COMP1021
Introduction to Computer Science

Getting Started with Python

David Rossiter and Gibson Lam

Outcomes

- After completing this presentation, you are expected to be able to:
  1. Understand the history and some background information of the Python programming language
  2. Install Python and start using Python through the command line tool and IDLE

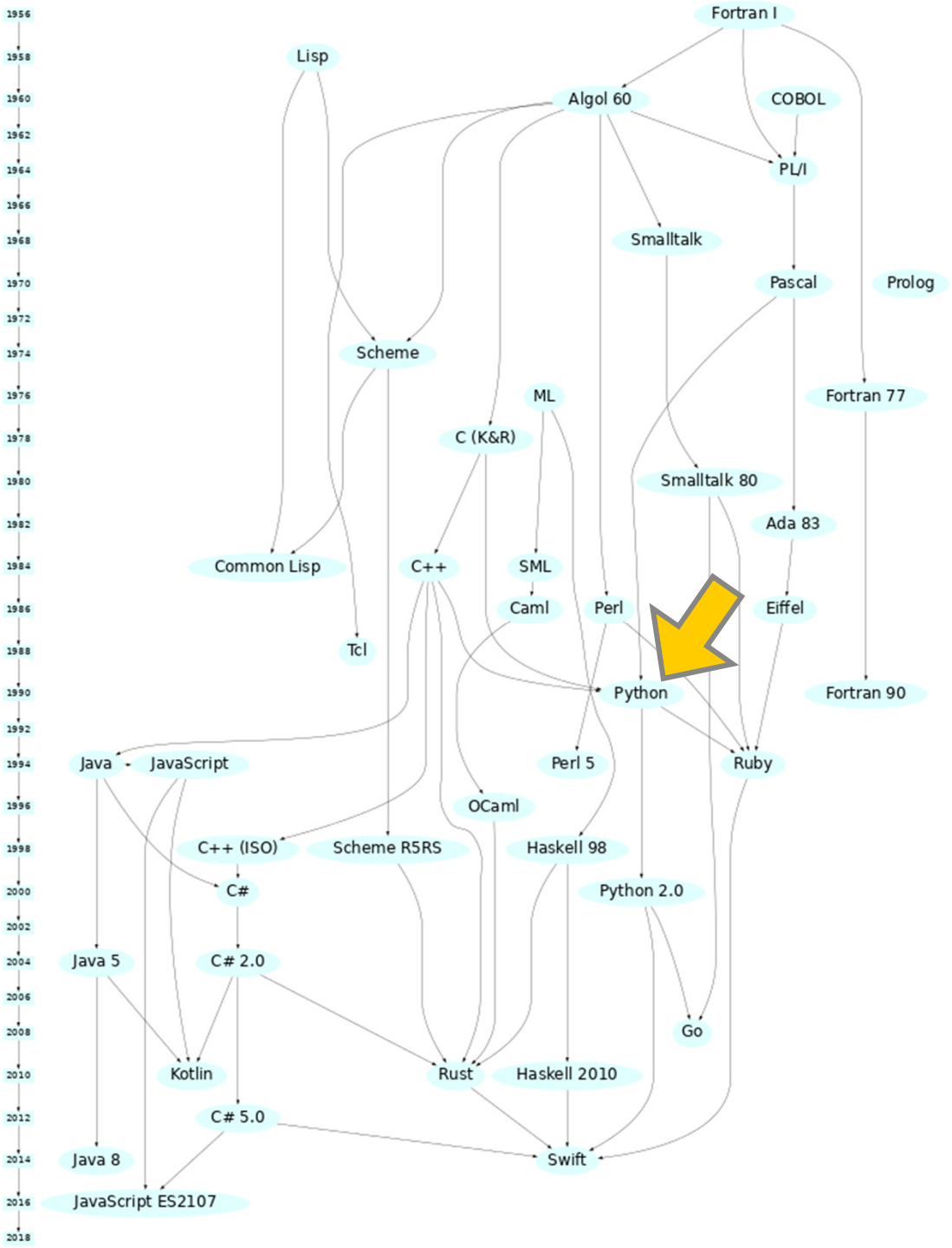
Computer Programming Languages

- Computer programming languages have been developed over the last 50 years
- There are hundreds of them
- For this course we will use a language called *Python*

Evolution of Programming Languages

- Only the main programming languages are shown here
- We can ignore all of them except Python

