

S24-W4111-HW0

February 9, 2025

COMS W4111: Introduction to Databases Spring 2024, Sections 002/V02

Homework 0: Environment Setup and Test

1 Introduction and Overview

1.1 HW Objectives

This section of W4111 - Intro. to Databases defines required and recommended SW tools. Students are busy and often defer tasks to “just before the homework is due.” In previous semesters, students were struggling with SW installation right before the HW 1 submission deadline. To avoid this problem, HW 0 tests the installation and configuration of the SW.

All students must complete and submit HW 0. **You may not use late days.** If you do not submit HW 0 by the deadline, we will deduct 3 points from your HW 1 score.

We will create an entry on GradeScope for HW 0 submission.

We will also create a topic/post on Ed for discussing the submission.

1.2 Submission Instructions

Complete all the tests in this notebook and submit only this notebook as a PDF to GradeScope. To convert the jupyter notebook into a pdf you can use either of the following methods:

- File -> Print Preview -> Print -> Save to PDF
- File -> Download As HTML -> Print -> Save to PDF

Due date: 28-January, 11:59 PM EDT on GradeScope

Please note: You may NOT use late days for the submission of this assignment. Check Courseworks for GradeScope access.

It is recommended that you put the screenshots into the same folder as this notebook so you do not have to alter the path to include your images.

Please read all the instructions thoroughly!

1.3 Add Student Information

In the cell below,

1. Replace "Your Name" your full name.

2. Replace "UNI" with your UNI.
3. Replace "Cool Track" with either "Programming" or "Non-programming," depending on the track you have chosen.

Run the cell.

```
[1]: # Print your name, uni, and track below
```

```
name = "Aaron McKeever"
uni = "adm2216"
track = "Programming Track"

print(name)
print(uni)
print(track)
```

```
Aaron McKeever
adm2216
Programming Track
```

2 Testing Anaconda and Python

Run the following cells to ensure that you have the correct version of Python and all necessary packages installed.

2.1 Python Version

The test below should return the path to the Python interpreter for your Anaconda environment. The exact path may differ from Mac to Windows, or based on installation choices you made. As long as the path has a sufficient level "anaconda3" in it, you should be OK.

The code cells below have the results of my execution. You must execute on your computer and show your results.

Your results will be similar but different in details because you are on a different computer.

```
[2]: #
# Run this cell to print your current working directory.
%pwd
```

```
[2]: '/Users/adm/Downloads/HW0'
```

```
[3]: #
# Display your node information.
import socket
hostname = socket.gethostname()
print("Your values")
print("Host name = ", hostname)
IPAddr = socket.gethostbyname(hostname)
print("IPAddr = ", IPAddr)
```

Your values
Host name = Aarons-MacBook-Pro-4.local
IPAddr = 127.0.0.1

```
[2]: import sys
```

```
[3]: ex = sys.executable  
ex
```

```
[3]: '/Users/adm/anaconda3/envs/Downloads/bin/python'
```

```
[9]: # Checking that anacoda3 is in the path.  
#  
if 'anaconda3' in ex:  
    print("Test seems OK.")  
else:  
    print("Not cool.")
```

Test seems OK.

The following tests that you have a sufficiently up to date version of Python.

```
[10]: print("Python version information:\n","\t", sys.version_info, "\n")  
if sys.version_info.major != 3 or \  
    ((sys.version_info.major == 3) and (sys.version_info.minor < 9)):  
    print("You have an invalid version of Python.")  
else:  
    print("Your Python version is OK.")
```

Python version information:

```
    sys.version_info(major=3, minor=12, micro=8, releaselevel='final',  
serial=0)
```

Your Python version is OK.

If the test fails, you have to install Anaconda properly.

2.2 Install ipython-sql

The actual message below will vary based on what you do/do not already have installed. You are fine as long as there is not a major error.

```
[6]: %pip install ipython-sql
```

Collecting ipython-sql

Downloading ipython_sql-0.5.0-py3-none-any.whl.metadata (17 kB)

Collecting prettytable (from ipython-sql)

Downloading prettytable-3.14.0-py3-none-any.whl.metadata (30 kB)

