Stubs, Mocks, et Architecture

Objectifs

- Écrire un stub (code temporaire)
- Écrire un mock (faux code)
- L'architecture pour eviter les stub et mock
- Continuer la pratique de Git/GitHub

Avec seg3103_playground

- Créer le répertoire **/lab05**
  - Unzip **grades.zip** et **twitter.zip**
  - Assurez-vous que vous pouvez
    - Compiler le code
    - Exécuter le code
- Validez votre environment et commit le code AVANT de appliquer vos modifications

Grades

Homework #1
89

Homework #2
92

Homework #3
100

Homework #4
48

Midterm
73

Final
83

Labs #1
100

Labs #2
100

Labs #3
25

Labs #4
100

Labs #5
100

Labs #6
25

Final Grade

Letter Grade
--

Numeric Grade
--

Percent
--

CALCULATE

mix phx.server
http://localhost:4000

SVP lire les erreurs !!!

```
Unchecked dependencies for environment dev:
* telemetry_metrics (Hex package)
  the dependency is not available, run "mix deps.get"
* phoenix_live_view (Hex package)
  the dependency is not available, run "mix deps.get"
* telemetry_poller (Hex package)
  the dependency is not available, run "mix deps.get"
* phoenix_live_reload (Hex package)
  the dependency is not available, run "mix deps.get"
* jason (Hex package)
  the dependency is not available, run "mix deps.get"
* phoenix_html (Hex package)
  the dependency is not available, run "mix deps.get"
* phoenix (Hex package)
  the dependency is not available, run "mix deps.get"
* plug_cowboy (Hex package)
  the dependency is not available, run "mix deps.get"
** (Mix) Can't continue due to errors on dependencies
```

`mix deps.get`

```
[error] Could not start Node.js watcher because script "/Users/aforward/sin/courses/_/seg3
x03_internal/lab05_solution/grades/assets/node_modules/webpack/bin/webpack.js" does not ex
ist. Your Phoenix application is still running, however assets won't be compiled. You may
fix this by running "npm install" inside the "assets" directory.
```

```
cd assets && npm install
```

