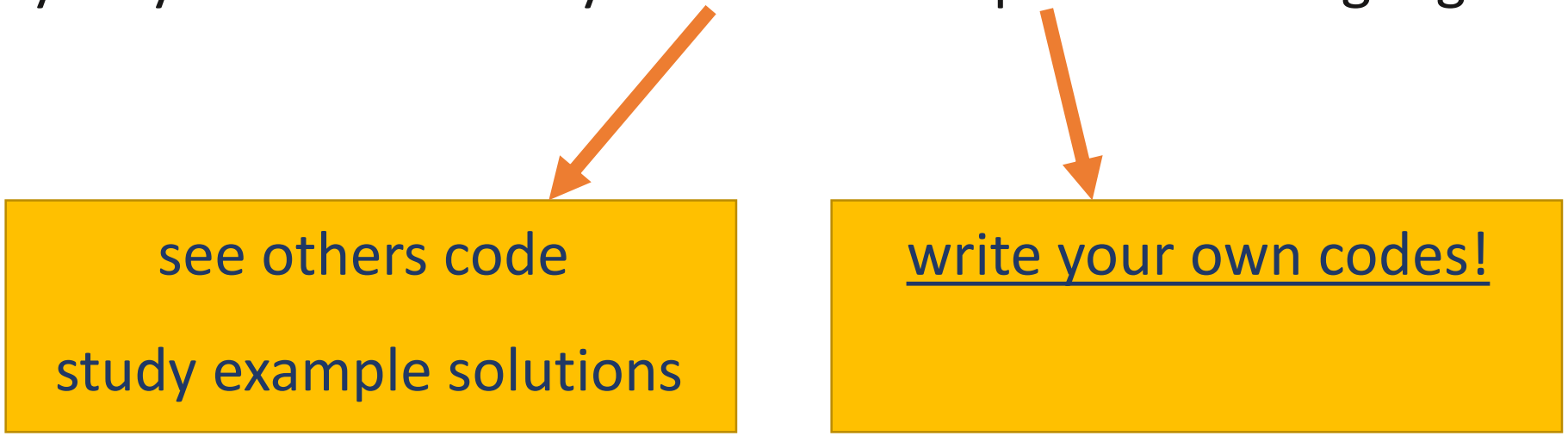
Programming with Python

Course Introduction

So how does one learn how to code?

Think of it like learning a new language

The only way to learn is to try “listen” and “speak” the language



In order to write *Python programs* on our computer, we need the

Spyder IDE from the *Anaconda distribution*…

What is Python?

Python is a computer programming language. This means, it is a language that you can use to give instructions to your computer.

You can think of your computer as a good friend who follows your instructions, and Python would be the language that you communicate in with him or her.

There are various ways of communication (just as in the “real world”: phone, email, chatting, etc.), some of which are more interactive than others (chatting is more interactive than writing a letter, for example).

Similarly, there are various ways to use the Python language.

A bit of terminology

Python: One (of many other) programming languages we will be using. It is the language we will 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 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.

JupyterLab: An IDE evolution of Jupyter notebook.

PyPlot: A module that provides visualization tools.

NumPy: A standard library (collection of modules, data types, etc.) that provides numerical arrays and mathematical functions.

