App Development & Modeling

BSc in Applied Computing

Produced by

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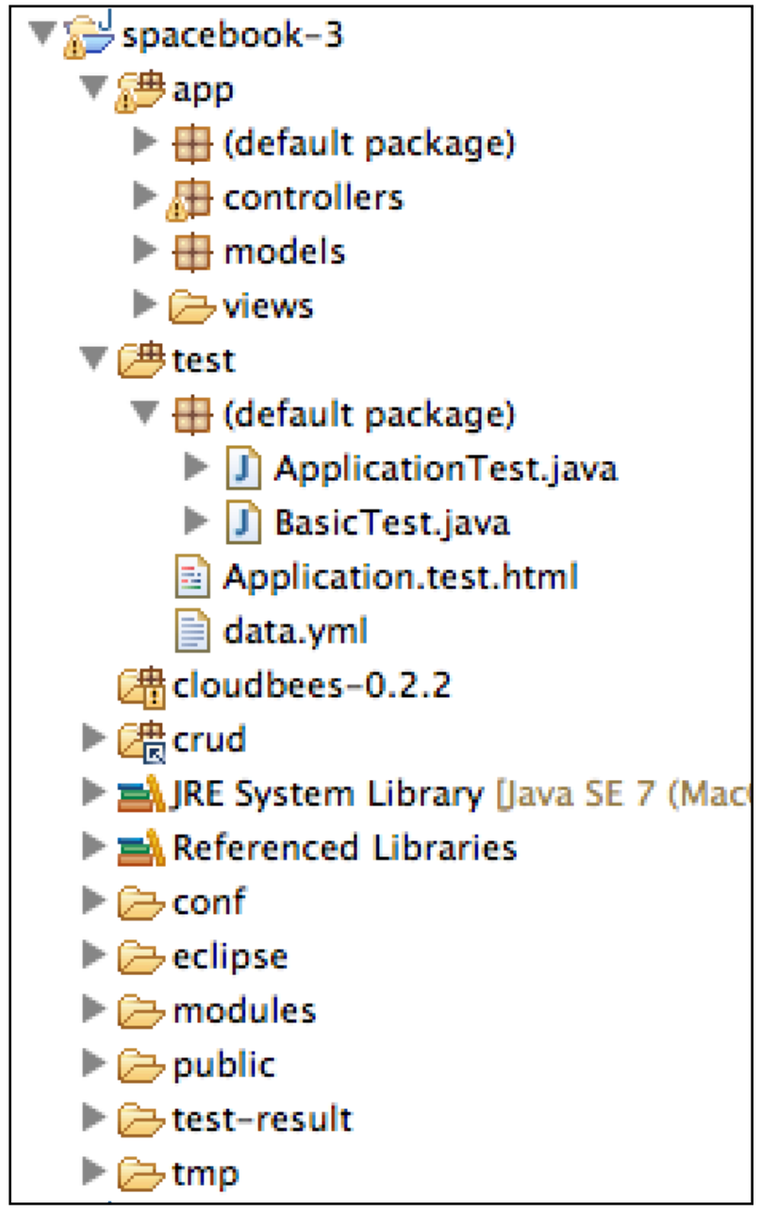
eLearning support unit

TDD in Play

Test Driven Development & Play

- Play comes with TDD support built in
- ‘test’ folder contains placeholders for simple tests
- Write standard ‘JUnit’ tests in here