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Final Grade

Letter Grade
--

Numeric Grade
--

Percent
--

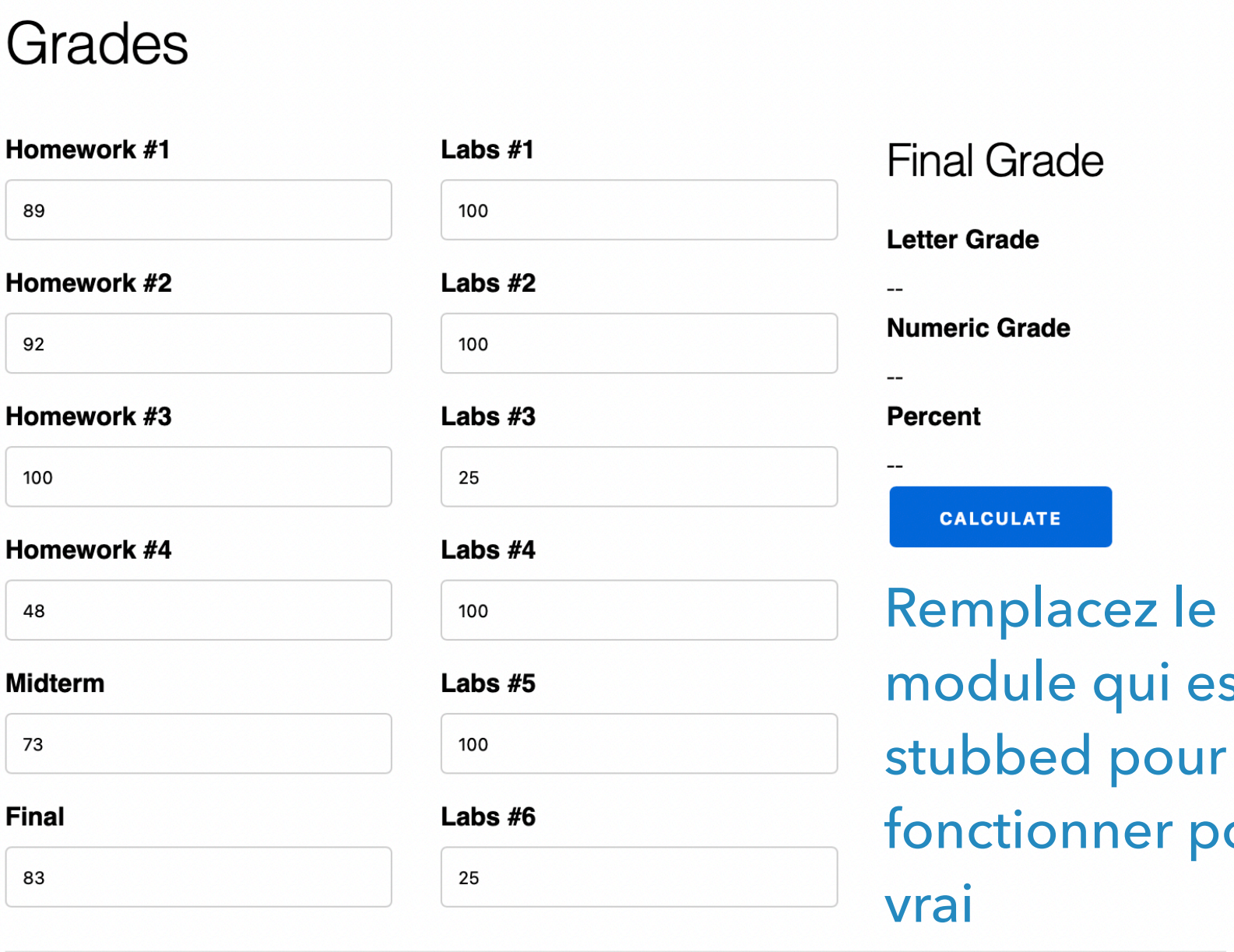
CALCULATE

Le bouton ne fonctionne pas

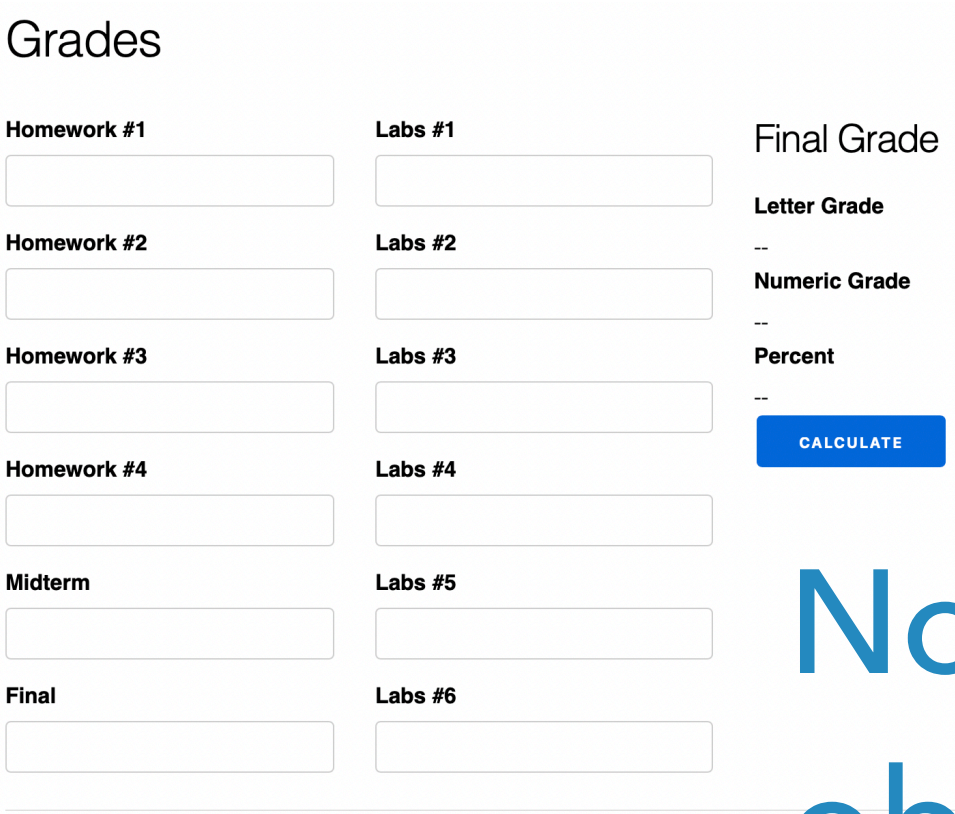
```
[error] GenServer #PID<0.2239.0> terminating
** (UndefinedFunctionError) function Grades.Calculator.letter_grade/1 is undefined
(module Grades.Calculator is not available)
    Grades.Calculator.letter_grade(%{final: "", homework: ["", "", "", ""], labs:
["", "", "", "", "", ""], midterm: ""})
    (grades 0.1.0) lib/grades_web/live/page_live.ex:23:
GradesWeb.PageLive.handle_event/3
```

Stub Grades.Calculator

- percentage_grade
- letter_grade
- numeric_grade



Remplacez le module qui est stubbed pour le faire fonctionner pour de vrai



Notez vos observations.

