

Creating Java Programs and Maintaining Your Web Site

Introduction

Throughout the semester you will be writing Java programs, maintaining a portfolio of your lab work by posting finished products to your EIU personal website, and submitting your lab electronically every week. This handout provides instructions which detail how to accomplish these things. Follow the instructions **carefully**, as there are many ways to make mistakes! Do **not** change the names of files, projects, or other identifiers when they are specified in an assignment — in particular, pay attention to upper- and lower-case spelling.

Your Lab Responsibilities — An Overview

Each week you will be responsible for the following activities. The steps involved in each are listed below, with expanded explanations in the “How To...” sections.

- 1. Creating Java Programs.** Just as most of us cannot crank out a ten-page research paper spontaneously, writing a computer program takes **planning**. The problem assigned must be well-understood, the logic must be designed, and only then should you sit down in the lab to type up any Java code. Programming includes an activity known as “debugging” – eliminating errors in the code and/or logic of a program. Testing your code for correctness is a very important step in the process. The steps to creating a program:
 - (a) Start **NetBeans** if necessary
 - (b) Create a new project and empty java file
 - (c) Add the **acmLibrary.jar** to the project’s library
 - (d) Enter the Java Program in the editor panel
 - (e) Execute and debug the program
- 2. Publishing to the Web.** As you finish each program, it is to be published to your personal EIU web site. This allows your professor to grade your work and for you to share the results of your programming efforts with family and friends. Once each program is published, it is up to you to test it online to ensure it is correct in order that you may receive full credit. Unless otherwise specified, each lab exercise must be published by the beginning of the following lab. The steps to publishing are:
 - (a) Drag the **project** folder to the WEB button, click BUILD, choose window size, enter password
 - (b) Check the applet works correctly on your web site.
- 3. Electronic Submission.** Once you have finished **all** of the exercises for a particular lab, you must then submit the entire lab directory, for example, **lab1** or **lab2**, for further grading. Unless otherwise specified, each lab submission is due by the beginning of the following lab. In addition, you may be instructed to print one or more of your programs to turn in at the beginning of the following lab. The steps to submitting your lab:
 - (a) Drag the **lab** folder to the SUB-MIT button, choose **mat2170**

How To... Create A Java Program

Let us assume you are creating the program **YourProjectName**, to be placed in your **/mat2170/lab1** directory. If you haven’t already, login and start **NetBeans** (click the silvery-blue cube near the left end of the dock).



Create a Java Project

1. In **NetBeans**, select **File→New Project...**

Within the *Categories* panel, select **Java**.

Within *Projects*, select **Java Class Library**.

Click **Next** to proceed.

2. You are now able to provide a project name and assign it a location. For this example, we want to put the project in a **lab1** directory within your **mat2170** folder, and the name of the project is to be **YourProjectName**.

- For the project name, enter the name of your program: **YourProjectName**
- In the project location, add the path to the particular lab (in this case, **/mat2170/lab1**) to the path name (the first time you will need to erase **NetBeansProject** from the path), giving a result similar to:

Project Location: **/external/Users/jsbach/mat2170/lab1**

Project Folder: **/external/Users/jsbach/mat2170/lab1/YourProjectName**

Click **Finish** to advance.

Make the acmLibrary available to this project

Right-click on **Libraries** in this new project, and select **Add JAR/Folder**

In the **Add JAR/Folder** window, navigate to your **www** folder, select the **acmLibrary.jar**, and click on **Choose** to finish. **Do NOT** select **._acmLibrary.jar**

Create An Empty Java File

1. First time: Right-click on **Source Packages**, then select **New→Other...**

When you are given the choice, select **Java** from the categories provided.

The file type to select is **Empty Java File**.

Click **Next**, then replace the suggested class name **NewEmpty** with the desired class name.

Note: *the file name and class name must match.*

Click the **Finish** button.

2. After doing the above once, **Empty Java File** should be available to select directly for your future projects with: **New→Empty Java File**

Enter The Java Program

1. The right-hand editor panel appears as a “blank slate,” the empty Java file you just created, which will ultimately contain the source code for your program.
2. Enter the Java code in this editor panel either using copy and paste or by typing it in from scratch. All programs should begin with header comments, contain block comments, and be formatted by using **RIGHT-CLICK** and choosing **FORMAT**.

Execute And Debug The Program

1. Click in the editor window (with the program in it) to place the focus there if it isn't already.

2. Select **Run**→**Run File** from the **NetBean** menus (or right-click in the editor and choose **Run File**).

If all goes well, you will see *Build Successful* in the bottom **Output** panel, the Java applet viewer will start, and the results of your program will appear in that window. After you have checked the results for correctness, close the applet viewer window (click on red dot in the top, left-hand corner).

Otherwise, the computer will complain about *syntax errors*. If your program has errors, carefully inspect your code for mistakes. Make corrections to the program, then execute the program again. Repeat this process until the program has no more errors. Ask the instructor or proctor for help if you need it.

3. Continue executing and testing your program until you are reasonably certain it is correct. Format the code by right-clicking the program and choosing **FORMAT**, then save your program.
4. When you have finished the program, select **File**→**Close Project "YourProjectName"** to close the project. It is alright to leave a few projects open for reference, but too many will result in **NetBeans** slowing down noticeably. If you are asked if you want to save your work, do save it.

How To... Publish To The Web

You should already have dragged the **WEB** application to your Finder window toolbar. Once you have successfully completed a programming exercise, to receive full credit for it, you must publish it to your web site.



1. In a Finder window, locate your project (in **mat2170/lab1** in our example).
2. Drag the project folder to the **WEB** button at the top of your Finder window.
3. When given a choice for the window size, unless instructed otherwise, choose the first option.
4. When the **BUILD** button appears, click it.
5. When prompted for your password, enter your EIU password – the same one you used to login.
6. When the **WEB** synchronization has finished, check that all is well by going to **Safari** and entering the url: **www.pen.eiu.edu/~YourUserIDHere** where, of course, you substitute your own user ID. It is your responsibility to make sure your programs execute correctly on your web site. If the window is too small, drag and drop the project folder to **WEB** again and choose a larger window size. If there is another issue which you are unable to resolve, let your professor know.



How To... Submit Electronically

You should already have dragged the **SUB-MIT** application to your Finder window toolbar. Once you have successfully completed **all** programming exercises for a lab, to receive full credit for it, you must submit the entire lab electronically.



1. In a Finder window, locate the **labN** folder within your **mat2170** folder, where **N** is the lab number. In our example, it was **lab1**.
2. Drag the lab folder to the **SUB-MIT** icon on the Finder window toolbar.
3. When given the choice of courses, select **mat2170**
4. You should get a message indicating your lab was successfully submitted. If not, contact your professor.

Note: all electronic submissions are *time stamped*. If you submit a lab more than once, the most current version will be selected for grading. The *time stamp* will also be used to determine whether the lab folder was handed in on time.

How To... Close Application Programs and Logoff

- Always close out of **NetBeans** and **Safari** when finished in the lab, before you log out.
- In **NetBeans**, select **File** → **Exit**; in **Safari**, select **Safari** → **Quit Safari**.
- When all programs have been shut down, logoff:
At the top left of the screen, select the **Apple icon** → **Log Out** *userid...*

Be sure to **always log out of your account** before you leave lab. Failure to do so may result in catastrophic loss of files, or worse.