Stefan Güttel

Programming with Python

Getting started for "Programming with Python"


The University of Manchester

A little bit of terminology

Python
: A programming language, the language you write computer programs in.

IPython
: A Python *interpreter:* A computer application that provides a convenient and interactive mode for executing Python commands and programs.

Jupyter
: A web application that allows to create and run IPython in the browser.

Spyder
: An *integrated development environment* (IDE): A computer application that includes IPython, a text editor for writing and debugging programs, and more.

NumPy
: A standard library that provides numerical arrays and mathematical functions.

PyPlot
: A module that provides visualization tools.

Anaconda
: A Python *distribution:* A single download that conveniently packages all of the above and installs it on your computer.

Your first assignment: Install Anaconda

This is probably the most important assignments of all!
Make sure you complete it until our next lecture!

1. If you have your own computer, download and install Anaconda. An instruction is given on the following slides. Learn how to start Spyder and familiarize yourself with it.

2. In the computer lab of the Alan Turing Bld learn how to start Spyder. (Programs $\Longrightarrow$ Anaconda 3 (64-bit) $\Longrightarrow$ Spyder)
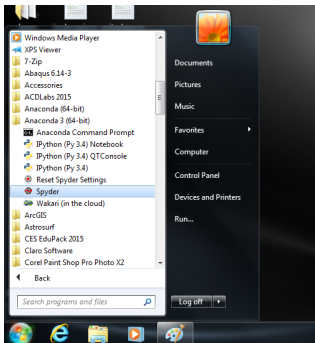
Your first assignment: Install Anaconda ctd.

3. Download the Python file `01-guess.py` and open it in Spyder. Hit [F5] and see what happens in the Console on the right.

4. Carefully read the content of `01-guess.py` line by line! Try to understand what is written there and write down in your own words what you think is going on.

   Don't worry if not everything makes sense yet, but you should be able to get some understanding. Assistants will be in the lab on Friday to help you and answer your questions.

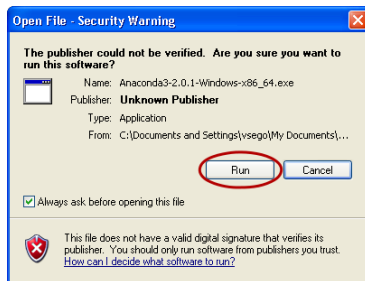   Don't be shy to ask for help!

Download Anaconda

- Go to Anaconda download
  `www.anaconda.com/download/`
- Be careful to pick Python **3.7** and download it (normally, Windows 64-bit Installer).
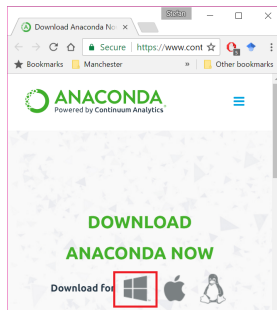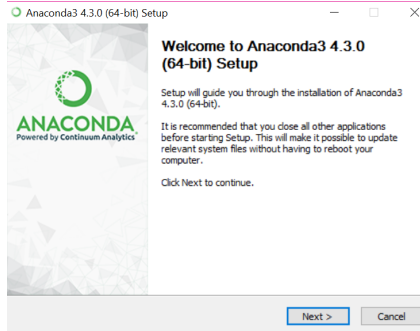

You don't need to give your email address.
Just click "No thanks" to start the download.
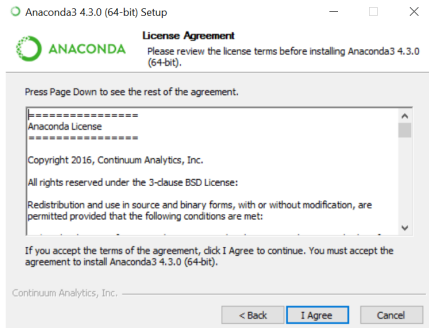
Start the installer

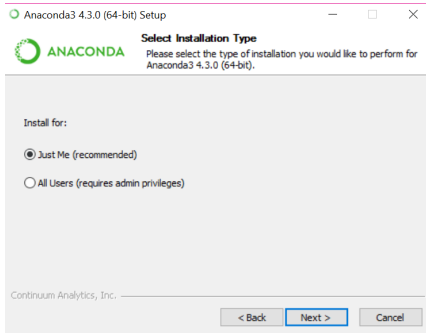Run your download.

Click "Next".

Install (1)

Accept the licence agreement.
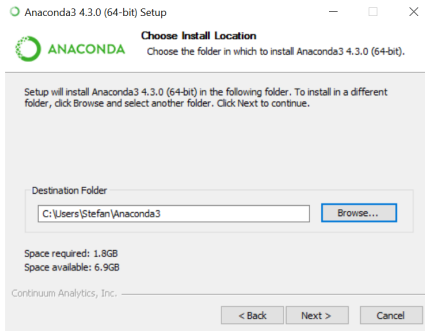It is advisable to read it first. ☺

Install (2)

1. Unless you deliberately want all users on your computer to use Anaconda, choose "Just Me". On most home Windows systems, only a single account is used anyway, so this option won't make much difference either way.
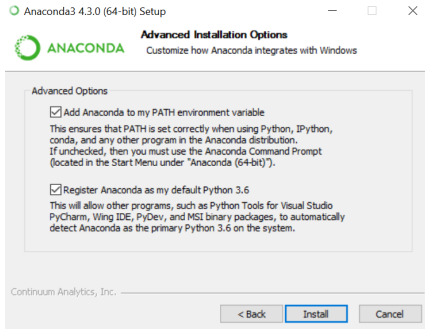
2. Click "Next".

Install (3)

Click "Next", unless you have a really good reason to pick a non-default location for Anaconda.
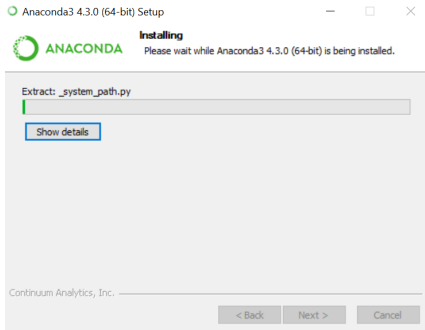
Install (4)

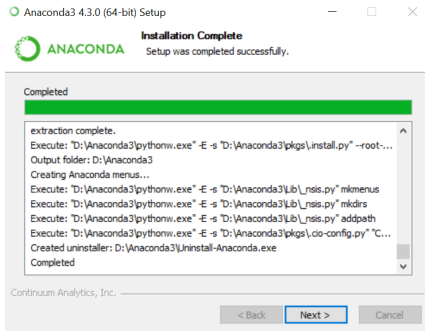The options here should be fine.
Click "Install".

Install (5)

Wait while the installation is progressing. (This can take ages; 60 minutes on a Surface Pro 2 notebook!)

Install (6)

When the "Next" button becomes
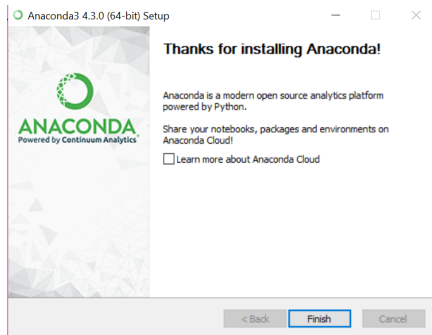available and the installation is finished,
click it.

Install (7)

Your Anaconda is ready for you to become the next programmer legend! Click "Finish".
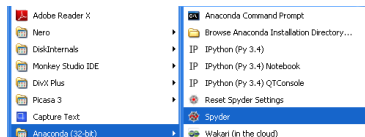(You don't need to learn about Anaconda Cloud.)

Start Anaconda

Find the new Start menu item "Anaconda" (the exact location may depend on the Windows version you're using) and click "Spyder".
This is the editor that we shall be using.

The first startup may take a couple of minutes.

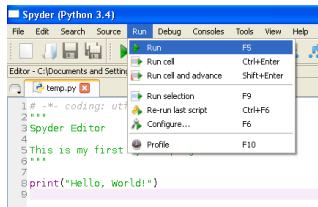You may also have to accept some Firewall access.

First usage (1)

1. Write a test program, for example:

   print (" Hello , World !")

   Leave the grey part (a comment) and a green part inside triple quotation marks as they are.

2. Go to the "Run" menu, then click on the "Run" item (or just press F5).

First usage (2)

With the first run of the program, Spyder will ask about some basic options.

In this window, select "Execute in a new dedicated Python console", which means that each run of the program will go clean, without variable values from the previous runs (which could cause weird errors).
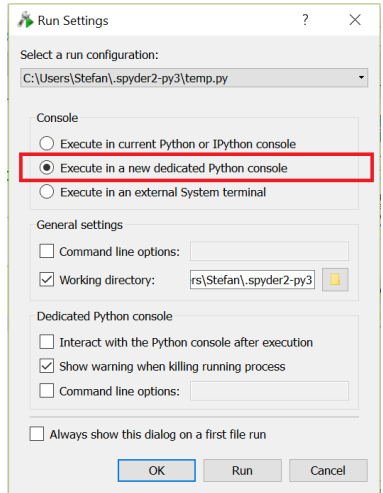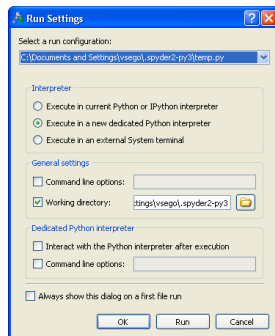
First usage (3)

Your program runs in the bottom right part of the editor:
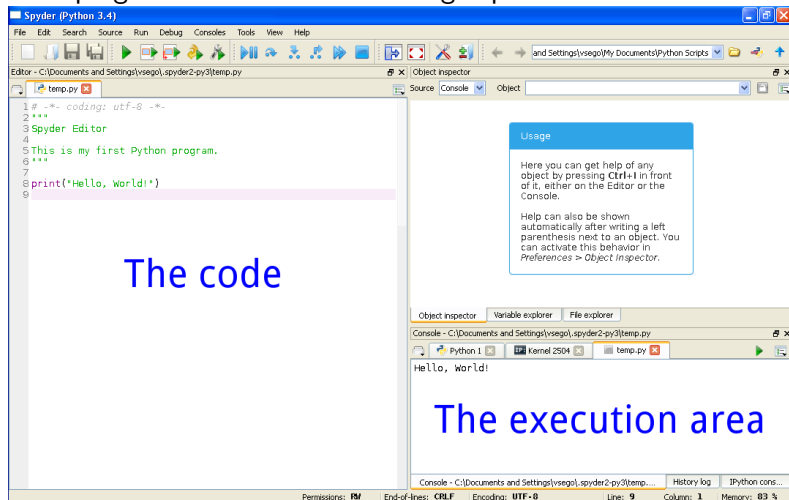
First usage (4)

If you need to fix your program settings from the first run, you can do so in menu "Run" by clicking "Configure…" (or press F6).

First "proper" Python code

If your installation and "Hello world" test succeeded, then:

- ▶ Go to the course website http://personalpages.manchester.ac.uk/staff/stefan.guettel/py/.
- ▶ Download the `01-guess.py` file onto your computer.
- ▶ Open the `01-guess.py` file in Spyder and run it.
- ▶ Study the output in the execution area and interact with it.
- ▶ Describe the game in your own words while interacting with it.
- ▶ Then have a look at the code and try to make any sense of it. Read the code carefully line-by-line.
- ▶ Don't spend too much time on lines you can't make sense of and don't worry: You are not yet expected to understand the code itself, but you may be able to identify some patters!?
- ▶ Try to modify some parts of the code and see what happens when you run it.