Lab Exercise #1
Project Compilation, Javadoc Generation, and Submission
Computer Science 2334

Name: ____

Learning Objectives (Milestones):

1. Install Java Development Kit and SSH Secure Shell Software
2. Successfully compile a sample Java program and generate Javadoc documentation for the program.
3. Create a project submission.
4. Successfully submit the project using the submit tool on the Computer Science Network.

Instructions:

This lab exercise *requires a laptop with an Internet connection*. Once you have completed the exercises in this document, you will submit it for grading. You should legibly write your name at the top of this lab handout.

1. Install the Development Kit. Refer to the Java Installation Instructions on the class website.

   Once you have Java installed, you can check your installation to ensure everything is correctly installed and that your PATH environment variable is correctly set by opening a command window (click on *Start* | *Run* and then enter the command “cmd”, “cmd.exe”, “command”, “command.exe”, or “command.com” depending on which version of Windows you have) and entering the commands shown below. If you have the correct version installed and your path set correctly the following commands should give the results listed below the commands.

   ```
   ...>java -version
   java version "1.5.0_12"
   ......

   ...> javac -version
   javac 1.5.0_12
   ......
   ```

2. Install the SSH Secure Shell Software on your laptop. This will be required later in this exercise to submit the electronic portions of this lab exercise and for the electronic submission of your projects. Download the software from the CS Website at http://www.cs.ou.edu/download/sshwin.exe. Save the file to your Desktop and once it has finished downloading, click on the saved file to run it. Follow the instructions given on your screen to complete the installation of the software.

3. Download the sample `Lab1.java` program from the class website. Save this file into a folder on your laptop where you will keep your CS 2334 Projects and Labs. It is recommended that you create a separate folder for each project and lab exercise. I suggest that you create a `cs2334` folder in the root of your laptop's hard drive (this would be `C:\cs2334`) and then create a lab1 folder under inside of the `cs2334` folder (`C:\cs2334\lab1`) and store these files in the lab1 folder.
   You will also need to download the `docs.opt` file from the class website. Save it in the same folder as the Lab1.java file.

4. Add the following code to the main method of `Lab1.java`.

   ```
   Lab1 lab1Program;

   lab1Program = new Lab1( "This is the first lab exercise for CS 2334." );
   ```

5. Compile the `Lab1.java` file from the DOS command prompt with the following command (you need to open a command window to do this). You should receive several compilation errors that you need to identify and correct in the source code. List these errors in the space provided below with a short explanation of how you fixed them. Be sure to list the line number that the actual error occurred on in the `Lab1.java` file. Once you have removed all of these errors, the file should compile without any errors or warnings.

   ```
   javac Lab1.java
   ```

   List the errors found and give a short explanation of how you fixed each one:

6. Run the `Lab1` program from the DOS command prompt. This should result in a runtime error. Fix this error in the program source code and verify that the program works by running it again. The command required to run the program is:

   ```
   java Lab1
   ```

   List the runtime error encountered and briefly explain the problem:

7. Generate Javadoc documentation for the `Lab1` program with the following command. (This must be done at the DOS command prompt.)

   ```
   javadoc @docs.opt *.java
   ```

   This command will create a new sub-folder named javadocs and place several files in the folder including an index.html file. The output of the `javadoc` command should be similar to:

   ```
   Creating destination directory: "javadocs\"
   Loading source file Lab1.java...
   Constructing Javadoc information...
   Standard Doclet version 1.5.0_08
   Building tree for all the packages and classes...
   Generating javadocs\Lab1.html...
   Generating javadocs\package-frame.html...
   Generating javadocs\package-summary.html...
   Generating javadocs\package-tree.html...
   Generating javadocs\constant-values.html...
   Building index for all the packages and classes...
   Generating javadocs\overview-tree.html...
   Generating javadocs\index-all.html...
   Generating javadocs\deprecated-list.html...
   Building index for all classes...
   Generating javadocs\allclasses-frame.html...
   Generating javadocs\allclasses-noframe.html...
   Generating javadocs\index.html...
   Generating javadocs\help-doc.html...
   Generating javadocs\stylesheet.css...
   ```

   Next, open the `javadoc\index.html` file using Internet Explorer or another web browser and inspect it's contents.