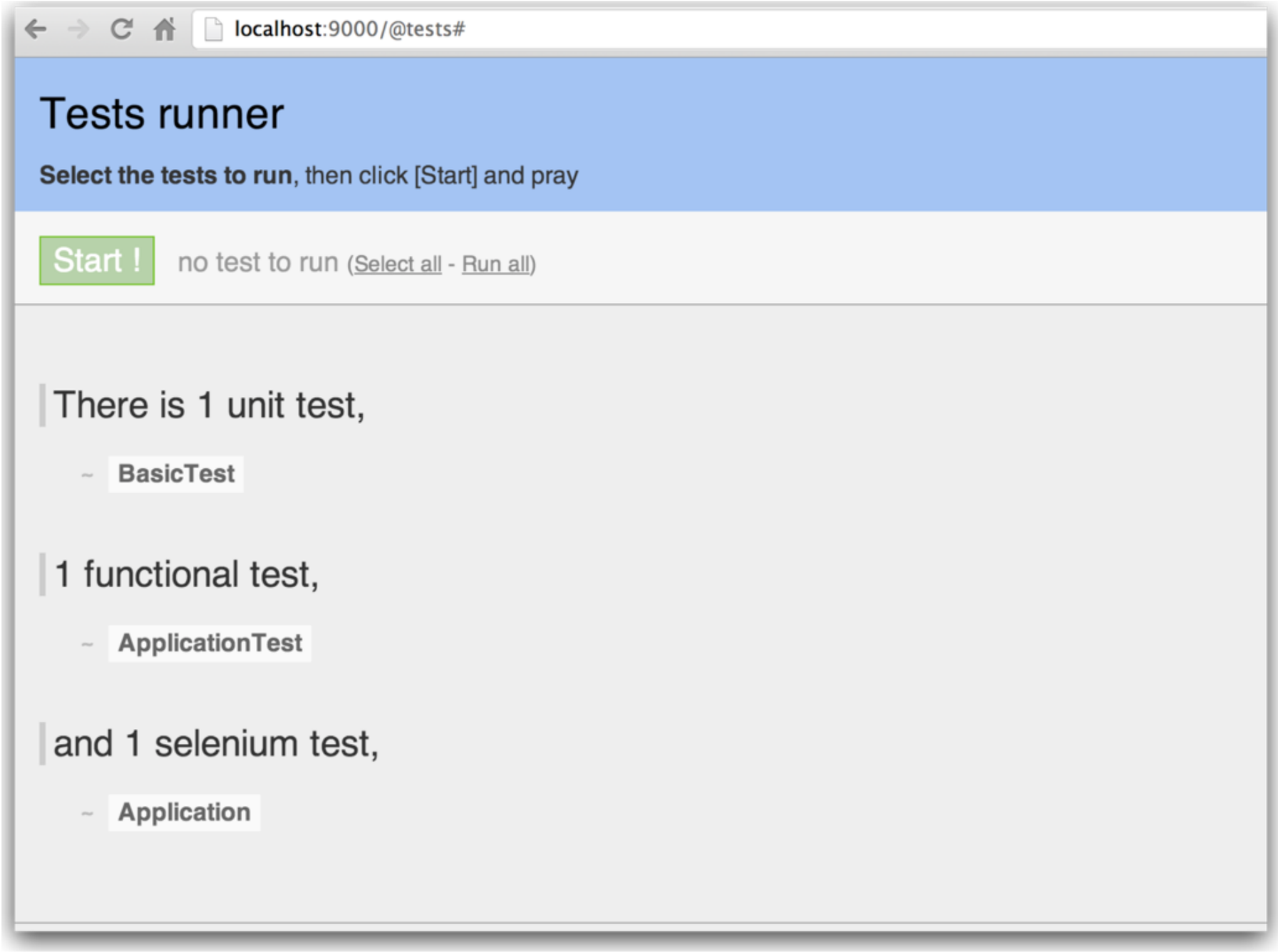
Run Play in Test Mode

- Type ‘play test’ instead of ‘play run’