Requirement already satisfied: ipython in

/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from ipython-

```

sql) (8.32.0)
Collecting sqlalchemy>=2.0 (from ipython-sql)
  Downloading SQLAlchemy-2.0.37-cp312-cp312-macosx_11_0_arm64.whl.metadata (9.6
kB)
Collecting sqlparse (from ipython-sql)
  Downloading sqlparse-0.5.3-py3-none-any.whl.metadata (3.9 kB)
Requirement already satisfied: six in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from ipython-
sql) (1.17.0)
Collecting ipython-genutils (from ipython-sql)
  Downloading ipython_genutils-0.2.0-py2.py3-none-any.whl.metadata (755 bytes)
Requirement already satisfied: typing-extensions>=4.6.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
sqlalchemy>=2.0->ipython-sql) (4.12.2)
Requirement already satisfied: decorator in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (5.1.1)
Requirement already satisfied: jedi>=0.16 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (0.19.2)
Requirement already satisfied: matplotlib-inline in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (0.1.7)
Requirement already satisfied: pexpect>4.3 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (4.9.0)
Requirement already satisfied: prompt_toolkit<3.1.0,>=3.0.41 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (3.0.50)
Requirement already satisfied: pygments>=2.4.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (2.19.1)
Requirement already satisfied: stack_data in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (0.6.3)
Requirement already satisfied: traitlets>=5.13.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (5.14.3)
Requirement already satisfied: wcwidth in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
prettytable->ipython-sql) (0.2.13)
Requirement already satisfied: parso<0.9.0,>=0.8.4 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
jedi>=0.16->ipython->ipython-sql) (0.8.4)
Requirement already satisfied: ptyprocess>=0.5 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
pexpect>4.3->ipython->ipython-sql) (0.7.0)
Requirement already satisfied: executing>=1.2.0 in

```

```

/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
stack_data->ipython->ipython-sql) (2.2.0)
Requirement already satisfied: asttokens>=2.1.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
stack_data->ipython->ipython-sql) (3.0.0)
Requirement already satisfied: pure-eval in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
stack_data->ipython->ipython-sql) (0.2.3)
Downloading ipython_sql-0.5.0-py3-none-any.whl (20 kB)
Downloading SQLAlchemy-2.0.37-cp312-cp312-macosx_11_0_arm64.whl (2.1 MB)
2.1/2.1 MB
6.9 MB/s eta 0:00:00ta 0:00:01
Downloading ipython_genutils-0.2.0-py2.py3-none-any.whl (26 kB)
Downloading prettytable-3.14.0-py3-none-any.whl (31 kB)
Downloading sqlparse-0.5.3-py3-none-any.whl (44 kB)
Installing collected packages: ipython-genutils, sqlparse, sqlalchemy,
prettytable, ipython-sql
Successfully installed ipython-genutils-0.2.0 ipython-sql-0.5.0
prettytable-3.14.0 sqlalchemy-2.0.37 sqlparse-0.5.3
Note: you may need to restart the kernel to use updated packages.

```

- If you got errors, please follow the [instructions in the ipython-sql site](#) to install the magic.
- **NOTE:** Running the cell above may produce multiple notifications about installing requirements or requirement already satisfied. That is normal.
- Once you get the install to work without errors, run the following cell.

```
[11]: %load_ext sql
```

The sql extension is already loaded. To reload it, use:

```
%reload_ext sql
```

- If you did not get an error response, your test passed.
- If you run the cell twice, your answer should be:

The sql extension is already loaded. To reload it, use:

```
%reload_ext sql
```

2.3 SQLAlchemy/PyMySQL

Install `sqlalchemy` and `pymysql`. These are Python language packages for interacting with SQL and MySQL databases. Your actual response message may be different. Your environment is OK if you do not get a major error.

```
[15]: !pip install pymysql sqlalchemy ipython-sql
      %pip install sqlalchemy
      %pip install pymysql
```

```
python(67207) MallocStackLogging: can't turn off malloc stack logging because it
was not enabled.
```