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

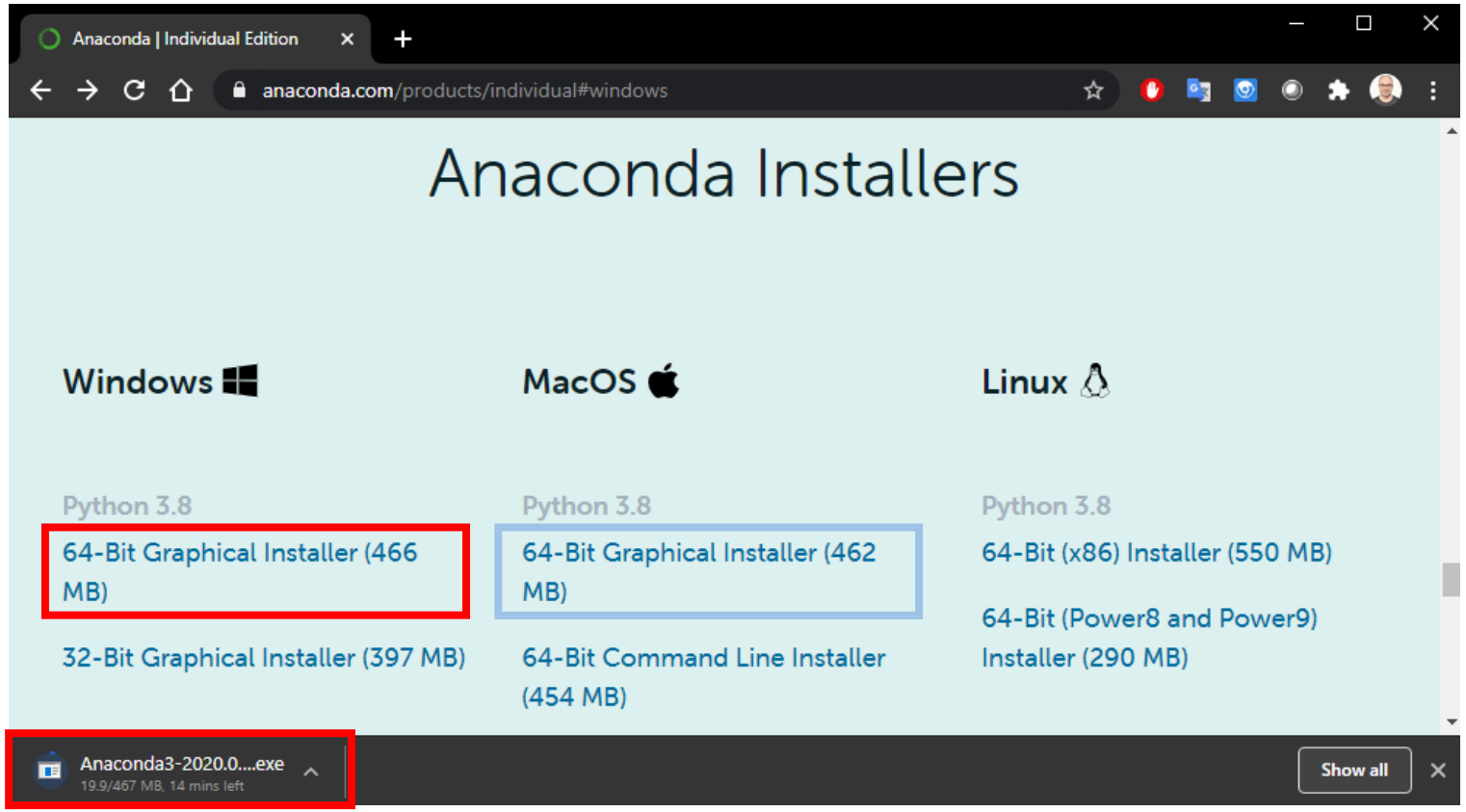
Install Anaconda

Go to https://www.anaconda.com/products/individual#Downloads

Scroll down, click on "64-Bit Graphical Installer" to download

Double-click on .exe file to start installation

(no need to complete the contact form on the following page)

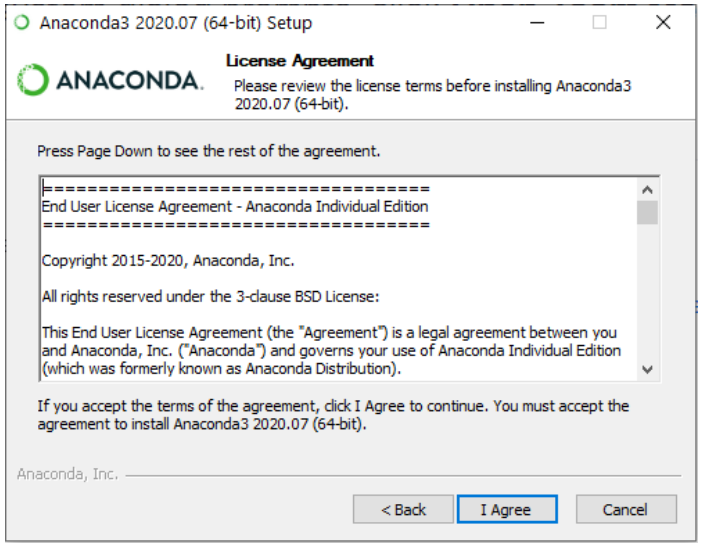


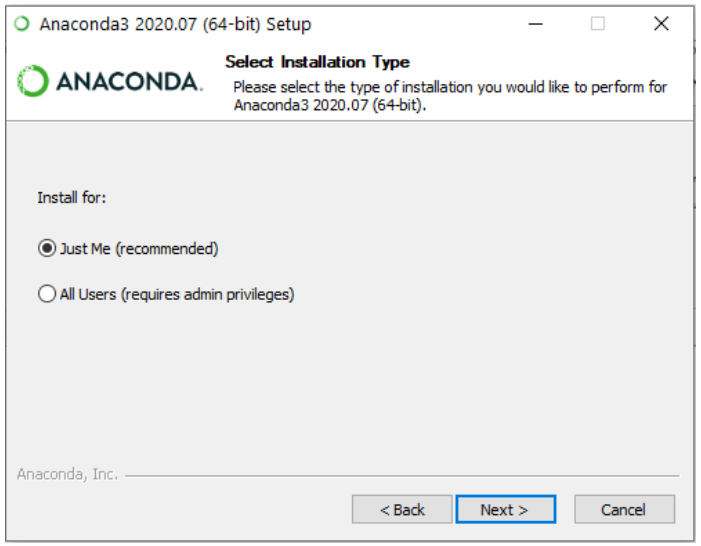
Installation example shown for a Windows machine