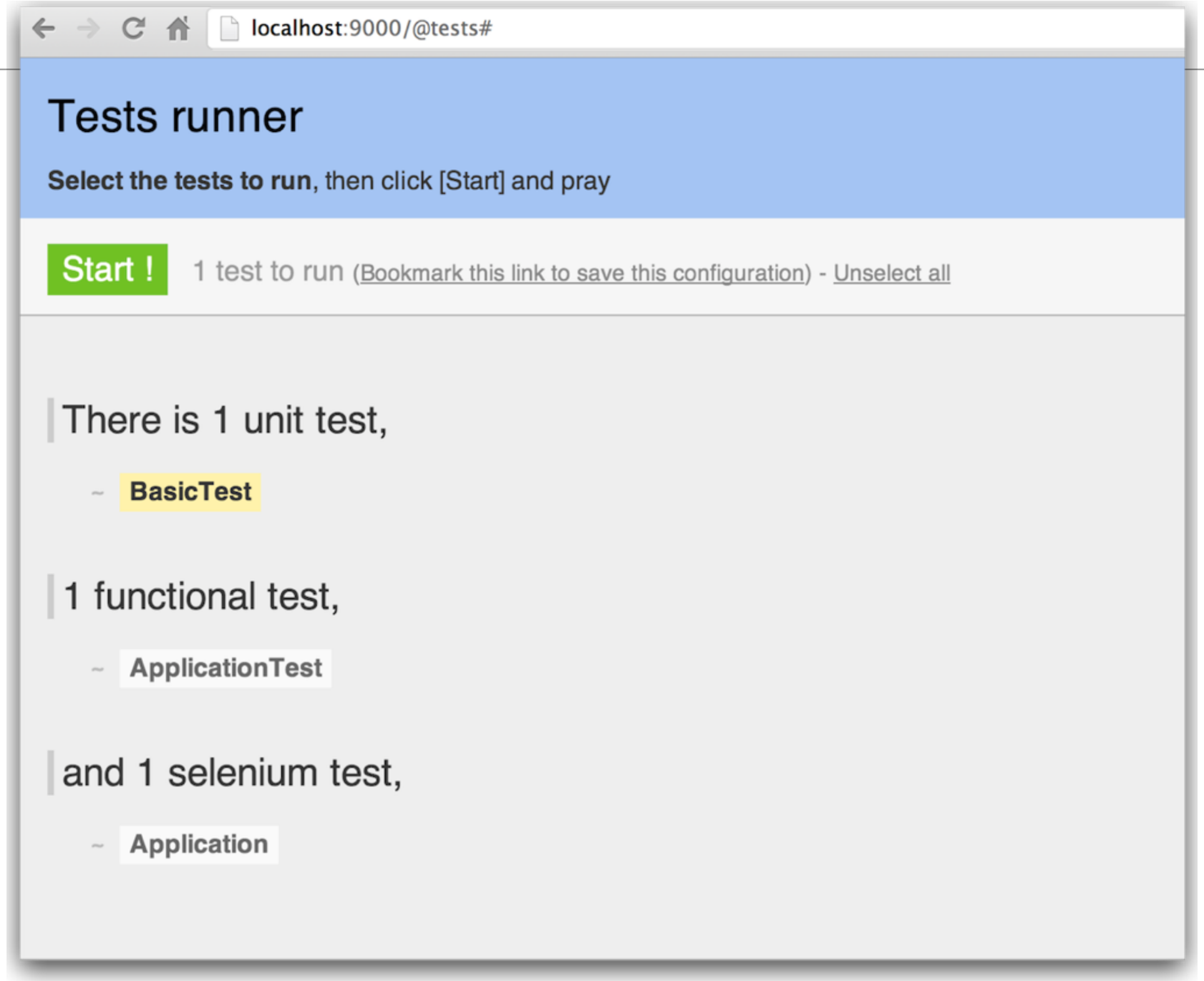
```
$ play test
~        _            _
~  _ __ | | __ _ _  _| |
~ | '_ \| |/ _' | || |_|
~ |  __/|_|\____|\__ (_)
~ |_|             |__/
~
~ play! 1.2.5, http://www.playframework.org
~ framework ID is test
~
~ Running in test mode
~ Ctrl+C to stop
~
CompilerOracle: exclude jregex/Pretokenizer.next
Listening for transport dt_socket at address: 8000
12:56:48,840 INFO  ~ Starting /Users/edeleastar/repos/modules/app-dev-modelling-prj/spacebook-3
12:56:48,843 INFO  ~ Module cloudbees is available (/Users/edeleastar/repos/modules/app-dev-modelling-prj/spacebook-3/
modules/cloudbees-0.2.2)
12:56:48,844 INFO  ~ Module crud is available (/Users/edeleastar/dev/play-1.2.5/modules/crud)
12:56:49,353 WARN  ~ You're running Play! in DEV mode
~
~ Go to http://localhost:9000/@tests to run the tests
~
12:56:49,420 INFO  ~ Listening for HTTP on port 9000 (Waiting a first request to start) ...
```