Requirement already satisfied: pymysql in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (1.1.1)
Requirement already satisfied: sqlalchemy in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (2.0.37)
Requirement already satisfied: ipython-sql in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (0.5.0)
Requirement already satisfied: typing-extensions>=4.6.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
sqlalchemy) (4.12.2)
Requirement already satisfied: prettytable in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from ipython-
sql) (3.14.0)
Requirement already satisfied: ipython in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from ipython-
sql) (8.32.0)
Requirement already satisfied: sqlparse in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from ipython-
sql) (0.5.3)
Requirement already satisfied: six in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from ipython-
sql) (1.17.0)
Requirement already satisfied: ipython-genutils in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from ipython-
sql) (0.2.0)
Requirement already satisfied: decorator in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (5.1.1)
Requirement already satisfied: jedi>=0.16 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (0.19.2)
Requirement already satisfied: matplotlib-inline in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (0.1.7)
Requirement already satisfied: pexpect>4.3 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (4.9.0)
Requirement already satisfied: prompt_toolkit<3.1.0,>=3.0.41 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (3.0.50)
Requirement already satisfied: pygments>=2.4.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (2.19.1)
Requirement already satisfied: stack_data in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (0.6.3)
Requirement already satisfied: traitlets>=5.13.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
ipython->ipython-sql) (5.14.3)

```

Requirement already satisfied: wcwidth in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
prettytable->ipython-sql) (0.2.13)
Requirement already satisfied: parso<0.9.0,>=0.8.4 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
jedi>=0.16->ipython->ipython-sql) (0.8.4)
Requirement already satisfied: ptyprocess>=0.5 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
pexpect>4.3->ipython->ipython-sql) (0.7.0)
Requirement already satisfied: executing>=1.2.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
stack_data->ipython->ipython-sql) (2.2.0)
Requirement already satisfied: asttokens>=2.1.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
stack_data->ipython->ipython-sql) (3.0.0)
Requirement already satisfied: pure-eval in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
stack_data->ipython->ipython-sql) (0.2.3)

python(67212) MallocStackLogging: can't turn off malloc stack logging because it
was not enabled.

Requirement already satisfied: sqlalchemy in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (2.0.37)
Requirement already satisfied: typing-extensions>=4.6.0 in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (from
sqlalchemy) (4.12.2)
Note: you may need to restart the kernel to use updated packages.

python(67214) MallocStackLogging: can't turn off malloc stack logging because it
was not enabled.

Requirement already satisfied: pymysql in
/Users/adm/anaconda3/envs/Downloads/lib/python3.12/site-packages (1.1.1)
Note: you may need to restart the kernel to use updated packages.

```

2.4 MySQL Connectivity

You installed MySQL Community Edition. You have to choose a userID and password during the installation.

Please set the values in the cell below.

```

[29]: # Replace root with the user ID for MySQL and dbuserdbuser with the password
      ↪you set.
      #
      #%sql mysql+pymysql://root:rootpass@localhost

      user = "root"
      password = "rootpass"

```

```
[30]: db_url = f"mysql+pymysql://{user}:{password}@localhost"
```

```
[31]: %sql $db_url
```

```
[32]: # Your list of databases will be different.
#
%sql use db_book;
```

```
* mysql+pymysql://root:***@localhost
0 rows affected.
```

```
[32]: []
```

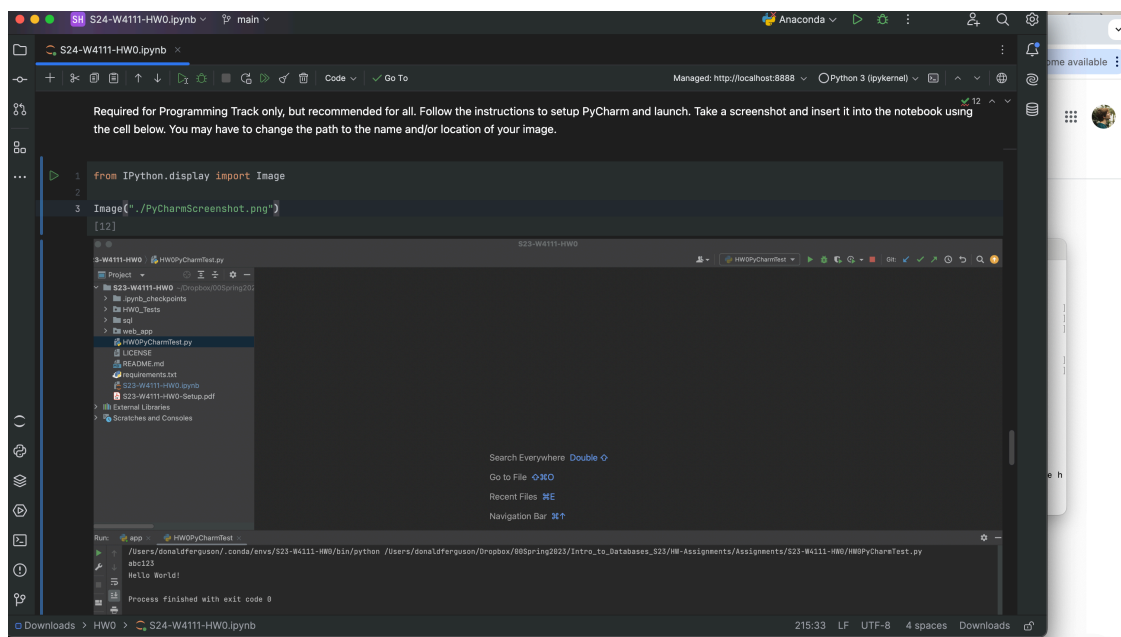
2.5 PyCharm

Required for Programming Track only, but recommended for all. Follow the instructions to setup PyCharm and launch. Take a screenshot and insert it into the notebook using the cell below. You may have to change the path to the name and/or location of your image.

```
[26]: from IPython.display import Image
```

```
Image("/Users/adm/Downloads/Screenshot 2025-02-08 at 10.36.53 PM.png")
```

```
[26]:
```