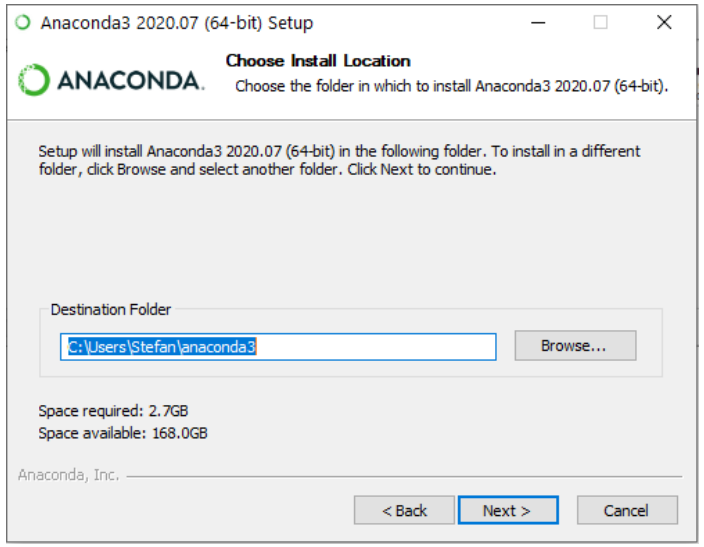
For Mac, download and install .pkg file instead

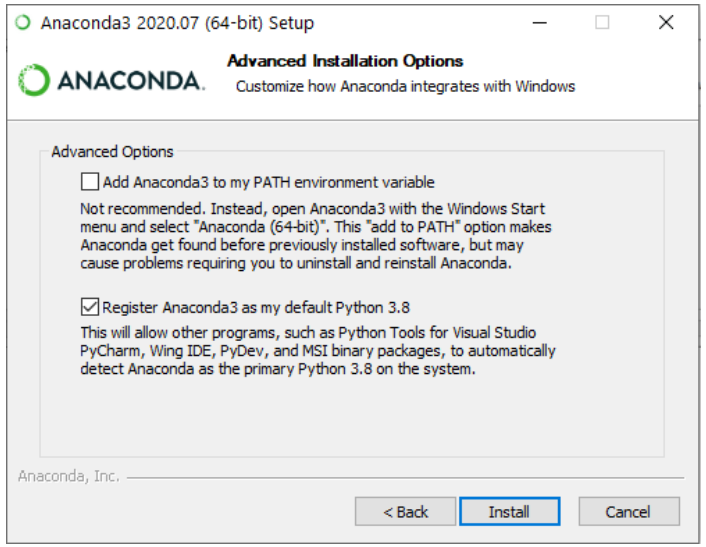
Install Anaconda ctd.

Click through the following pages, leave all the recommended settings as they are.