Tasty mocking framework for unit tests in Java

build passing coverage 85% license MIT

maven-central v3.11.1

Project status

Please see the release notes page.

Updates are announced via Twitter Follow @mockitojava and mailing list .

https://site.mockito.org

Pas réussi de faire
fonctionner Mockito
comme prévu avec JUnit5.

Vous pouvez jouer avec
Mockito vous-même et
partager votre code si vous
le faites fonctionner.

Easy mocking. Better testing.

Getting started

Download (v4.3)

http://easymock.org/

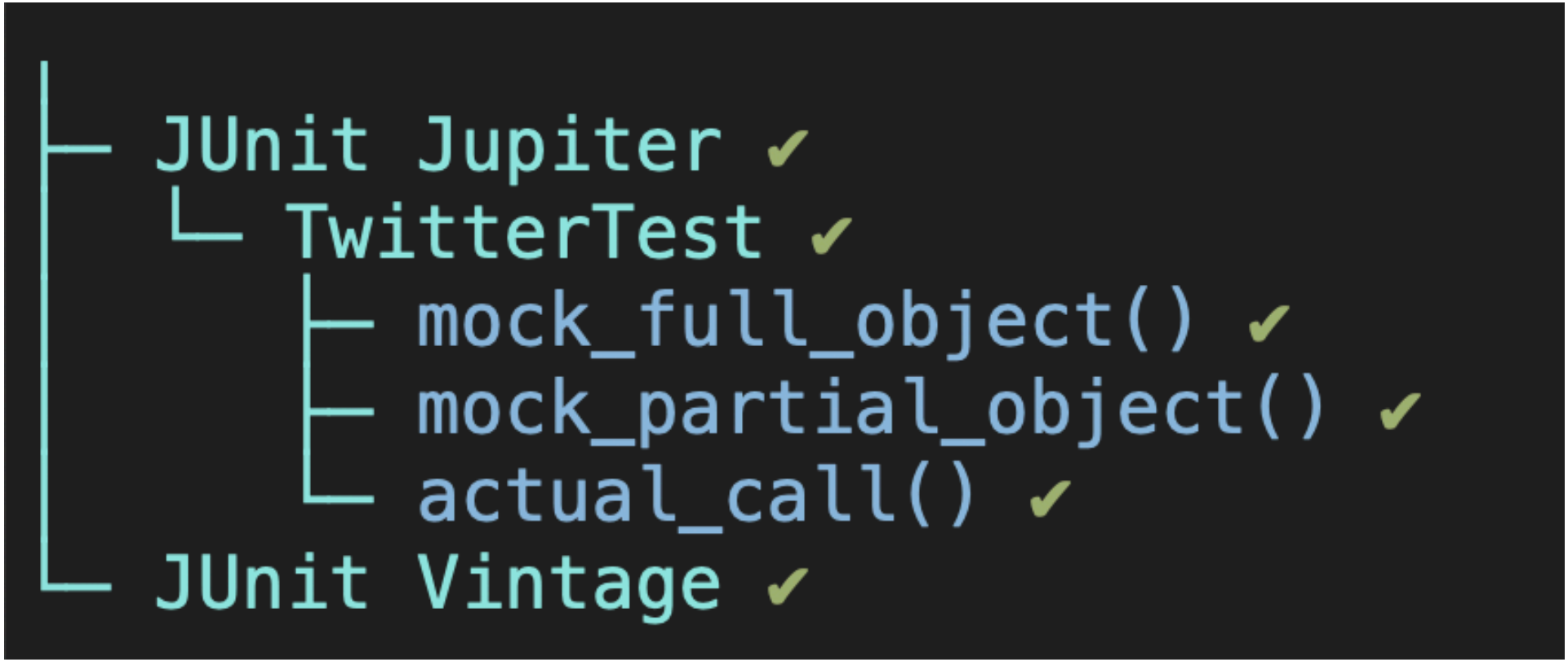
https://easymock.org/user-guide.html

```
twitter (main)$ ./bin/run
Twitter Text Feed
Hello to @you

twitter (main)$ ./bin/run
Twitter Text Feed

twitter (main)$ ./bin/run
Twitter Text Feed
Hello to @you

twitter (main)$ ./bin/run
Twitter Text Feed
I am tweet that likes to talk about @me
```


