Quick-start for GAE in Eclipse

1. To set up the GAE development environment, you need to firstly install the GAE Java SDK, then install Google Plugin for eclipse. Also, you also need to make sure your eclipse is using JDK instead of JRE.

Google Plugin for eclipse, which is used to develop GAE project in eclipse, requires JDK 1.7. If your version of JDK is not 1.7, you can go to Java SE download site to download and install the latest version of JDK 1.7.

After you install the JDK, you need to set it up in your Eclipse. In Eclipse, go to “Eclipse”->"Preferences", in the left column, find "Java" -> "Installed JREs", check if you have selected the latest JDK you installed.

If not, you need to add JDK to Eclipse. To do this, click "Add..." button, select "Standard VM" in the following window and click "Next". Input the path to your JDK in "JRE Home" in the following window, as shown below. Click "Finish" when you are done, and remember to select the jdk you just added in the previous window.

2. Install the Google Plugin for Eclipse: To install the Google App Engine plugin for Eclipse, go to “Install New Software” under “Help” in Eclipse, put the installation location (e.g. https://dl.google.com/eclipse/plugin/4.4) for your version of Eclipse in the “Work With” textbox and hit Enter. If your version of Eclipse is Juno (i.e. 4.2),
then you need to use the installation location https://dl.google.com/eclipse/plugin/4.2 etc. This will bring up a list of plugins in the window below and you only need to select “Google Plugin for Eclipse” and “SDKs” in that list and click “Next”. You should then proceed with the next steps to complete the plugin installation. You can see a full description of this process at https://developers.google.com/eclipse/docs/install-eclipse-4.4. You will need to restart Eclipse for the changes to take effect.

3. Create a new web app: To create a new web app, you need to make sure your eclipse's Java compiler compliance level is 1.7. Open Eclipse Preference by clicking “Eclipse”->“Preferences”, go to "Java"->"Compiler", select "1.7" in "Compiler compliance level" as shown below.

![Preferences](image)

Then follow the below steps to create a web application project:

- Click "File"->"New"->"Other...", find "Web Application Project" under "Google", click "Next >"
- Input "Project name" and "Package" in the following windows. In this assignment, the project name is *University* and the package name is *university*. We don't need Google Web Toolkit, so uncheck "Use Google Web Toolkit". Click "Finish" when you are done.
4. Following the above steps will create the following project structure:

5. Add the provided `ProcessCommandServlet.java` file under the `src/university` folder and `university.jsp` under the `war` folder in the above structure. Also replace the contents of the `web.xml` file (under `war/WEB-INF`) with the contents of the `web.xml` file we provide.

6. If you run the project and go to `http://localhost:8888` in your browser, you will see the interface of your web application. Hitting the “send command” button will return “null” until you implement each of the required methods in the `ProcessCommandServlet.java` file.

7. The only file you will need to modify is `ProcessCommandServlet.java`. The parts you will need to implement in that file are clearly marked, with comments to guide you. For additional information on querying the datastore of the Google App Engine, you can check [https://developers.google.com/appengine/docs/java/datastore/queries](https://developers.google.com/appengine/docs/java/datastore/queries).

8. Once you are done with the project and have tested it offline, you should upload your application to the Google App Engine. For online deployment, you need to get and set an application ID for your project by following the steps at [https://developers.google.com/eclipse/docs/appengine_appid_version](https://developers.google.com/eclipse/docs/appengine_appid_version). After setting your application ID, you can deploy your project by following the steps at [https://developers.google.com/eclipse/docs/appengine_deploy](https://developers.google.com/eclipse/docs/appengine_deploy). Make sure you do
not exceed the free storage and access limits when testing your application online, so we can test it online too. You might also want to delete the data in the datastore generated by your application, but the results of the tests we perform should not be affected even if you do not (unless you coincidentally insert the same data that we will use in our tests).

Note: This tutorial was adapted from http://www.cs.dartmouth.edu/~campbell/cs65/lecture23/lecture23.html. You can find additional details about GAE there.