From http://rigaux.org/language-study/diagram.html



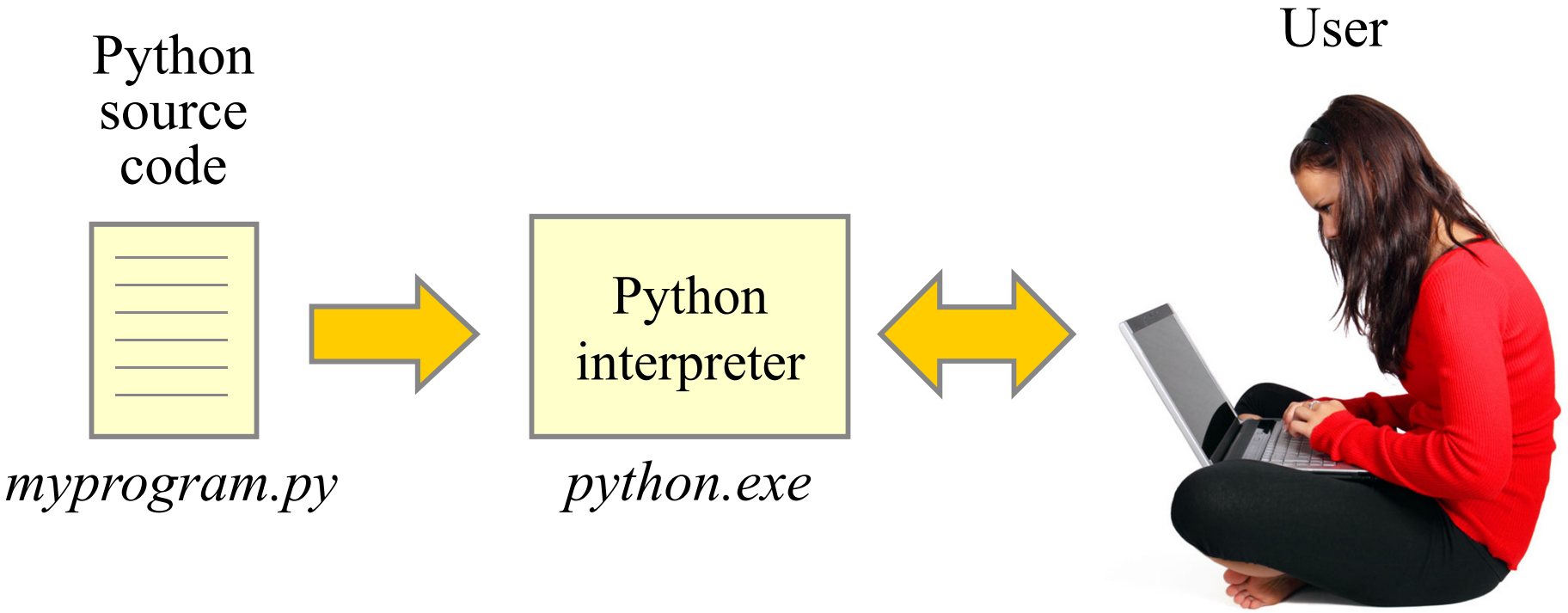
Python

Guido Van Rossum

- Started by a guy who was bored during Christmas 1989
- He made a computer language with these qualities:
  - a language just as powerful as other languages
  - code that is almost as understandable as simple English
  - suitable for everyday tasks, so you can quickly make a useful program
  - open source, so anyone can contribute to its development