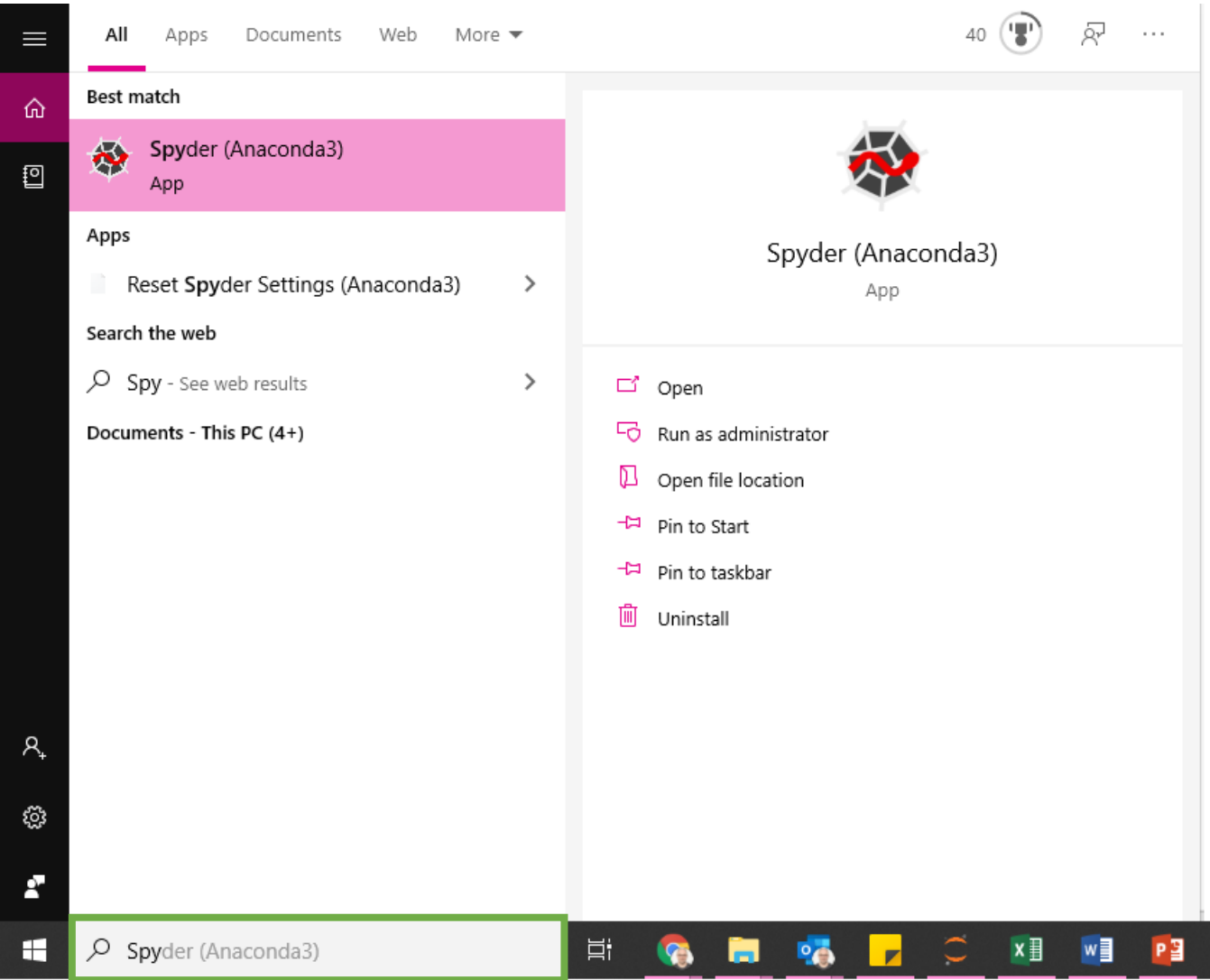






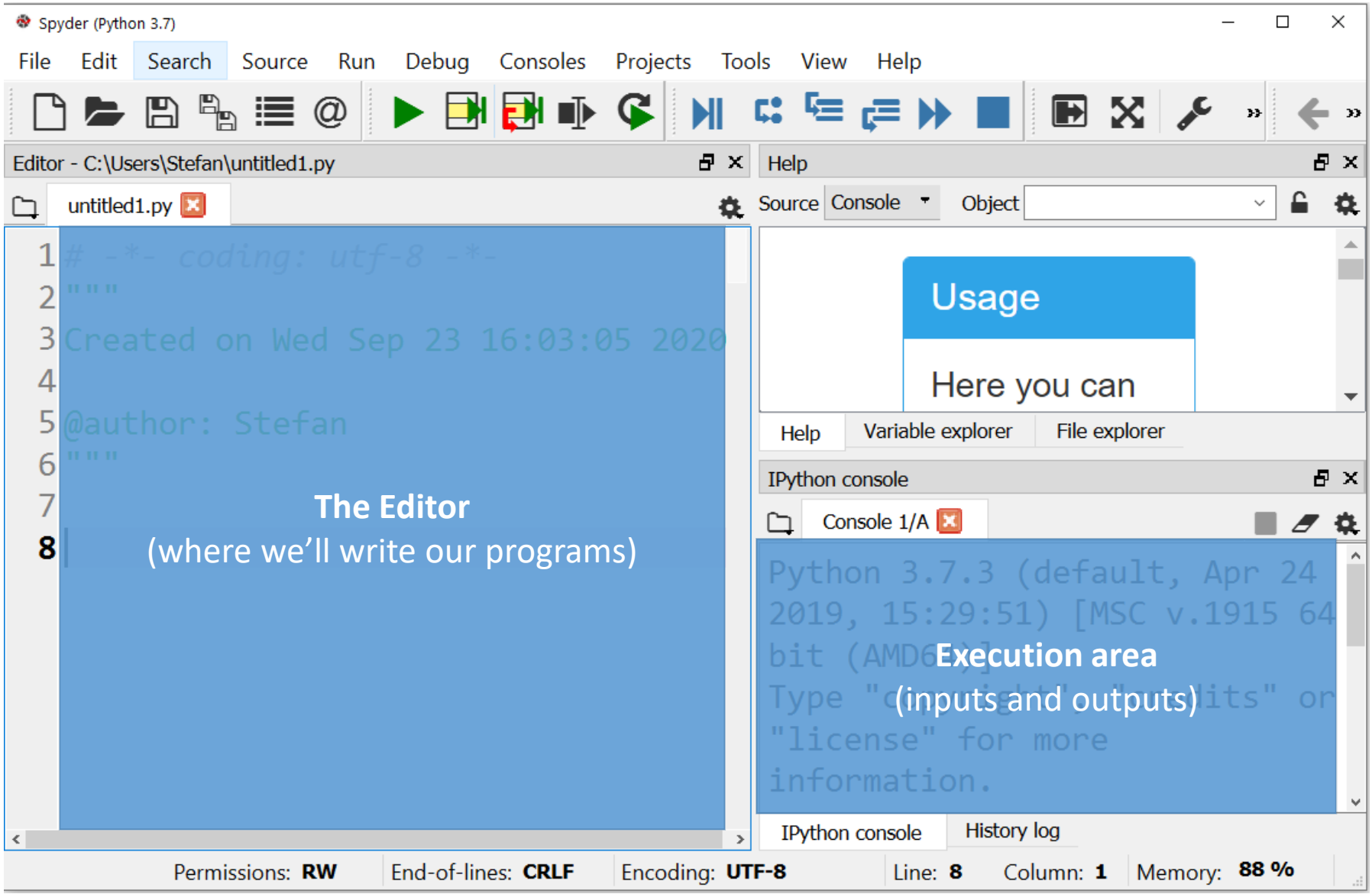
Start Spyder

After the installation is completed, **type “Spyder”** in the Windows search bar (you might have to accept Firewall access)



