

PyHH is a small library of for simulation of the electrical activities of neurons. It is written in Python. PyHH contains a few classes, which correspond to experiment objects in real experiments. The most basic classes are Compartment (for building neurons), NaChannel, KChannel, LeakChannel, Ligand, LGIC (ligand-gated ion channel), IClamper (for current injection), VClamper (for voltage clamp), CClamper (for concentration clamp) and Experiment (for integration of the equations). Doing a simulation with these classes is just like performing a real experiment in a lab. Since PyHH is not standalone software, you need to write a Python script and run it from a terminal (called command line in Windows). Python is pre-installed on Linux or Mac systems. Windows, however, requires the user to install Python. Just go to the official Python website and download the latest python (Python 2.7.13 or Python 3.6.1) and install it with a few clicks. On Windows, Python 2.7.x is installed in the path C:\Python27. So you can start Python from a terminal by typing:

```
C:\Python27\python
```

and run a Python script (say tutorial-1.py) by typing:

```
C:\Python27\python tutorial-1.py
```

If you let the terminal know where Python is by setting the environmental variables, you can just type

```
python
```

in order to start Python, or

```
python tutorial-1.py
```

to run the Python script. Check the Internet to see how to set the environmental variables. You don't need to install PyHH, just drop pyhh.py in a folder where you want to use it. But, you need something, such as Matplotlib, for visualization of the simulation results. For the installation of Matplotlib on Windows, you can download a python file named get-pip.py and run the script by typing:

```
python get-pip.py
```

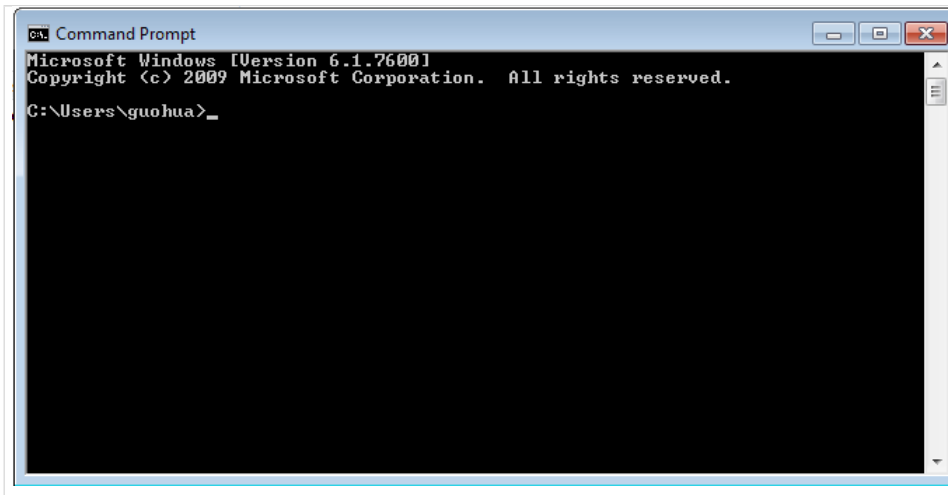
then run

```
python -m pip install -U pip setuptools
```

```
python -m pip install matplotlib
```

There are other ways to install matplotlib. If you work with a Linux system, life will be easier. I don't have recent experience with Mac OS.

I don't use Windows, but to test PyHH on Windows, I had installed Python and Matplotlib on my dual boot computer. See the link <https://docs.python.org/2/faq/windows.html> for how to run Python programs on Windows. On my Windows system, the command Prompt looks like



Before you dive into PyHH, try the codes by typing:

```
python tutorial-1.py
python tutorial-2.py
....
```

If you like them, I suggest you try PyHH in the interactive mode first. Go to the folder where you want to use PyHH (I use the folder PyHH) by typing

```
cd PyHH
```

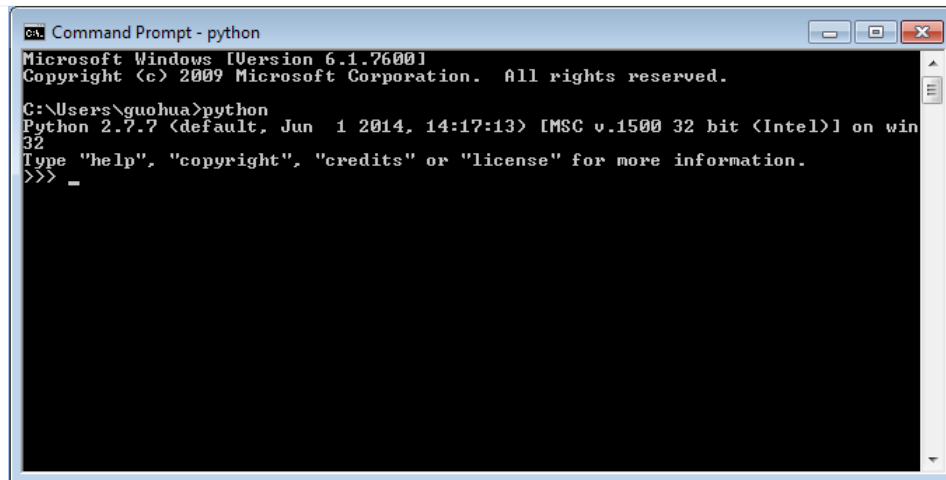
then type:

```
python
```

```
or
```

```
python3
```

you will get Python interpreter in the interactive mode (this is on Windows):



```
Command Prompt - python
Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\guohua>python
Python 2.7.7 (default, Jun 1 2014, 14:17:13) [MSC v.1500 32 bit (Intel)] on win
32
Type "help", "copyright", "credits" or "license" for more information.
>>> _
```

From now on, I suppose that you know how to start a terminal (command prompt).