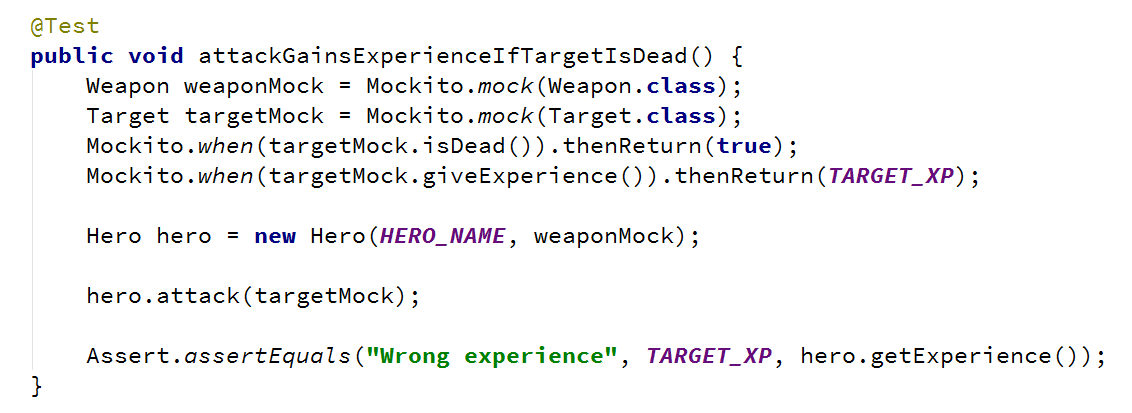
Locate pom.xml



Add Mockito dependency



Go to HeroTests and refactor the code, making use of Mockito



\*Implement hero inventory and **Target** dropping loot functionalities

\*Test **Hero** getting loot upon killing a **Target**