

Lab 0A: Java — Classes and Objects

CS 205

Lab objectives:

- Import, edit and run a Java application in Eclipse.
- Generate documentation using Javadoc.
- Use class fields, methods, and constructors.
- Use the ArrayList class.
- Use a static field shared by all class objects.
- Write test code to ensure that your code behaves as required.

Before starting this lab, you should have read Chapter 1 in your text. Follow the steps in this lab carefully and complete the assignments.

1. Download the lab0aStarter zip file from the course web site.
2. Launch Eclipse and create a new Java project by selecting File-Import-General-Existing Projects into Workspace. Click Next. Make sure Select archive file is selected and browse to the downloaded zip file. Click Finish.
3. Examine the two source files and verify that you understand all the code.
4. Run the GreeterTester main program by right-clicking GreeterTester and select Run As-Java Application. The output will appear in the console.
5. Observe the Javadoc comments that are in the form `/** ... */`. These comments contain tags like `@param` and `@return` which will generate the appropriate documentation. Generate javadoc documentation by right-clicking the default package in the Package Explorer pane and selecting Export-Java-Javadoc. In the dialog window, use the Configure button to navigate to the javadoc program, `C:\Program Files\Java\jdk1.8.0_xx\bin\javadoc.exe` (Windows; this will likely be filled-in automatically on Mac and Linux). Next, select the destination for the doclet (usually a `doc` folder inside your project folder). Finally, click Finish. Check the generated documentation.
6. In the Greeter class add a `sayGoodbye` method. You can easily add the javadoc comments by right-clicking in the declaration line of the method and selecting Source-Generate Element Comment. Sorry, but you still have to type in the content of the comment. Add code in GreeterTester to test this method and also generate the new javadoc documentation that includes this method.

7. Add a method `void swapNames(Greeter other)` in the `Greeter` class that swaps the names of this greeter with another. What could go wrong with this method? Test that! Complete the javadoc.
8. Modify the code so that instead of always saying “Hello”, the code will cycle through several separate greetings. To accomplish this you will add a private field which is an `ArrayList` of `Strings`. This `ArrayList` will contain the separate greetings. You will also add a count generator which is an instance of the `ModCounter` class included with the project. Because each greeter object doesn’t need its own count generator, make the generator static so that it is shared among all `Greeter` objects. How do you know that the count generator is being shared among all your `Greeter` objects? Test that! How do you know that the count resets to 0 after the last greeting has been used? Test that! Complete the `JavaDoc`.
9. Make sure that the javadoc comments in your files include your name. (The javadoc `@author` tag is handy for this.) When you are satisfied with your project and documentation, export the project (right-click on `Lab0a` in the `Package Explorer` pane, select `Export-General-Archive File`) and submit the project in `Canvas`.