8. Now you need to create three text files that are required with every project submission for the course. These files are named COMPILATION.txt, EXECUTION.txt, and MILESTONES.txt. Note that these names must be in all caps, except for the .txt extension. If this exact name format is not used, the submit tool will not accept your project for submission. You can use *notepad* or *wordpad* to create these files (both of these programs can be found in Windows under *Start* | *Program Files* | *Accessories*).

   i. For each project, create a text file named COMPILATION.txt (everything but the extension in all caps). This file should contain the exact command line you used to compile your project in MS-DOS. If you used an Integrated Development Environment (IDE) to create your code, remember that the grader will not have access to your IDE. Your code needs to compile from the MS-DOS command prompt.
   For this submission, the contents of COMPILATION.txt should be:

   ```
   javac Lab1.java
   ```

   ii. For each project, create a text file named EXECUTION.txt (everything but the extension in all caps). This file should contain the exact command line you used to execute your project at the MS-DOS command line. If command line arguments are used, explain the command line arguments.
   For this submission, the contents of EXECUTION.txt should be:

   ```
   java Lab1
   ```

   iii. For each project, create a text file named MILESTONES.txt (everything but the extension in all caps). This file will list the numbered MILESTONES of the project, and list which MILESTONES you believe that you have met. If you know of problems in meeting the Milestone, explain the problem, so that you may be considered for partial credit.
   For this submission, the contents of MILESTONES.txt should be:

   ```
   Milestone #1:
   ```

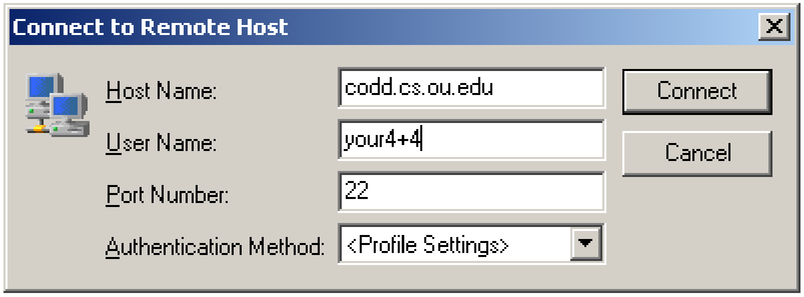
```
          I met this Milestone.
     Milestone #2:
          I met this Milestone.
     Milestone #3:
          I met this Milestone.
     Milestone #4:
          I met this Milestone.
```

9. In order to electronically submit your files via the Computer Science Network, you must *sftp* into codd.cs.ou.edu and transfer your files from your laptop to your CSN account. The instructions for doing this are given below:

   i. Start the Secure File Transfer Client program:
      a) Click on 'Start' in the lower left hand corner of the screen.
      b) In the menu that appears, click on 'Programs'.
      c) In the next menu that appears, click on 'SSH Secure Shell'.
      d) Now click on 'Secure File Transfer Client' in the newest menu that has appeared.

   ii. Connect to codd.cs.ou.edu:
      a) Click on 'Quick Connect' either in the main window or under the 'File' menu of the SSH Secure File Transfer program.

      b) A 'Connect to Remote Host' dialog will display. Enter *codd.cs.ou.edu* for the Host Name and your account name (your 4+4) for the User Name as shown below. Then, click on the 'Connect' button.



Host Name: codd.cs.ou.edu
User Name: your4+4
Port Number: 22
Authentication Method: <Profile Settings>

      c) A dialog box will display asking 'Do you want to save the new host key to the local database?' Answer 'Yes' by clicking on the 'Yes' button.

      d) Enter your account password in the 'Enter Password' dialog and click on 'OK'. Your default password is `CS#<account name>`. For example, Will Smith, whose student id # is 345-24-9660, has the *account name* smit9660 with a default password of `cs#smit9660`. You will change your password in Step 10 of this exercise.

   iii. Transfer your files to *codd.cs.ou.edu*:
      a) Once a connection has been established, you need to create a new folder in your CSN account. Do this by right clicking in the right hand side pane of the program and choosing the 'New Folder' menu option. For each lab/project you will want to create a new folder. I suggest you use the name *lab1* for the folder for this lab exercise.

      b) Browse into the new folder (*lab1*) by double clicking on the folder icon for *lab1*.

      c) In the left hand pane of the program, browse to the folder that holds your CS2334 lab exercise files. If you followed suggestions on where to store files given in Step 3 of this handout, you can do this by double clicking on 'My Computer', 'Local Disk C:', 'cs2334', and then 'lab 1'.

      d) Select the files to transfer (upload) to your CSN account. You need transfer the lab1.java, COMPILATION.txt, EXECUTION.txt, and MILESTONES.txt files. Once you have selected the files to upload, click on the 'Upload' menu option under the 'Operation' menu.

10. Once you have transferred your files to *codd* you can *ssh* into your account on *codd.cs.ou.edu* and use the submit command to submit your project. The instructions for doing this are given below:

i. Open an SSH terminal by choosing the 'New Terminal' menu option of the 'Window' menu. This will provide a command shell on *codd.cs.ou.edu* that you will use to submit your program.

ii. Change your CSN account password.
At the command prompt in the SSH Secure Shell window type the following command to change your password:

```
passwd
```

At the prompt type your current password and press enter. Then enter a new password at the second prompt and press enter. At the third prompt type the new password again and press enter.
It is important that you choose a good password. Do not use your name, phone number, student id, account name, or any other information that is linked to your identity. It is your responsibility to safeguard your account and the files you have stored on the account.