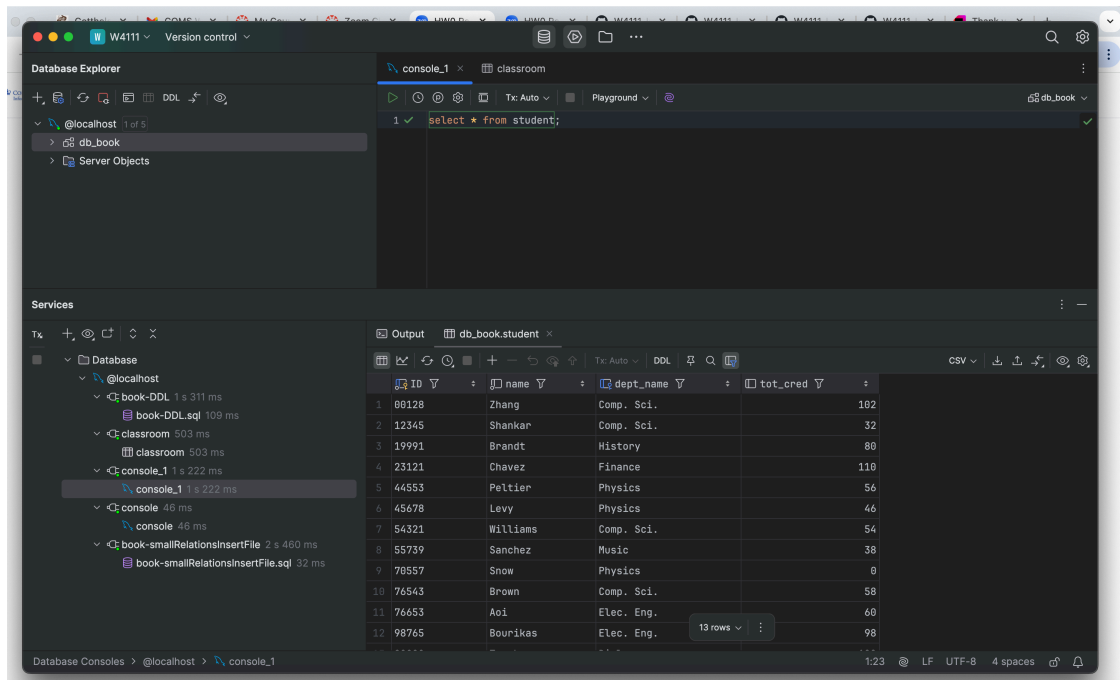


2.6 DataGrip

Follow the instructions in the homework definition to setup DataGrip and connect DataGrip to MySQL. Insert your screenshot of the successful query on the sample database below. You may have to change the path to the name and/or location of your image.

[27]: Image("/Users/adm/Downloads/Screenshot 2025-02-08 at 10.39.19 PM.png")

[27]:



3 Sample Database

The recitation showed how to install the first database/dataset we will use in the course.

Please follow the recitation and load the data, then run the query below.

[34]: `%config SqlMagic.style = '_DEPRECATED_DEFAULT'`

[35]: `%sql select * from db_book.student`

`* mysql+pymysql://root:***@localhost`
`13 rows affected.`

[35]: `[('00128', 'Zhang', 'Comp. Sci.', Decimal('102')),`
`('12345', 'Shankar', 'Comp. Sci.', Decimal('32')),`
`('19991', 'Brandt', 'History', Decimal('80')),`
`('23121', 'Chavez', 'Finance', Decimal('110')),`
`('44553', 'Peltier', 'Physics', Decimal('56')),`
`('45678', 'Levy', 'Physics', Decimal('46')),`
`('54321', 'Williams', 'Comp. Sci.', Decimal('54')),`
`('55739', 'Sanchez', 'Music', Decimal('38')),`
`('70557', 'Snow', 'Physics', Decimal('0')),`
`('76543', 'Brown', 'Comp. Sci.', Decimal('58')),`
`('76653', 'Aoi', 'Elec. Eng.', Decimal('60')),`

```
('98765', 'Bourikas', 'Elec. Eng.', Decimal('98')),  
('98988', 'Tanaka', 'Biology', Decimal('120'))]
```

[]: