

CMPSCI 521/621
Project #1
September 15, 2006
Due: October 13, 2006

Unit Testing with Junit and Coverlipse

In this assignment, you are asked to write unit test cases for 2 Java classes using JUnit and Coverlipse in Eclipse. The classes to be tested are **MutableFSA** and its super class **AbstractFSA**. Both classes are part of the LASER Finite-State Automaton (FSA) package¹. To compile these two classes, other classes of the package are needed. To make this assignment clear, two eclipse Java projects are provided.

1. Project **FSA Unit Test**, which includes three files, is the project you will need to look at and work with.
2. Project **FSA**, which includes all source code and necessary jar files for the package, is set up for compiling project **FSA Unit Test**.
3. The three files in the project **FSA Unit Test** are:
 - a. `MutableFSA.java` and `AbstractFSA.java` in the package **laser.fsa**: these two files contain methods to be tested.
 - b. `MutableFSATest.java` in the package **laser.fsa.test**: This file is generated automatically by the JUnit eclipse plugin. It contains the JUnit test class for the class `MutableFSA` and `AbstractFSA`. The **setUp** method and some member variables that are used to create test drivers have already been added in the class. Also, for each method in the class `MutableFSA` and `AbstractFSA` that is needed to test, a corresponding test method has been added in the test class. You are required to implement test cases for these methods only.

Assignment:

1. Complete the test methods for class `MutableFSATest`. There are 18 test methods in this class and one of them, **testRemoveState**, has been implemented as an example.
2. When writing test cases, please refer to the specification of the javadoc instead of the implementation. The javadoc files can be found in the project **FSA Unit Test**, under the **doc** directory. You may need to read the javadoc for two classes: **laser.fsa.MutableFSA** and **laser.fsainterface.FSAInterface** (there is no javadoc for **AbstractFSA**). Note that if you find a conflict between the javadoc and the code, do not change the code but let JUnit report failure.
3. For each test method you write, try to achieve 100% statement coverage for the corresponding method being tested. The tool Coverlipse will be used to find out which statements in the tested method are covered and which are not. Instructions for installing Coverlipse in eclipse are described below.
4. To simplify things, the above two projects are exported to the archive file **fsa.zip**, that can be downloaded here. You can import this file to restore the two projects. Instructions on importing the project are described below.

*Send the revised **MutableFSATest.java** to Anna Grishkan before 5 pm on September 13th.*

¹ written by Nathan Jokel

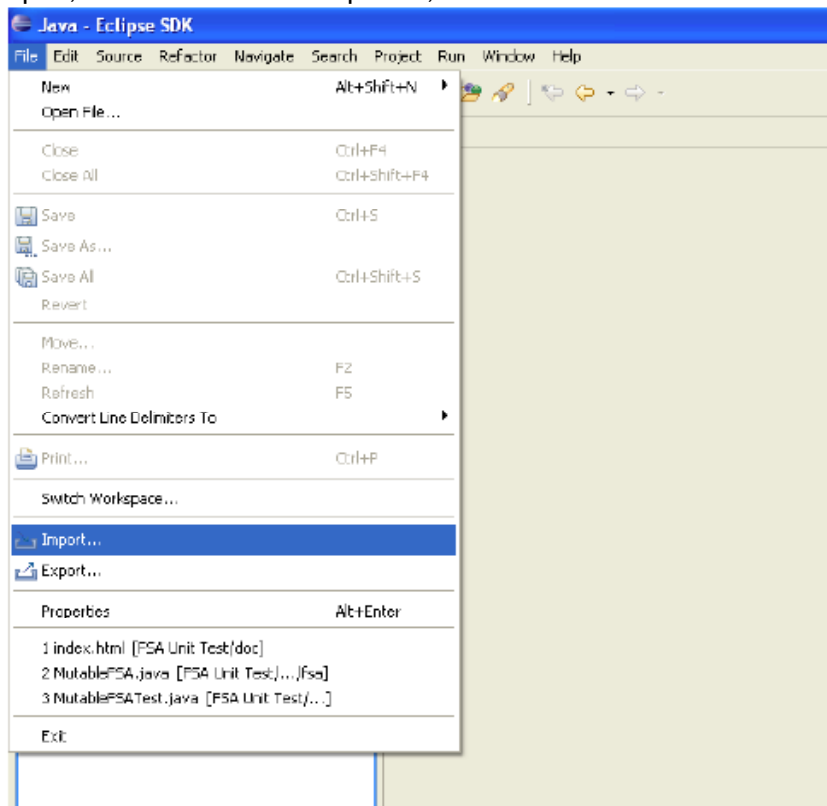
Directions & Notes:

Please use Sun Java 1.5 for this homework, since the FSA package uses generics, which is a new feature of Java 1.5. A generics tutorial is available from <http://java.sun.com/j2se/1.5/pdf/generics-tutorial.pdf>. (Note that generics are not an important part of this homework.)

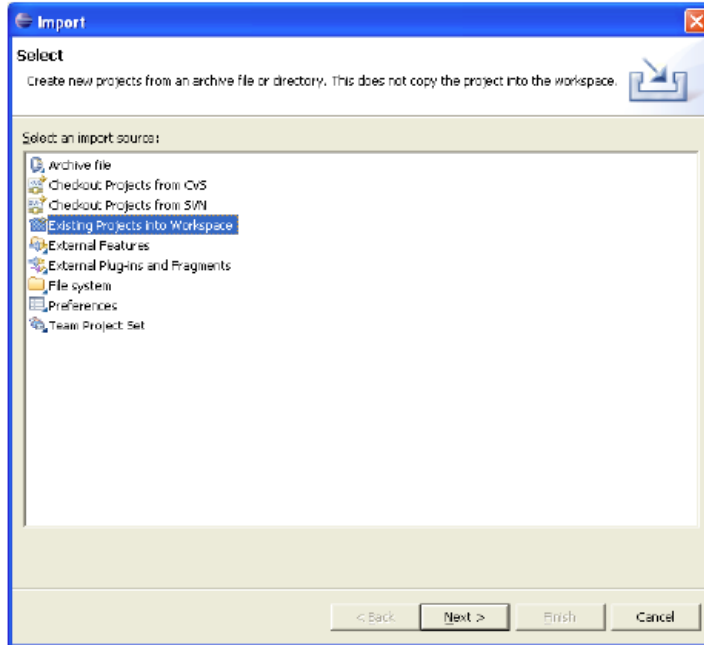
Coverlipse can be found at: <http://coverlipse.sourceforge.net/index.php>. The installation instructions can be found at: <http://coverlipse.sourceforge.net/download.php>. From this page you can see there are two ways to install Coverlipse in eclipse. We recommend the first way: "Installing via the eclipse update mechanism", which seems easier.

Importing Project

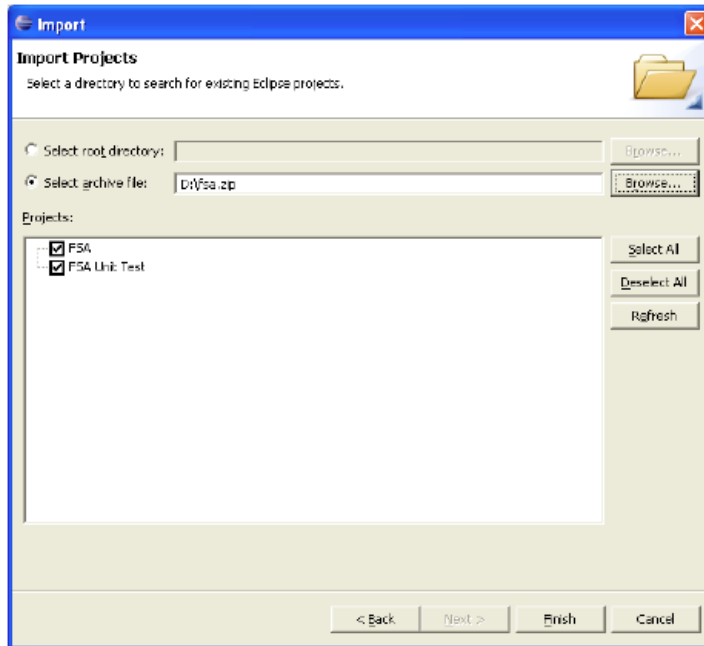
- Download the file **fsa.zip** from the course website and save it to some directory (e.g. d:\)
- Start eclipse, click menu: File->Import..., shown below



