Homework 0: Environment Setup

COMS W4111: Introduction to Databases
Sections 002, V02
Spring 2023

(v 1.0; 19-JAN-2023)

Introduction and Overview

Homework 0 provides step-by-step instructions on how to install and set up necessary tools for this course/section. HW 0 also contains tests to verify successful installation. We start the semester with a HW 0 environment setup prior to HW 1. This allows us to resolve configuration and set up issues before students begin working on graded assignments.

Completing the HW requires using a Jupyter notebook, running tests and providing screenshots. Students run the tests and include the screenshots in the Jupyter notebook S23-W4111-HW0. The notebook includes additional information and guidance, including submission format.

This assignment is for both Programming and Non-Programming tracks. All steps will be required for both tracks unless specifically marked for **Programming Only**.

Total points for homework assignments and exams determine final grade. The final point total is between 0 and 100. HW 0 is not worth any points, i.e. the points earned for submission is 0. Failing to submit HW 0 **on time without using late days will result in a 5 points deduction from HW 1,** however.

Due date: September 29, 11:59 PM EDT on GradeScope

Please note:

- You may NOT use late days.
- You submit on Gradescope. The notebook S23-W4111-HW0.ipynb provides submission guidance.

The following tools will need to be installed and or setup, and tested:

1. Anaconda/Python 3/Jupyter Notebook
2. PyCharm (Programming Track only, but strongly recommended for all students).

3. MySQL Server Community Edition.
4. DataGrip

HW 0 Project

There are two ways to get the project you use for HW0:

- Clone the GitHub repository (https://github.com/donald-f-ferguson/S23-W4111-HW0).
- There is also an option to download a zip file that contains the project files.

We recommend using Git. There are online instructions for installation and use. Some of the tools that you install will contain Git support.

The project has the following structure:

- /HW0_Test: Some test results will go into this directory.
- /web_app: A simple web application.
- S23-W4111-HW0.ipynb: The Jupyter notebook you use for completing the HW.
- Requirements.txt: You use this file during setup.
- HW0PyCharmTest.py: A test for the python/PyCharm environment.
- /sql contains files you will use to load data into MySQL.

There are some README.md files that provide optional information.

You can ignore all other files in the project.

The professor will hold an online, recorded recitation on 21-Jan at approximately 1000 EST to demo installation and use of the software. We will publish the exact time and Zoom URL when we can.

Anaconda/Python 3/Jupyter Notebook

Follow the online instructions to download and install Anaconda Individual Edition here. A successful installation produces a new application Anaconda Navigator.

Once installation is complete:

1. Launch/start Anaconda Navigator
2. Select and Launch Jupyter Notebook

A file system/folder navigator page will appear in the browser. Navigate to the folder/directory containing the HW 0 files. You created the folder/directory either by cloning the class repository and making a copy of the relevant folder, or by downloading a zip file and unzipping.

Click on the link S23-W4111-HW0.ipynb. This will launch the Jupyter Notebook in a new browser window/tab. Switch to the notebook in the browser. Follow the instructions in the notebook under the heading “Section 2 Testing Anaconda and Python.”

PyCharm

Note: Programming Track only, recommended for all.

Download the *professional* version of PyCharm. You need to apply for a free education license. Please install PyCharm Professional. You can install the trial version and apply the license later if necessary.

PyCharm requires configuration for each project. In the test for this section you will practice configuring a Python Environment.

Start PyCharm, and in PyCharm use the file open menu to open the project S23-W4111-HW0 that you cloned/unzipped. Click on the HW0PyCharmTest.py file. The Anaconda installation should make Python 3.8 the default interpreter for your projects. If you get a message about missing an interpreter or cannot find the run option, please follow online instructions to configure a Python interpreter for the project.

Follow the instructions and replace your *uni* in the Python file where specified. Right click on the HW0PyCharmTest.py file, either on the tab or anywhere in the file’s body. Click “Run HW0PyCharmTest” to execute. Take a screenshot of your window and embed it into the test notebook file provided where specified. There is a Markdown cell. You just need to replace the name of the file in Image("./PyCharmScreenshot.png"). The notebook contains instructions.

If your file will not run because it is missing a configuration or interpreter follow the above instructions, otherwise move onto the next section.

MySQL Server Community Edition

You must install MySQL (Server) Community. There is a download link and you can select your operating system. For Mac, you need to install the correct version for your chipset (ARM, Intel). The installation is relatively easy. There are

- Instruction for Windows. Use the MySQL Installer method and choose the Developer Default.
- Instructions for Mac.
- Linux.

At some point, you will be promoted for/have to set login/authentication options.

- Write down and remember the *root* user ID and *password.* You are installing on a local machine with no sensitive data. A simple password is OK. We recommend the password *dbuserbdbuser.* Using a common password solves problems due to your forgetting your password.
- **Choose the Legacy Authentication method.**

Installing MySQL registers MySQL Server as a service. It should start automatically. If you are ever unsure if MySQL Server is running, there are online OS specific instructions for determining status, starting and stopping the server.

DataGrip

DataGrip will be the GUI (Graphical User Interface)/integrated development environment (IDE) and tool that allows you to visualize and edit data table definitions and data on your MySQL server. You need to apply for an education license from JetBrains if you didn't already do so in the PyCharm setup.

Download DataGrip and setup. You will need the education license so you can use DataGrip beyond your free trial period. You can start with the trial version of professional and apply the credit later.