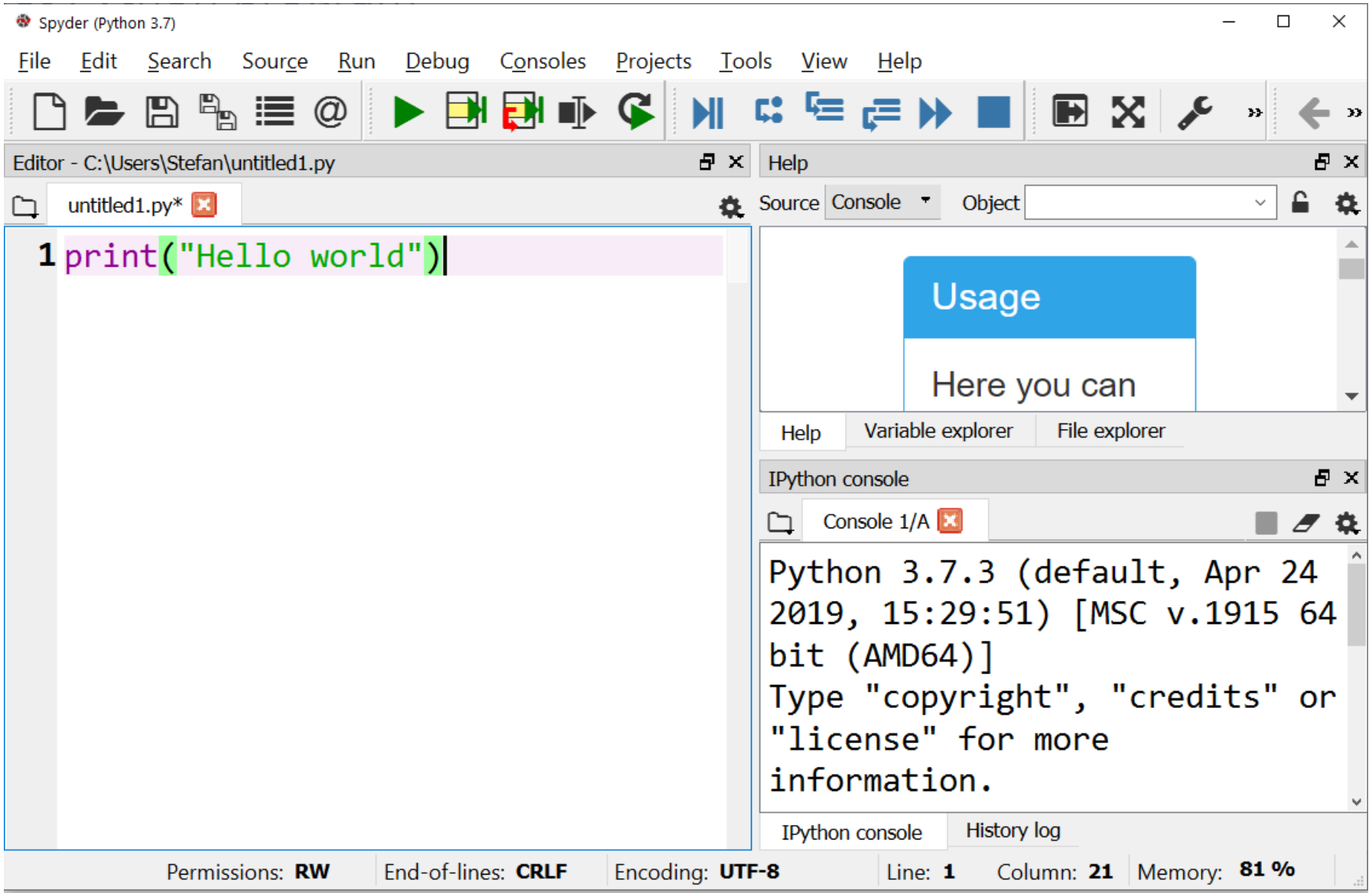
Start Spyder

You should see a window similar to the one below. Familiarise yourself with the layout.