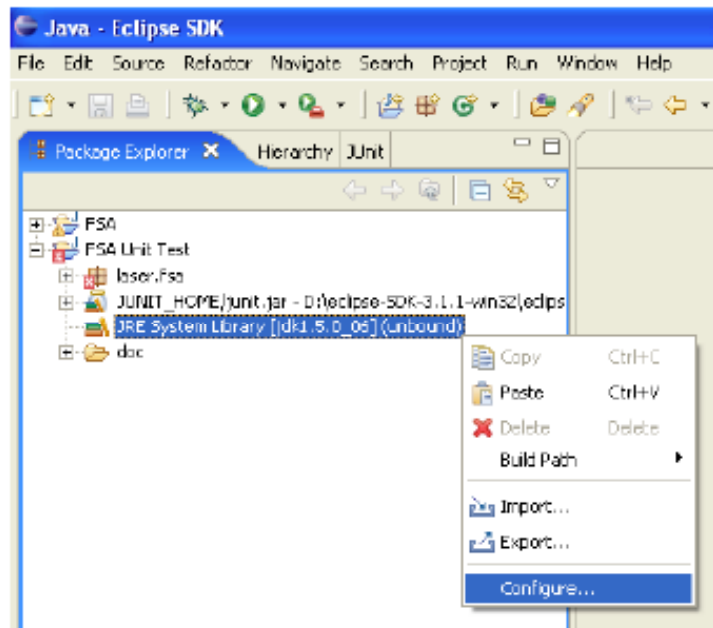
- In the dialog shown below, select “Existing projects into Workspace”, and then click “Next>”



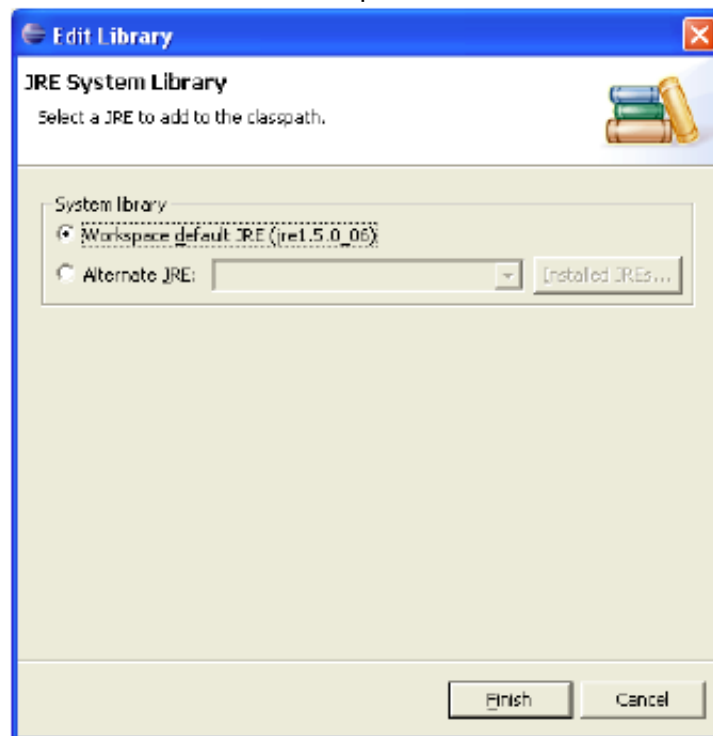
- In the dialog shown below, select “Select archive file:”, and then use “Browse...” to choose file **fsa.zip**. The two projects in the zip file should be available to import now. Click “Finish”.



- After importing, project **FSA** can be compiled successfully. Project **FSA Unit Test**, however, cannot be compiled. To fix this problem, click project **FSA Unit Test**, and then **right-click** the item “JRE System Library [jdk1.5.0_06] (unbound)” and then click “Configure...”



- In the dialog shown below, select “Workspace default JRE (jre 1.5.0_06)” and click “Finish”. And this will finish the importation.



Running Unit testing

After you finish your test cases, you can run the unit test as shown below:

- Select file **MutableFSATest.java**, right click it, select "Run As" -> "JUnit w/Coverlipse"

