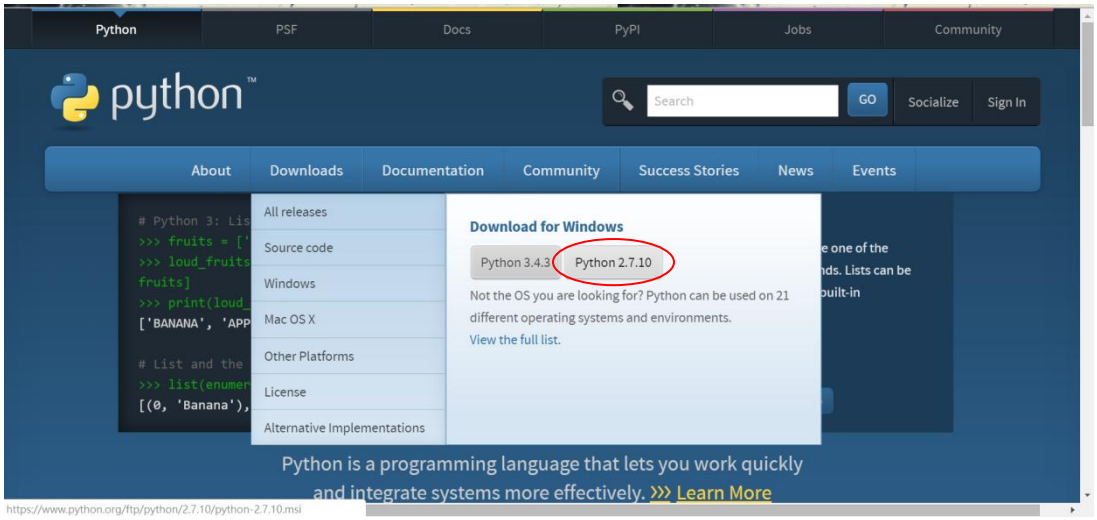
Z3 Tutorial

In this tutorial, you will learn how to install and use Z3, a high-performance theorem prover developed by Microsoft.

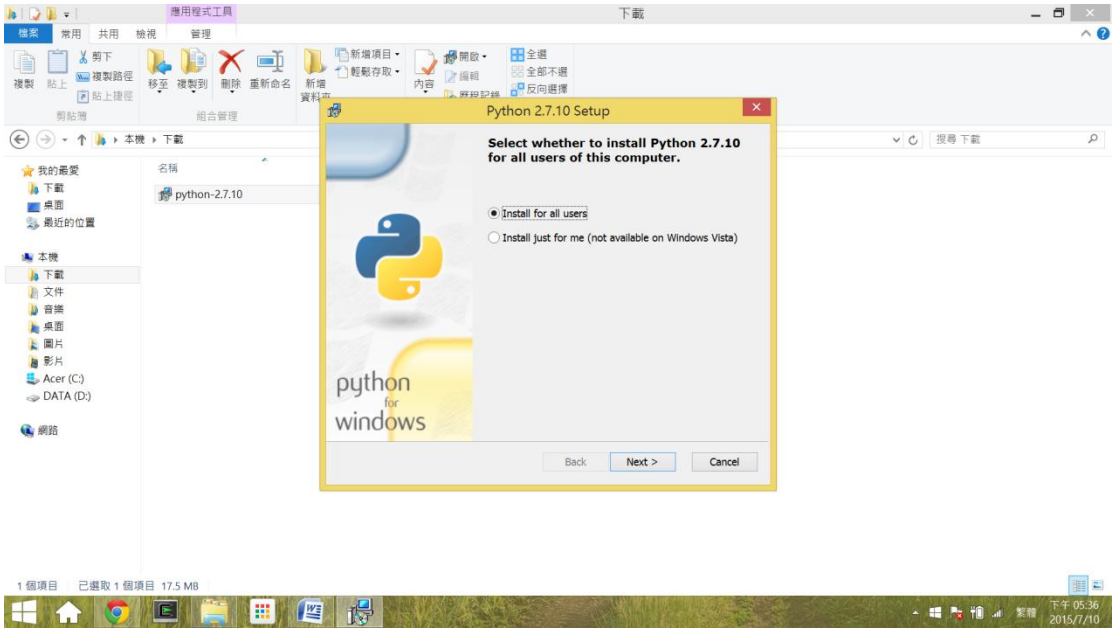
Pre-installation:

We will use z3.py, the Z3 Python API, in this tutorial. Before we proceed to installing Z3, we need to install and build Python. Z3 is unstable when used with Python 3, so here we will have to install Python 2. As of now, the latest version of Python 2 is 2.7.10.