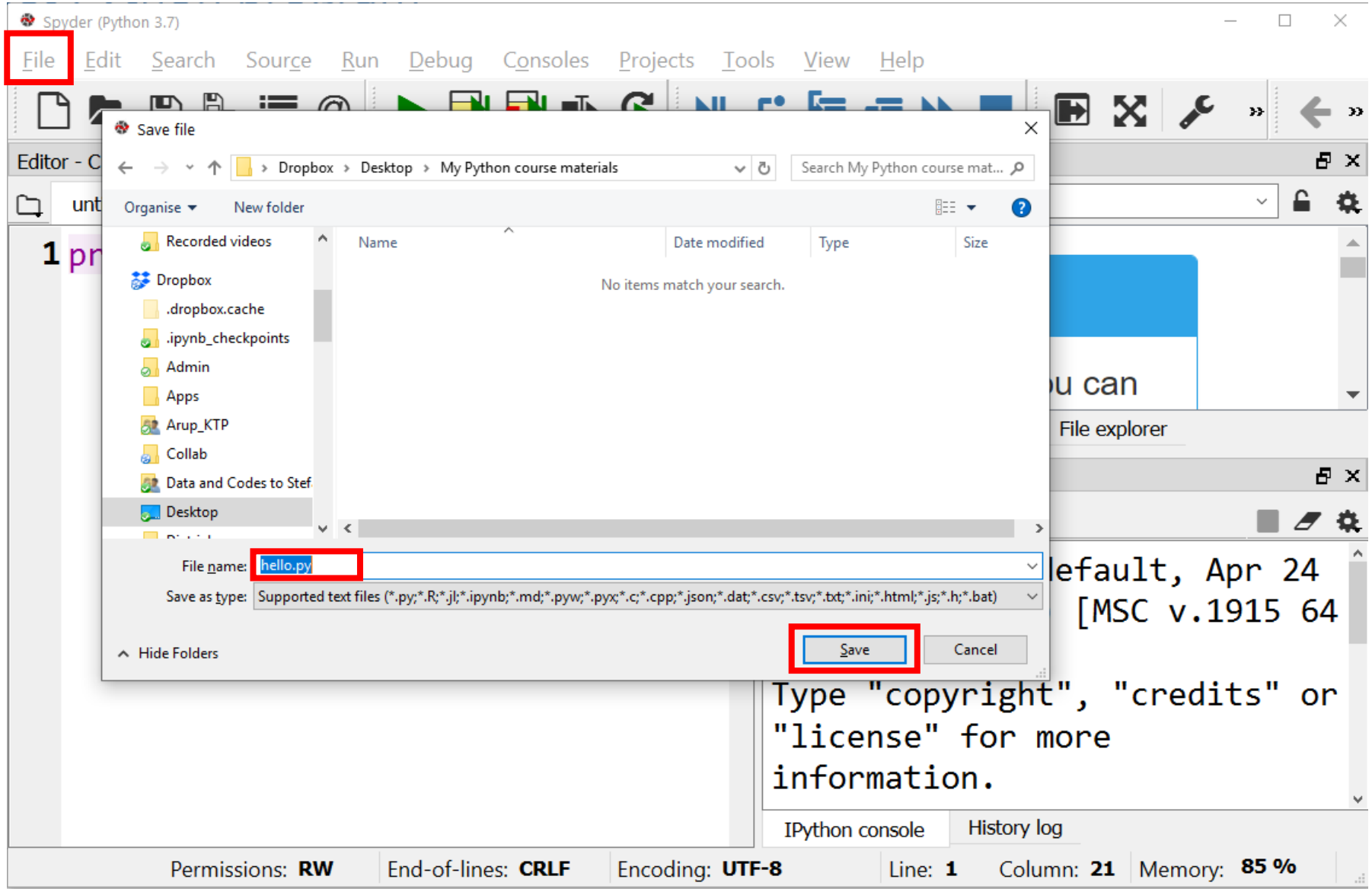
Your first Python program

Delete the stuff in the editor and type `print("Hello world")`



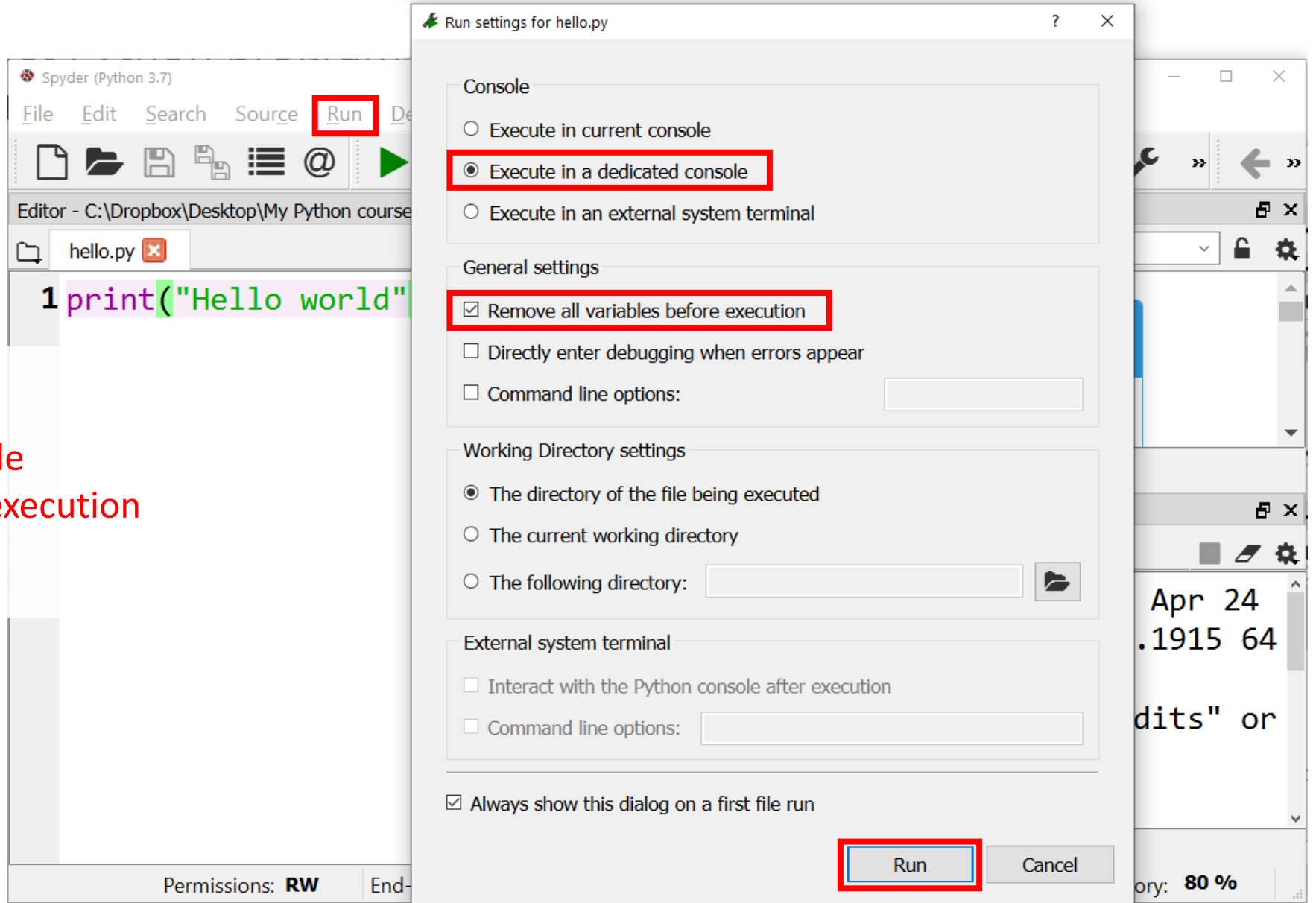
Your first Python program ctd.