JUnit Jupiter ✔
TwitterTest ✔
mock_full_object() ✔
mock_partial_object() ✔
actual_call() ✔
JUnit Vintage ✔

./bin/test

```
  JUnit Jupiter:TwitterTest:mock_full_object()
    MethodSource [className = 'TwitterTest', methodName = 'mock_full_object', methodParameterTypes = '']
    => java.lang.ExceptionInInitializerError
       org.easymock.internal.ClassProxyFactory.createEnhancer(ClassProxyFactory.java:233)
       org.easymock.internal.ClassProxyFactory.createProxy(ClassProxyFactory.java:165)
       org.easymock.internal.MocksControl.createMock(MocksControl.java:107)
       org.easymock.internal.MocksControl.createMock(MocksControl.java:85)
       org.easymock.IMocksControl.mock(IMocksControl.java:67)
       [...]
     Caused by: org.easymock.cglib.core.CodeGenerationException:
java.lang.reflect.InaccessibleObjectException-->Unable to make protected final java.lang.Class
java.lang.ClassLoader.defineClass(java.lang.String,byte[],int,int,java.security.ProtectionDomain) throws
java.lang.ClassFormatError accessible: module java.base does not "opens java.lang" to unnamed module
@480d3575
       org.easymock.cglib.core.ReflectUtils.defineClass(ReflectUtils.java:464)
       org.easymock.cglib.core.AbstractClassGenerator.generate(AbstractClassGenerator.java:339)

org.easymock.cglib.core.AbstractClassGenerator$ClassLoaderData$3.apply(Abstra lassGenerator.java:96)

org.easymock.cglib.core.AbstractClassGenerator$ClassLoaderData$3.apply(AbstractCla sGenerator.java:94)
       org.easymock.cglib.core.internal.LoadingCache$2.call(LoadingCache.java:54)
```

RTFE

--add-opens java.base/java.lang=ALL-UNNAMED

https://github.com/easymock/easymock/issues/235

```
├─ JUnit Jupiter ✔
│  └─ TwitterTest ✔
│     ├─ mock_full_object() ✔
│     ├─ mock_partial_object() ✔
│     └─ actual_call() ✘ Cannot invoke "String.cont
<local2>" is null
└─ JUnit Vintage ✔
```

./bin/test 🥲

```java
@Test
void mock_full_object() {

    Twitter twitter = createMock("twitter", Twitter.class);

    expect(twitter.loadTweet()).andReturn("hello @me");
    expect(twitter.loadTweet()).andReturn("hello @you");
    replay(twitter);

    String actual;

    actual = twitter.loadTweet();
    assertEquals("hello @me", actual);

    actual = twitter.loadTweet();
    assertEquals("hello @you", actual);
}
```

```java
@Test
void mock_partial_object() {

    Twitter twitter = partialMockBuilder(Twitter.class)
      .addMockedMethod("loadTweet")
      .createMock();

    expect(twitter.loadTweet()).andReturn("hello @me").times(2);
    replay(twitter);

    boolean actual;

    actual = twitter.isMentionned("me");
    assertEquals(true, actual);

    actual = twitter.isMentionned("you");
    assertEquals(false, actual);
}
```

```
@Test
void isMentionned_lookForAtSymbol() {
  // Assuming a tweet like "hello @me"
  // isMentionned("me") should be true
  // isMentionned("you") should be false
}

@Test
void isMentionned_dontReturnSubstringMatches() {
  // Assuming a tweet like "hello @meat"
  // isMentionned("me") should be false
  // isMentionned("meat") should be true
}
```

```
@Test
void isMentionned_superStringNotFound() {
  // Assuming a tweet like "hello @me"
  // isMentionned("me") should be true
  // isMentionned("meat") should be false
}

@Test
void isMentionned_handleNull() {
  // Assuming no tweet is available (i.e. null)
  // isMentionned("me") should be false
  // isMentionned("meat") should be false
}
```

Test isMentionned()

Submission

- All work should written under
  - **seg3103_playground/lab04**
- Git commit your work at each step
  - When the application starts (BEFORE YOU MAKE ANY CHANGES)
  - With the stubbed value
  - With the value from assignment #2
- Create **README.md** to summarize your work
- Share your repository with the teacher and TA (s)
  - Submissions to BrightSpace should clearly reference your GitHub repository

- Grades project
  - Your stubbed code
  - Results from putting in your *working* code from assignment #2
  - Observations from the stub
- Twitter
  - Implement the 4 missing test cases using mock objects
  - Show the results of those tests
  - Analyze the results by looking at the code of isMentionned
  - If necessary fix the code based on your testing