1. Go to https://www.python.org/
2. Move cursor onto “Downloads”, and click on “Python 2.7.10”. After clicking the button, Python should start downloading automatically.



3. Go to the Downloads directory in your computer. You should see a file named *python-2.7.10*. Note that the filename extension may vary depending on the OS of your computer. Currently I’m using Microsoft 8, and the extension is *.msi*. Open the file.
4. You should see an installation window like the one in the picture below. It is recommended to use the default settings in your installation. After the installation is complete, exit the installer.

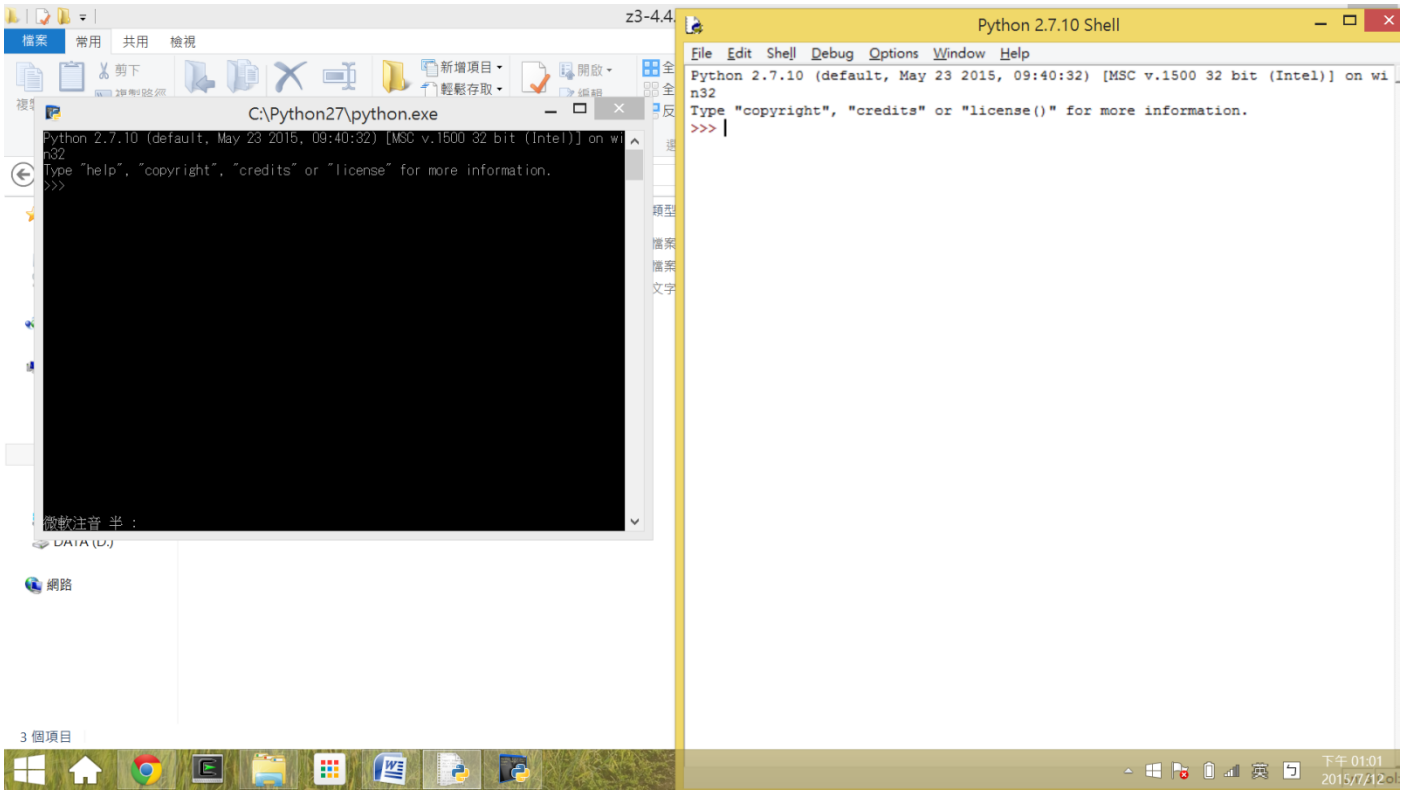


Installation:

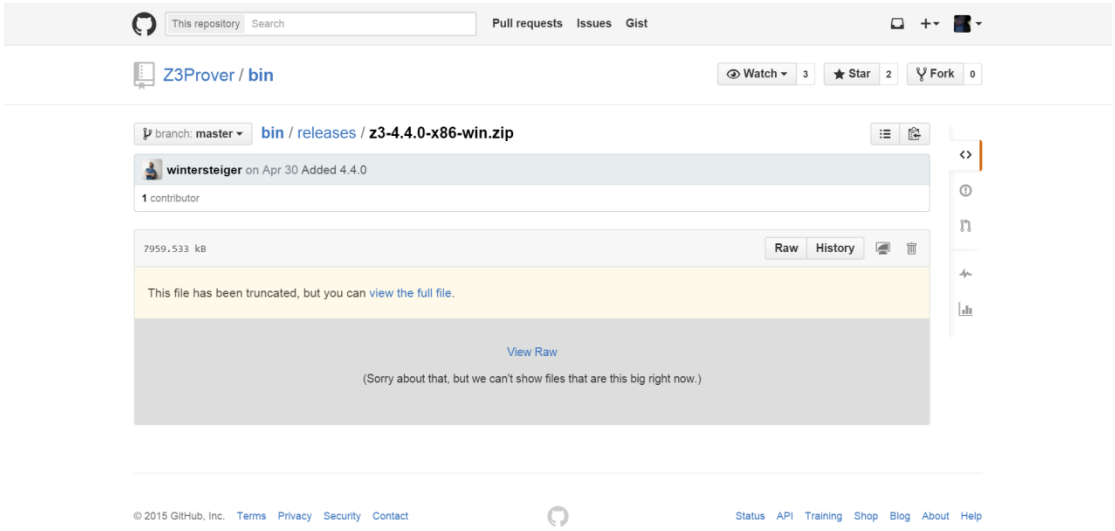
We will demonstrate how to install Z3 on different platforms.

Windows:

1. Check whether your Python is in version x86 or x64 by opening either Python command line tool or IDLE. Below is a screenshot of my results, left is the command line tool and right is IDLE:

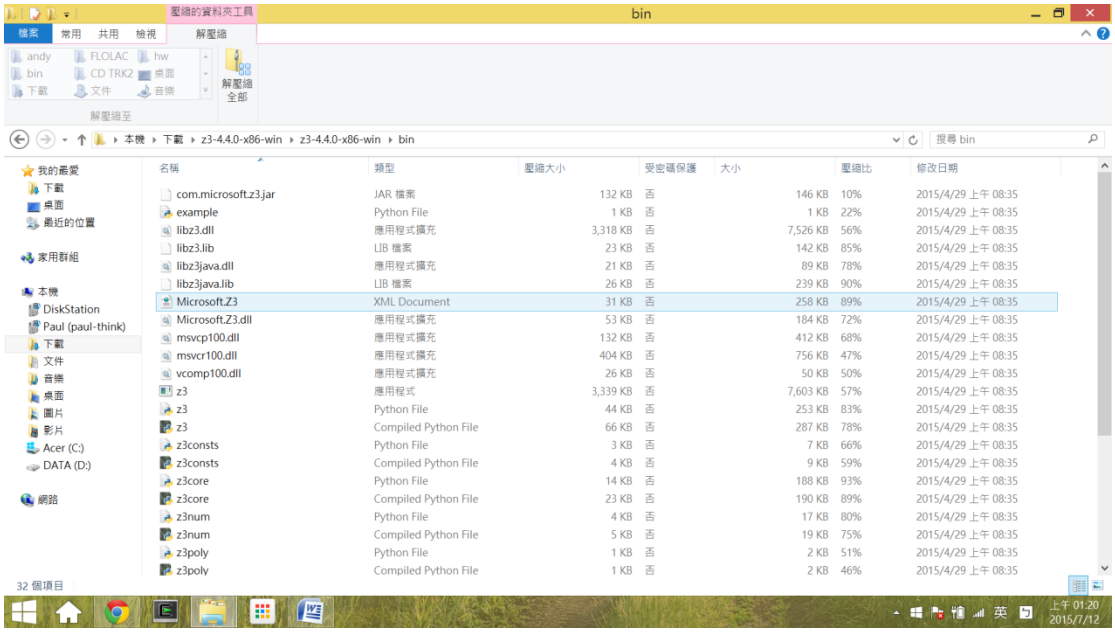


2. Go to https://github.com/Z3Prover/bin and click on “releases”
3. Select the .zip that matches your Python’s version. You should see this window:

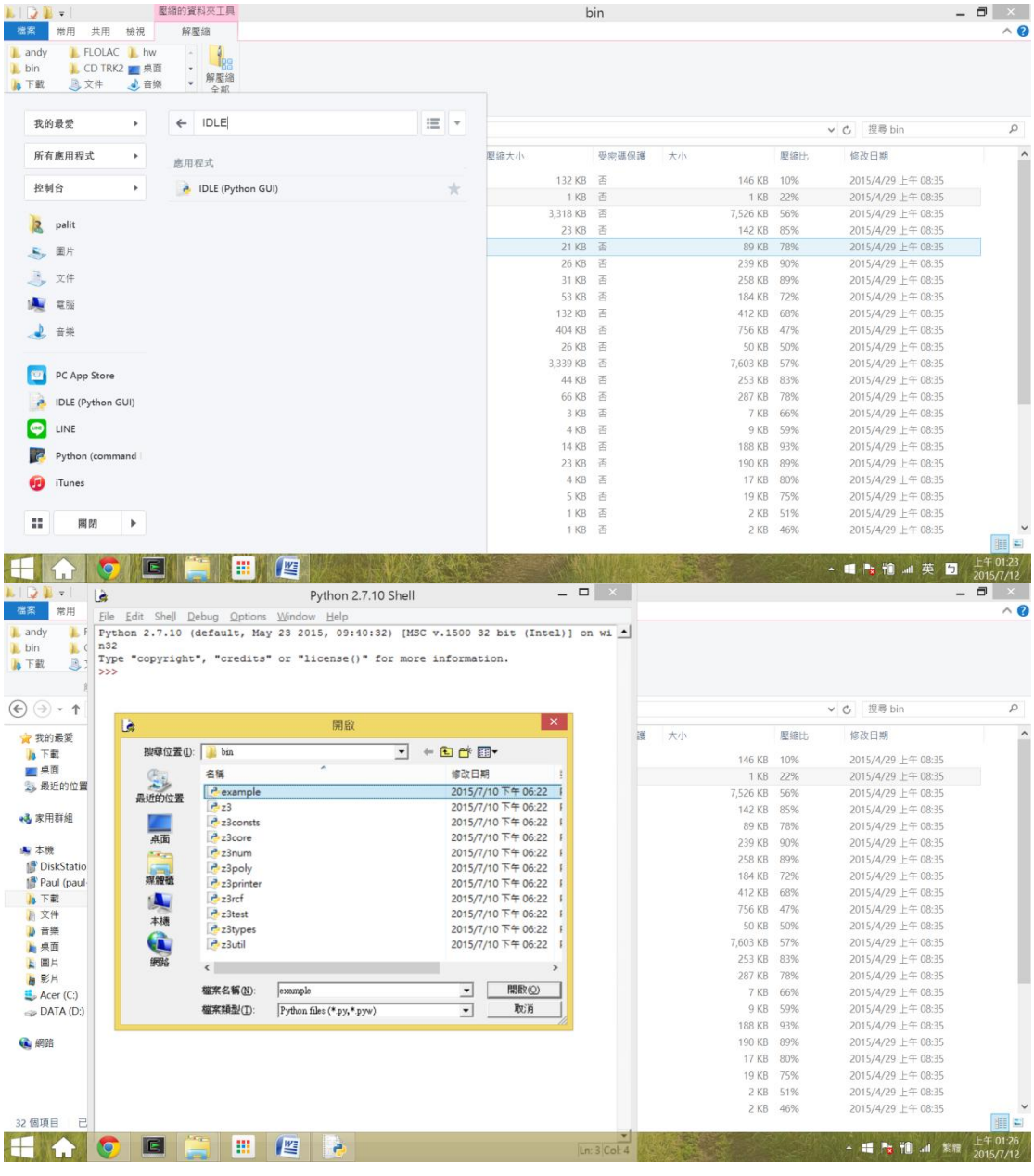


Click on “View Raw” to download Z3.

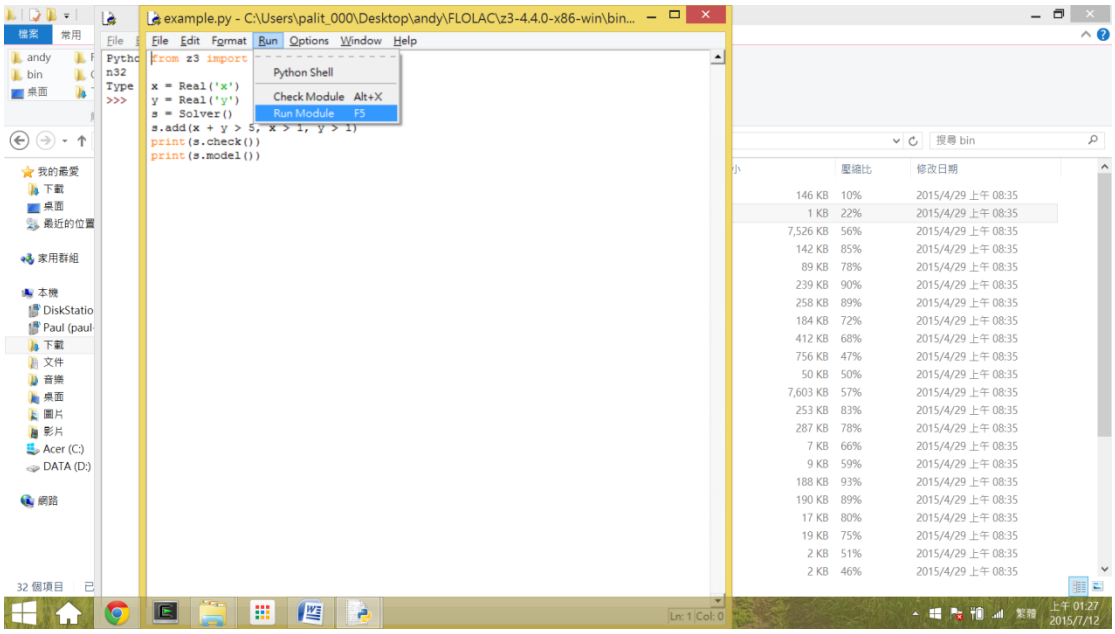
4. Go to the “Downloads” directory in your computer, and unzip the file you just downloaded.
5. Open the file created from uncompressing the .zip file, and go to the “bin” directory. The *example.py* is the place where we will be doing all of our tutorials.



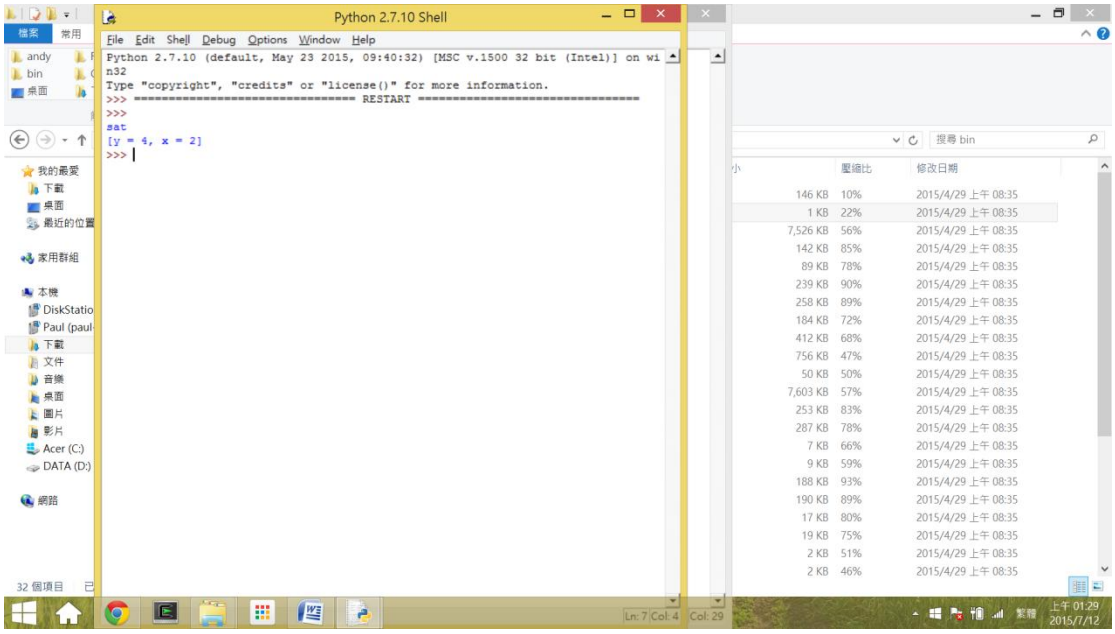
6. Either right-click on *example.py* and select “open with IDLE”, or open IDLE that comes with the Python package and open *example.py* with it.



7. Once you've opened *example.py* with IDLE, do "Run" -> "Run Module".



8. If the solution pops up onto the Python console, it means you've successfully installed Z3 and now ready for the tutorials.



Other platforms (i.e. Mac OSX, Ubuntu, FreeBSD):

1. Check whether your Python is running as x86 (32 bit) or x64 (64 bit)
2. Go to https://github.com/Z3Prover/bin and click on “Nightly”
3. Follow step 3-8 in *Windows* section
4. Note that most of these platforms come with Python installed. You can just download Z3 and open the *example.py* with any IDE you see fit.