Go to File and Save as… - create a new folder and save the file as hello.py



Your first Python program ctd.

1. Click on Run -> Run (or hit the [F5] key)

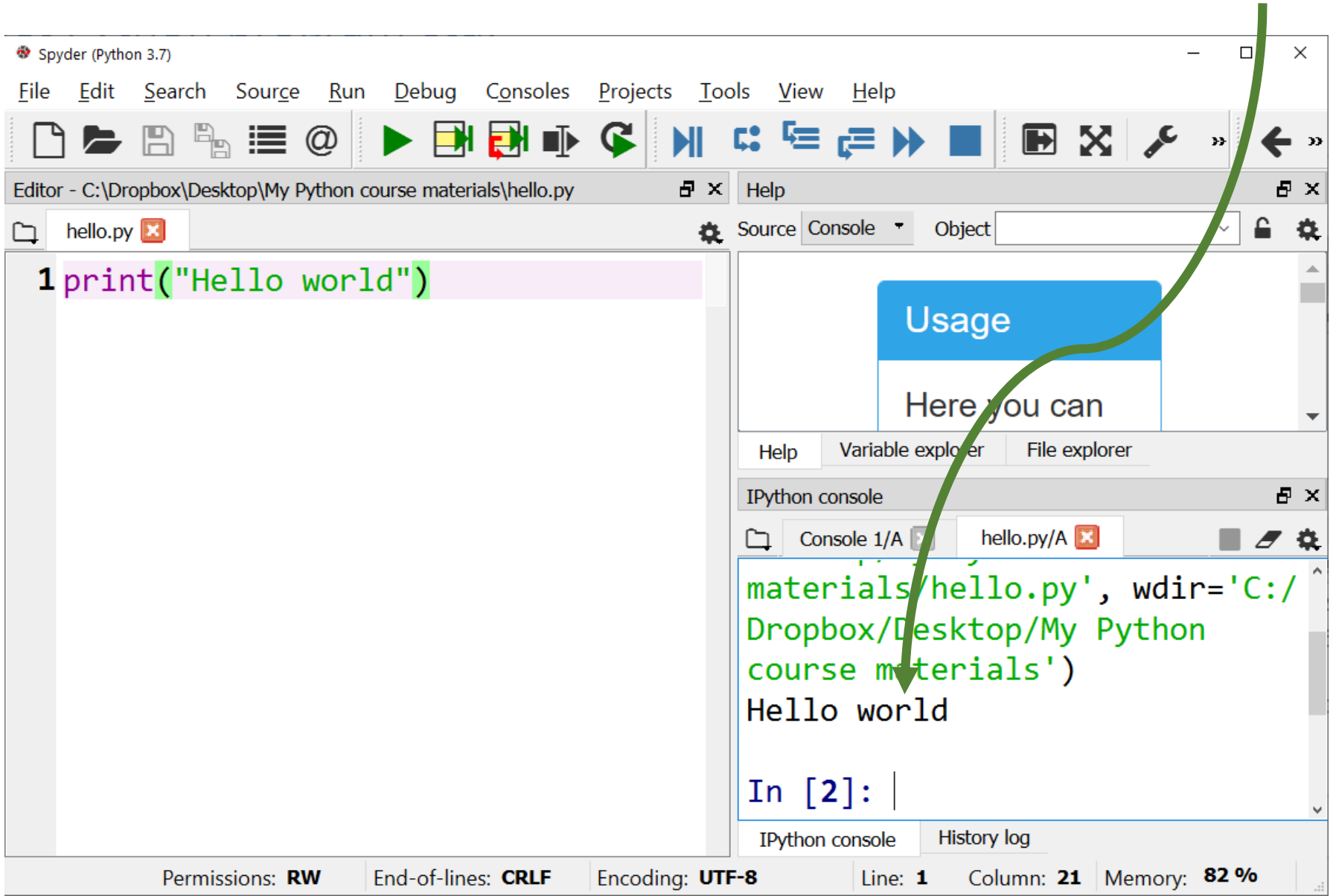


2. Select the options
   - Execute in a dedicated console
   - Remove all variables before execution

   and click [Run]

Your first Python program ctd.