iii. Submit your lab exercise (project):

a) In order submit your project, you must change your current directory, which is your home directory (/home/<username>), to the directory where your files are stored (/home/<username>/lab1). The command to perform this operation must be typed at the prompt in the SSH Shell window and is the same command as used in MS-DOS to change your current directory, *cd*. The command you need to type is:

```
cd lab1
```

After executing this command, the command prompt should be [<*username*>@codd lab1].
You can always determine which directory you are currently in by invoking the *pwd* command:

```
pwd
```

b) You can view a listing of the files in this directory with the *ls* command:

```
ls
```

ls will provide a listing in a list format including files sizes if used as follows:

```
ls -lh
```

The results of the second form of ls should be:

```
[smit9660@codd lab1]$ ls -lh
total 7.0K
-rw-r--r--    1 smit9660    squid      21 Jan 15 20:34 COMPILATION.txt
-rw-r--r--    1 smit9660    squid      15 Jan 15 20:34 EXECUTION.txt
-rw-r--r--    1 smit9660    squid    1.6K Jan 15 20:34 Lab1.java
-rw-r--r--    1 smit9660    squid      44 Jan 15 20:34 MILESTONES.txt
```

c) Now you can submit your lab (or project) using the *submit* command. The form of the command is

```
/opt/cs2334/bin/submit <course name> <assignment name> <extra files>
```

The <*course name*> field should be *cs2334-011*, *cs2334-012*, or *cs2334-013*, depending on which lab section you are in. For project submissions the <*course name* > field will always be *cs2334-010.*

The <*assignment name*> field will be the name of the lab or project you are submitting in the form of *lab<#>* or *project<#>* where *<#>* is the lab or project number. For this lab exercise, the <*assignment name*> field is *lab1.*

Note, you must correctly specify the <*course name*> and <*assignment name*> fields in order to submit your lab or project. These fields are case sensitive.

The final field, <*extra files*>, contains the names of any source code files or other files to be submitted other than the COMPILATION.txt, EXECUTION.txt, and MILESTONES.txt files. These three files are always required for projects and are required for this lab exercise. The submit tool will automatically retrieve these from the directory where you submit your project or lab from. If these files are not found in this directory, the submit tool will report an error and reject the submission.

You should NEVER submit .class files. These files will always be deleted before your project is graded.

For each lab and project assignment, the command required for the submit tool including the <*course name*> and <*assignment name*> fields will be provided in the assignment specifications.

To submit your lab assignment type the following command:

```
      /opt/cs2334/bin/submit cs2334-011 lab1 Lab1.java
```

Note, depending on which lab section you are enrolled in, you may need to substitute *cs2334-012* or *cs2334-013* for *cs2334-011*.

If your submission is accepted, you should receive output from submit that is similar the output given below. The two most important messages are: *SUBMISSION ACCEPTED* and *SUBMISSION FOR <your user name> IS SUCCESSFUL ....*

```
[smit9660@codd lab1]$ /opt/cs2334/bin/submit cs2334-011 lab1 Lab1.java
submit, version 10:43:32 Jan 12 2005 (cs2334)
Working ...
Log of submission for smit9660
-----------------------------------------------------

Submission Log for smit9660  Sat Jan 15 15:17:10 2005

smit9660 on codd submitting from /home/smit9660/lab1
required file COMPILATION.txt is present
required file EXECUTION.txt is present
required file MILESTONES.txt is present
extra file Lab1.java is present

Testing Submission of Lab 1 for smit9660

Compiling ...

Compiling Lab1.java ...
>javac Lab1.java
Your Lab1.java file compiled with no problems.

Generating Javadocs ...

>javadoc @docs.opt *.java
Loading source file Lab1.java...
Constructing Javadoc information...
Standard Doclet version 1.5.0_01
Building tree for all the packages and classes...
Generating Lab1.html...
Generating package-frame.html...
Generating package-summary.html...
Generating package-tree.html...
Generating constant-values.html...
Building index for all the packages and classes...
```

```
Generating overview-tree.html...
Generating index-all.html...
Generating deprecated-list.html...
Building index for all classes...
Generating allclasses-frame.html...
Generating allclasses-noframe.html...
Generating index.html...
Generating help-doc.html...
Generating stylesheet.css...
Javadocs created with no problems.

SUBMISSION ACCEPTED

Submitting COMPILATION.txt ...
Submitting EXECUTION.txt ...
Submitting MILESTONES.txt ...
Submitting Lab1.java ...
SUBMISSION FOR smit9660 IS SUCCESSFUL ...
-----------------------------------------------------
```

If you receive any error messages or the message:

+++ SUBMISSION FAILED +++

you must correct the problems indicated in the output of the submit command and submit the lab or project again.

11. Once you have submitted a lab exercise or project, ***do not delete*** the files you submitted from your CSN account. ***Do not alter, edit, or execute*** any of these files. In case of an error in the submission process, these files can be used as a back-up for grading purposes. However, if they are modified after the project is submitted, they will not be accepted.