Play JUnit Test Runner

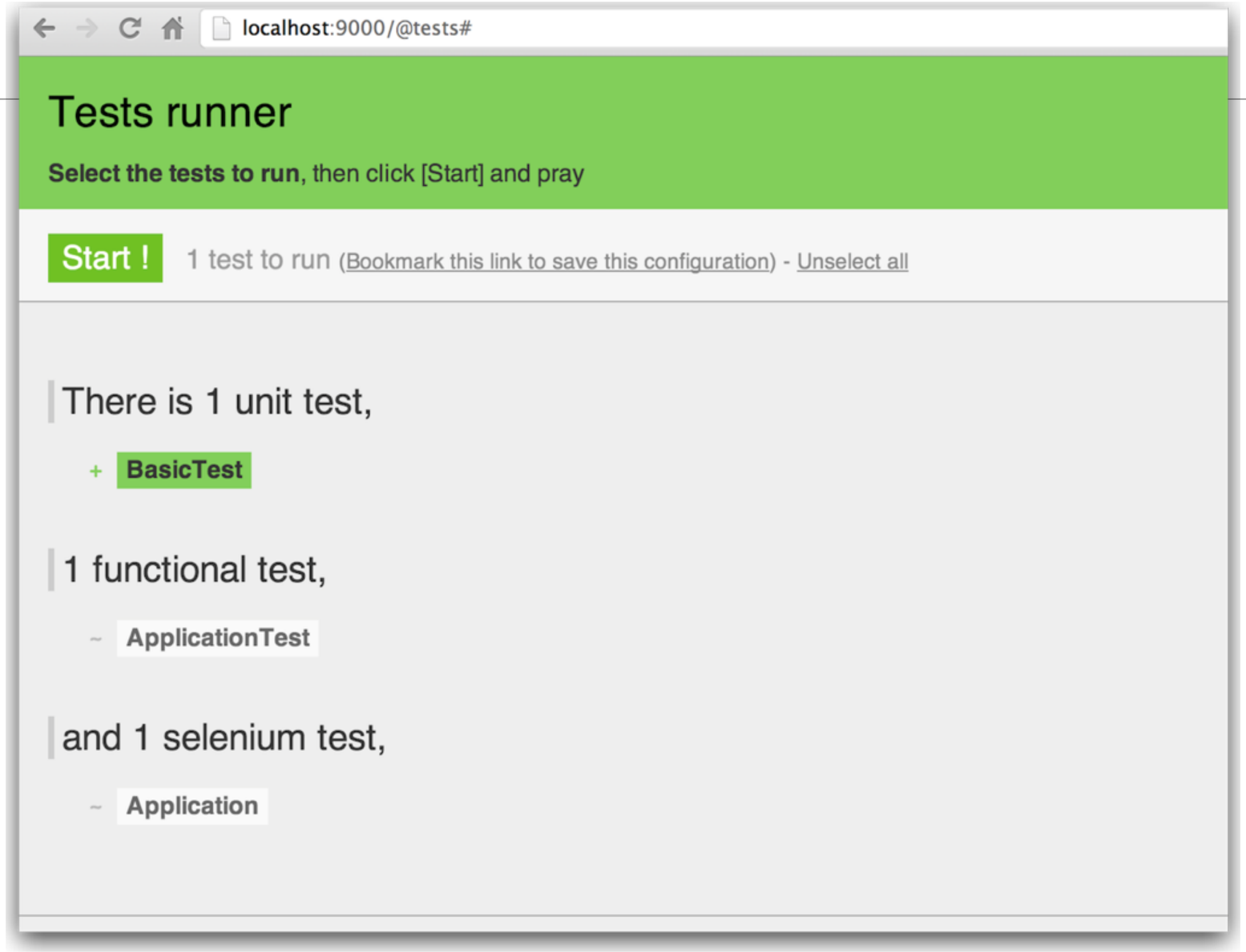
- Browse to ‘http://localhost/@tests’



Selecting Tests...



Running Tests... Success



Test Source

- Simple test to see if test infrastructure is operating successfully

```
public class BasicTest extends UnitTest
{

  @Test
  public void aVeryImportantThingToTest()
  {
    assertEquals(2, 1 + 1);
  }

}
```

Test Source - Deliberate Error

- Introduce change we know will definitely fail...

```
public class BasicTest extends UnitTest
{

  @Test
  public void aVeryImportantThingToTest()
  {
    assertEquals(3, 1 + 1);
  }

}
```

localhost:9000/@tests#

Tests runner

Select the tests to run, then click [Start] and pray

Start ! 1 test to run (Bookmark this link to save this configuration) - Unselect all

There is 1 unit test,

- **BasicTest**

aVeryImportantThingToTest	**Failure, expected:<3> but was:<2>** In /test/BasicTest.java, line 11 : assertEquals(3, 1 + 1); Show trace	3 ms

1 functional test,

~ **ApplicationTest**

and 1 selenium test,

~ **Application**

Test for the User Model class

```
@Test
public void testCreateUser()
{
  User bob = new User("bob", "jones", 20, "irish", "bob@jones.com", "secret");
  bob.save();

  User testUser = User.findByEmail("bob@jones.com");
  assertNotNull (testUser);
}
```

- Simple test:
  - Create a user object ‘bob’
  - Store it in the database
  - Try to find it in the database
- This test confirms that we can write/read simple object from the database

Another User Test

```
@Test
public void testFindUser()
{
  User jim = new User("jim", "smith", 20, "irish", "jim@smith.com", "secret");
  jim.save();

  User test = User.findByEmail("jim@smith.com");
  assertNotNull (test);

  User alice = User.findByEmail("alice@jones.com");
  assertNull (alice);
}
```

- Similar to last test, except:
  - Confirm that if we try to find a non-existent user, we get ‘null’
- This test confirms that a null will be returned when querying got a non-existent user

Message Test (1)

```
@Test
public void testCreateMessage()
{
  User mary = new User("mary", "collins", 20, "irish", "mary@collins.com", "secret");
  mary.save();

  User joan = new User("joan", "collins", 20, "irish", "joan@collins.com", "secret");
  joan.save();

  Message msg = new Message (mary, joan, "Hi there - how are you");
  msg.save();

  List<Message> joansMessages = Message.find("byTo", joan).fetch();
  assertEquals (joansMessages.size(), 1);
}
```

Message Test (2)

```
@Test
public void testNoMessagese()
{
  User mary = new User("mary", "colllins", 20, "irish", "mary@collins.com", "secret");
  mary.save();

  List<Message> joansMessages = Message.find("byTo", mary).fetch();
  assertEquals (joansMessages.size(), 0);
}
```

Message Test (3)

```
@Test
public void testMultipleMessages()
{
  User mary = new User("mary", "colllins", 20, "irish", "mary@collins.com", "secret");
  mary.save();

  User joan = new User("joan", "colllins", 20, "irish", "joan@collins.com", "secret");
  joan.save();

  Message msg1 = new Message (mary, joan, "Hi there - how are you");
  msg1.save();
  Message msg2 = new Message (mary, joan, "Where are you now?");
  msg2.save();

  List<Message> joansMessages = Message.find("byTo", joan).fetch();
  assertEquals (joansMessages.size(), 2);
  Message message1 = joansMessages.get(0);
  assertEquals(message1.messageText, "Hi there - how are you");
  Message message2 = joansMessages.get(1);
  assertEquals(message2.messageText, "Where are you now?");
}
```

Create Tests for Each Model Object

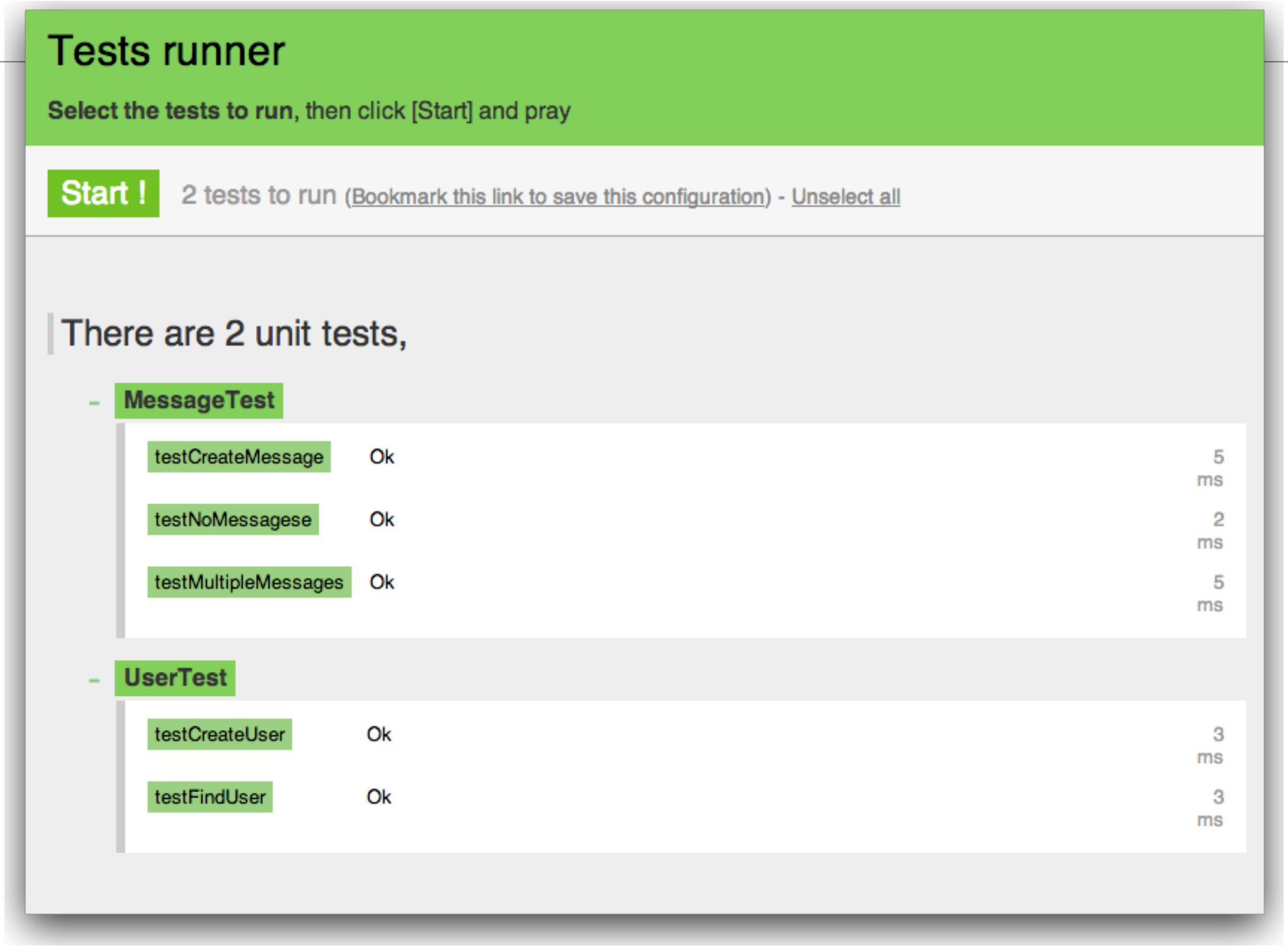
UserTest

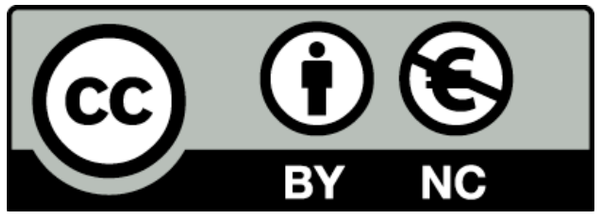
```
public class UserTest extends UnitTest
{

  @BeforeClass
  public static void loadDB()
  {
    Fixtures.deleteAllModels();
  }

  @Test
  public void testCreateUser()
  {
    User bob = new User("bob", "jones", 20, "irish", "bob@jones.com", "secret");
    bob.save();

    User testUser = User.findByEmail("bob@jones.com");
    assertNotNull (testUser);
  }

  @Test
  public void testFindUser()
  {
    User jim = new User("jim", "smith", 20, "irish", "jim@smith.com", "secret");
    jim.save();

    User test = User.findByEmail("jim@smith.com");
    assertNotNull (test);

    User alice = User.findByEmail("alice@jones.com");
    assertNull (alice);
  }
}
```

MessageTest

```
public class MessageTest extends UnitTest
{
  @BeforeClass
  public static void loadDB()
  {
    Fixtures.deleteAllModels();
  }

  @Test
  public void testCreateMessage()
  {
    User mary = new User("mary", "colllins", 20, "irish", "mary@collins.com", "secret");
    mary.save();

    User joan = new User("joan", "colllins", 20, "irish", "joan@collins.com", "secret");
    joan.save();

    Message msg = new Message (mary, joan, "Hi there - how are you");
    msg.save();

    List<Message> joansMessages = Message.find("byTo", joan).fetch();
    assertEquals (joansMessages.size(), 1);
  }

  @Test
  public void testNoMessagese()
  {
    User mary = new User("mary", "colllins", 20, "irish", "mary@collins.com", "secret");
    mary.save();

    List<Message> joansMessages = Message.find("byTo", mary).fetch();
    assertEquals (joansMessages.size(), 0);
  }

  @Test
  public void testMultipleMessages()
  {
    User mary = new User("mary", "colllins", 20, "irish", "mary@collins.com", "secret");
    mary.save();

    User joan = new User("joan", "colllins", 20, "irish", "joan@collins.com", "secret");
    joan.save();

    Message msg1 = new Message (mary, joan, "Hi there - how are you");
    msg1.save();
    Message msg2 = new Message (mary, joan, "Where are you now?");
    msg2.save();

    List<Message> joansMessages = Message.find("byTo", joan).fetch();
    assertEquals (joansMessages.size(), 2);
    Message message1 = joansMessages.get(0);
    assertEquals(message1.messageText, "Hi there - how are you");
    Message message2 = joansMessages.get(1);
    assertEquals(message2.messageText, "Where are you now?");
  }

}
```

Test Runner Runs All Tests





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