

COMP2007 Coursework 3

Purpose: To familiarise yourself with basic unit testing using TestNG.

Submission: Complete this coursework by 11.55pm Monday 16th November and submit online via Moodle.

Marking: This is a *collaborative* coursework that will be binary marked and is worth 2% of the overall module mark. Collaborative means that it is all right to work together on doing this coursework. The essential thing is that you individually get a good understanding of writing basic unit test code using the TestNG framework.

The Work

Preliminary: Download the basic BagTest example code from Moodle and make sure you can compile it and run the example tests. The example code is organised as a simple project in the way described during the lectures. You will need Ant installed to run the build file. See <http://ant.apache.org> for download information. Ant is installed on lab machines.

To run the tests:

- Unzip the file (using the 'unzip' command). This will create a working directory called BagTestCoursework containing the Ant build.xml file, the src directory with the Bag classes .java files, a test directory containing the test code .java files and the lib directory containing the TestNG .jar file. Note that all the classes have been placed within a package called mybag, so all the .java files are in a directories called mybag.
- Run the command 'ant test' from the command line. This will compile the code and run all the tests. A summary of the results will be displayed and a directory created called reports containing the HTML formatted test report.
- The command 'ant compile' just compiles the code and the command 'ant clean' will clean the project.

The project can be built from the command line, and the source code edited using an editor like emacs or JEdit. Alternatively the IDEA, Eclipse or NetBeans IDEs can be used but you will need to configure a project to use TestNG.

When you run the tests you should see this output (the path names will differ):

```
r$ ant test
Buildfile: build.xml

init:
    [mkdir] Created dir: code/BagTestCoursework/build
    [mkdir] Created dir: code/BagTestCoursework/test-output

compile:
    [javac] Compiling 11 source files to code/BagTestCoursework/build

test:
    [testng] [Parser] Running:
    [testng]   Ant suite
    [testng]
    [testng]
    [testng] =====
```

```
[testng] Ant suite
[testng] Total tests run: 9, Failures: 0, Skips: 0
[testng] =====
[testng]
```

```
BUILD SUCCESSFUL
Total time: 1 second
```

The full test report can be seen by loading the file `reports/test-output/index.html` into a web browser.

The Work: Test the Bag classes you created for coursework 1. Add your bag classes and other code to the project, then carry on creating new tests until you are confident your code works correctly. You should aim to add at least enough tests to make sure that every line of your code is run during a test (100% coverage).

The src and test code are kept in separate directories (don't muddle them up). Your concrete Bag classes should be added into the `src/mybag` directory, don't forget to add the package declaration to each. Your test methods should be added to the test classes in the `test/mybag` directory. See the comments in the code for more information.

Resources

- [TestNG \(http://testng.org\)](http://testng.org) testing framework. Visit the website to learn more about TestNG.
- [The TestNG Javadoc](http://testng.org/javadoc/). <http://testng.org/javadoc/>
- The [JUnit website](http://www.junit.org/) <http://www.junit.org/>. TestNG is an improved version of JUnit and can also run JUnit tests. Both TestNG and JUnit are based on the same approach to unit testing, so share many of the ideas and concepts.
- An [extensive collection of articles and papers](http://www.junit.org/taxonomy/term/12) about unit testing is available at the JUnit website, <http://www.junit.org/taxonomy/term/12>