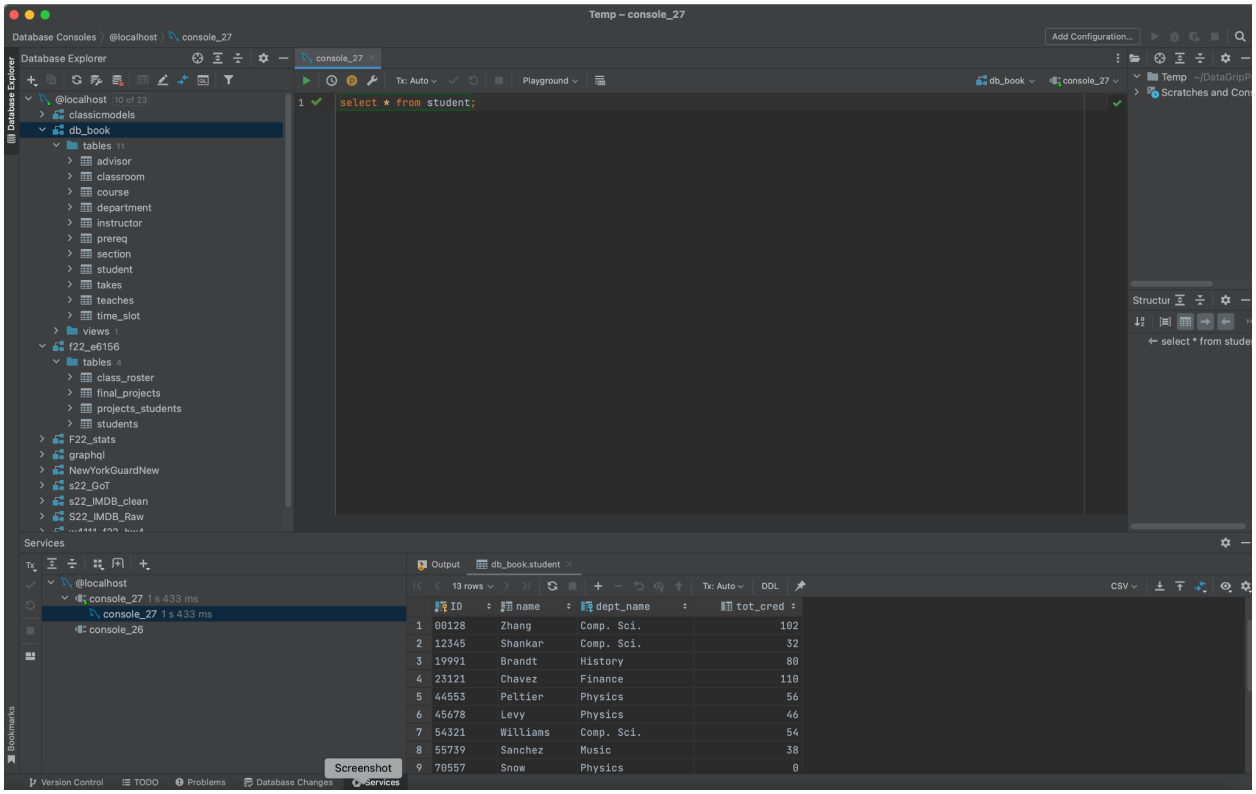
You will need to set up a connection in DataGrip to your local MySQL Sever. There are online instructions for configuring a connection. In addition to the general instructions, there are MySQL specific instructions.

Once DataGrip is installed, you need to install two databases. You do this by running 3 SQL scripts that are in the HW 0 folder:

1. DDL.sql
2. smallRelationsInsertFile.sql

Start DataGrip. You will run the SQL scripts in the order above.. The DataGrip documentation provides instructions on how to run an SQL script from a file (hard drive). Follow the instructions for each of the SQL files.

Right click on the folder "db_book" in the left navigation menu. Choose "new query console." In the new window area, enter *select * from student.* Click the green arrowhead to run the query. You will take a screenshot and include it in your Jupyter notebook submission. Your screen will look like … … The left hand panel will not have as many folders.


Temp – console_27
Database Consoles
@localhost
console_27
Add Configuration...
Database Explorer
console_27
Tx: Auto
Playground
db_book
console_27
@localhost 10 of 23
classicmodels
db_book
tables 11
advisor
classroom
course
department
instructor
prereq
section
student
takes
teaches
time_slot
views 1
f22_e6156
tables 4
class_roster
final_projects
projects_students
students
F22_stats
graphql
NewYorkGuardNew
s22_GoT
s22_IMDB_clean
S22_IMDB_Raw
1 select * from student;
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Scratches and Cons
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Services
@localhost
console_27 1 s 433 ms
console_27 1 s 433 ms
console_26
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13 rows
Tx: Auto
DDL
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ID
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dept_name
tot_cred
1 00128 Zhang Comp. Sci. 102
2 12345 Shankar Comp. Sci. 32
3 19991 Brandt History 80
4 23121 Chavez Finance 110
5 44553 Peltier Physics 56
6 45678 Levy Physics 46
7 54321 Williams Comp. Sci. 54
8 55739 Sanchez Music 38
9 70557 Snow Physics 0
Screenshot
Version Control
TODO
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Database Changes
Services
Database Explorer
Bookmarks