

APS106 – Lab #0

Welcome to the APS106 labs! Throughout the course these labs will provide you with opportunities to practice your programming skills and design cool programs to solve real engineering problems.

This week you will get an introduction to the lab submission and autograding system called Gradescope. You will submit all future lab assignments to Gradescope for grading.

For this and all subsequent lab assignments, the following guidelines apply:

1. **You must submit a program which is your own work.** You may consult your friends and the TAs during the labs; however, you are NOT working in groups. Do not share files with others. The labs offer a chance to learn to program, take advantage of that opportunity, and make sure your friends take advantage of it too.
2. All labs will be posted on the course website. You may work on the labs during the scheduled practical sessions where a TA will be available to help you learn OR on your own outside of practical sessions. You are free to attend any of the weekly practical sessions. You can follow the instructions posted on the APS106 Quercus site to install Python and the PyCharm development environment on your own computer (both programs are freely available to download from the Internet, with installation instructions on Quercus).

Lab Objectives

- ☐ Meet your practical session TAs
- ☐ Install Anaconda, Python, Jupyter Notebook, and VS Code on your computer
- ☐ Run simple Python programs (.py files) and on your computer
- ☐ Sign into and familiarize yourself with Gradescope

Lab Deliverables

Submit the following files to Gradescope before the deadline.

- ☐ lab0.py
- ☐ lab0.ipynb

Lab Instructions

Throughout the course you will be writing code in both **Jupyter Notebooks** (files with .ipynb extensions) and plain **Python files** (.py extension). Notebooks are more interactive and allow you to run specific sections of code at different times, making them useful for learning and tasks like data exploration and visualization. Python files (.py) run all the code within the file making them better suited for non-interactive, automated tasks like a program to continuously measure and display speed and other data on a car's dashboard. You will learn more about the differences between these file types later in the course; for now, the important thing for you to know is both file types allow you to write and execute Python code.

The labs in this course will give you experience with both Jupyter Notebooks and Python files. The first few labs will use Jupyter Notebooks and the later labs will have you write Python files. In this lab, we will make sure your laptop is setup to work with both types of files.

Part 1 – Jupyter Notebook

1. Follow the Anaconda and Python installation instructions provided on Quercus to install these programs on your computer. Ask one of your TAs for help if you encounter any errors.
2. Download the `lab0.ipynb` file from Quercus. This is the “starter code” for this lab. Each week we will provide you with a starter code file for you to complete and submit for grading.
3. Open `lab0.ipynb` using the Jupyter Notebook app. Note that the file will open in your web browser (like Chrome or Edge).
4. Follow the instructions within the Notebook to complete and run the code.
5. Save the file to your computer. Make a note of which folder you are saving it in (we recommend you make a folder for each lab assignment and store all your files in these folders throughout the course). You will need to access this location later when you submit your files to Gradescope.

Part 2 – Python File

1. Download the `lab0.py` file from Quercus.
2. Open `lab0.py` in Visual Studio Code (VS Code). You should see the file contains this program:

```
1  #####
2  # APS106 Winter 2024 Lab 0
3  #####
4
5  ## Print a welcome message to the user
6  name = "" # TODO: Enter your name here
7  welcome_msg = "Hi " + name + ", Welcome to APS106!"
8  print(welcome_msg)
```

3. On line 6, enter your name between the quotation marks.

```
1 #####
2 # APS106 Winter 2024 Lab 0
3 #####
4
5 ## Print a welcome message to the user
6 name = "Lisa" # TODO: Enter your name here
7 welcome_msg = "Hi " + name + ", Welcome to APS106!"
8 print(welcome_msg)
```

4. Run the program. You should see the welcome message printed with your name.

Part 3 – Submitting to Gradescope

1. Go to <https://www.gradescope.ca/>, sign in, and then navigate to the APS106 W2024 course. **If you have any problems signing in, please email the course Head TA (contact info on Quercus) the following information: your full name (as it is spelt on Acorn/Quercus), your UofT email, and your PRA section.**
2. On the left side of the screen, click on Assignments.
3. On the assignments page, click Lab 0.
4. Submit your `lab0.ipynb` and `lab0.py` files for grading. Do not change the name of the files!
5. To verify that your lab was submitted successfully, run the autograder and check the results. There are only two test cases for this lab.
6. Before you leave your practical session, introduce yourself to one of your TAs and ask them how they use programming in their work or research ☺