Congratulations! Your first program should have printed something to the console.

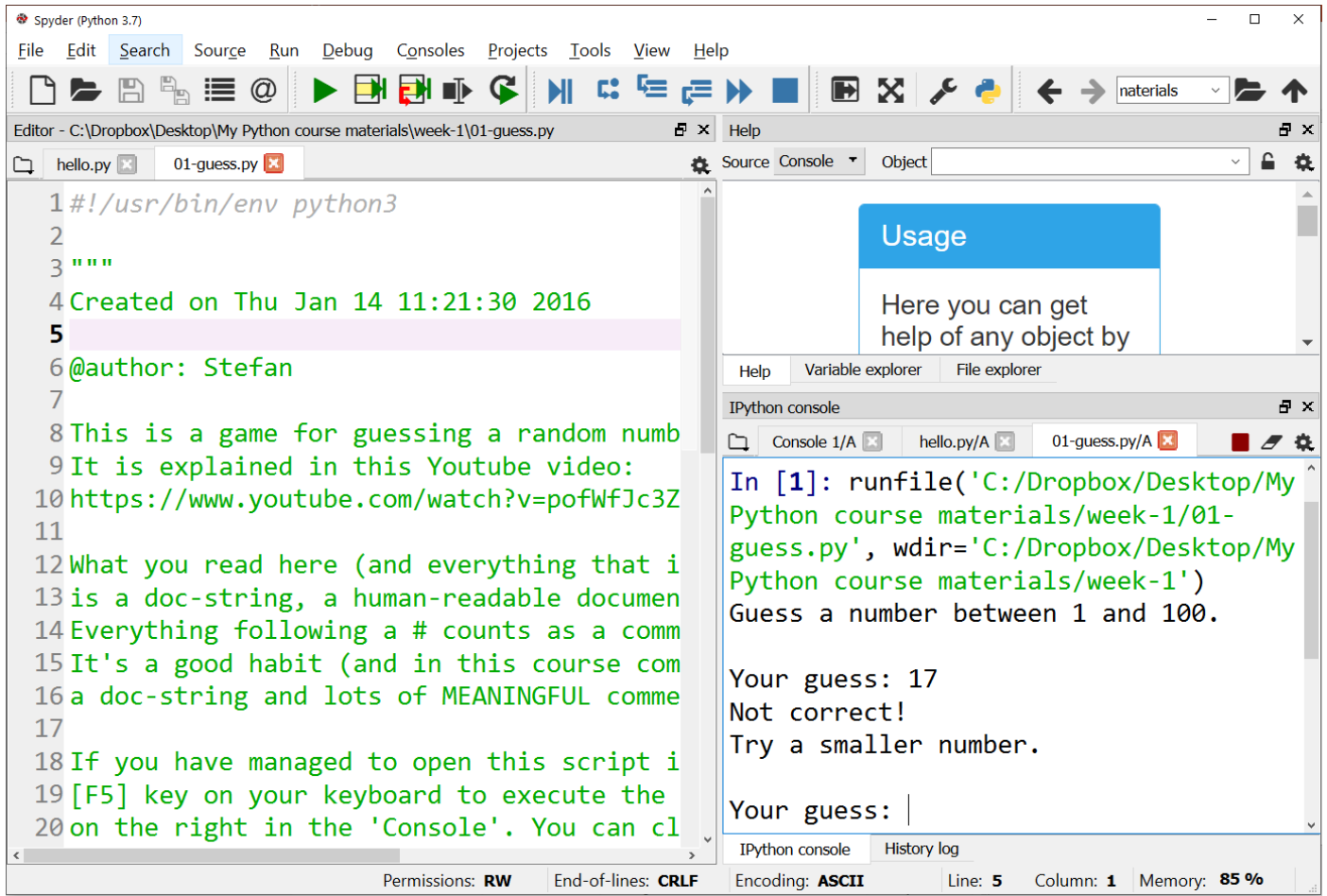


A more interesting program: number guessing

Download the 01-guess.py file from the course website

Ideally, move it to a new “week-1” folder for all your codes (be organised from the start!)

Open the file in Spyder, run it, play with it, read the code, understand it? Modify?



Don’t be afraid to modify the code.
It’s likely you will break it!
But your computer won’t break.
Try fix the code again.
And again.
Until it works.
That’s the only way to become a programmer ☺

Refer to:
https://www.youtube.com/watch?v=pofWfJc3Zog

What if the Anaconda installation fails on my own computer?

Unfortunately, we do not have capacity to provide individual IT support. **But:**

- **If possible, reinstall or try the installation on another computer**
- **Sign up on https://repl.it/ and create Python 3 “repls”**

  This is a very convenient browser-based Python editor, including program execution

  It will be sufficient for (almost) all of our course