Executing a Python Program

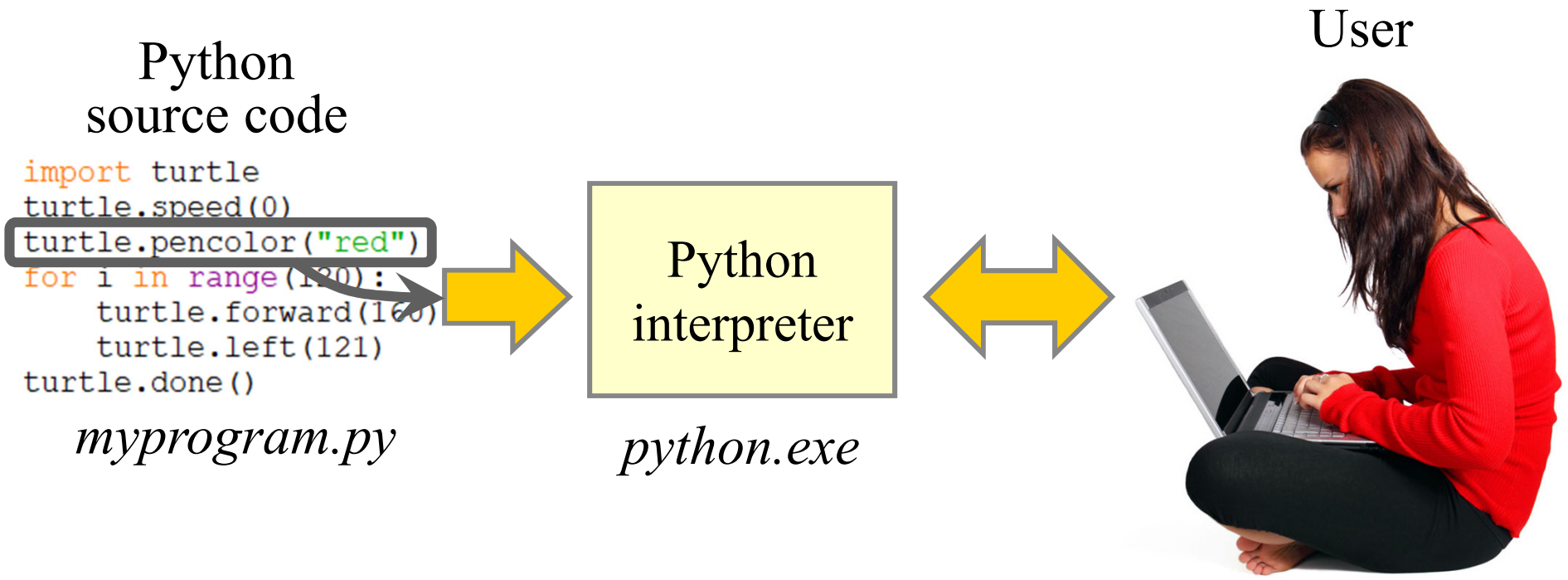
- Python programs have to be 'given' to a Python *interpreter* for execution



- We say that Python code is *interpreted*
- This is the most common way that Python is used

Python is Interpreted

- *Interpreted* means that each line of code is given to the interpreter and executed, one by one



Different Versions of Python

- Python version 1 – this version disappeared a long time ago
- Python version 2 – this version officially died early 2020
- Python version 3 – this version is what we use
- Python 3.9 is the version we use this semester
- You can install it in your own computer, see next slide
  - This is probably the way most students use Python
- You can also run it virtually – details a few slides later
- (It has also been installed in all the ITSC computer barns, the Virtual Barn, and the CS department labs)

Installing Python on Your Machine

- You need to do this
- Get the installation file from the COMP1021 web site:

Getting Started with Python

[1spp, 4spp, 6spp, 9spp]

Different ways to access Python here

- Here's some ways you can access Python
  1. To do COMP1021 work on **your own computer**, you need to install Python on it
     - You should install one of these files (from here), which are the same versions we use on the course:
       - Python for Windows (64 bits) - python-3.9.5-amd64.exe
       - Python for Windows (32 bits) - python-3.9.5.exe
       - Python for MacOS X (11 or later) - python-3.9.5-macos11.pkg
  2. Python is already installed in the **Virtual Barn environment** of ITSC:
     - Please see here for more information
  3. The **ITSC Computer Barns** already have Python installed, at the HKUST campus
     - You can go to these physical rooms whenever you want
- The computers in the Computer Science Department (CSD) **lab room** also have Python installed, but we won't go there this semester

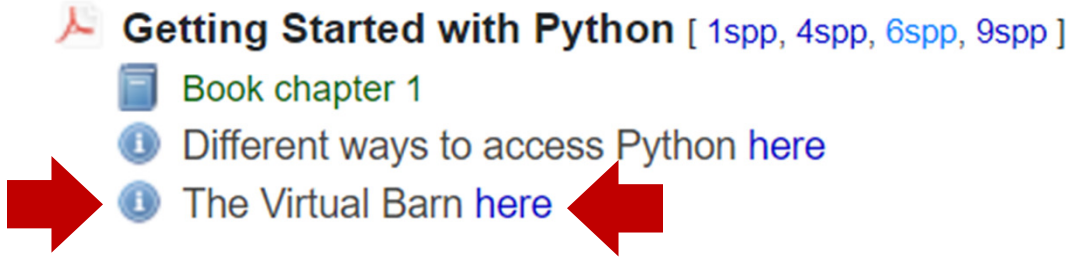
PC users

Mac users

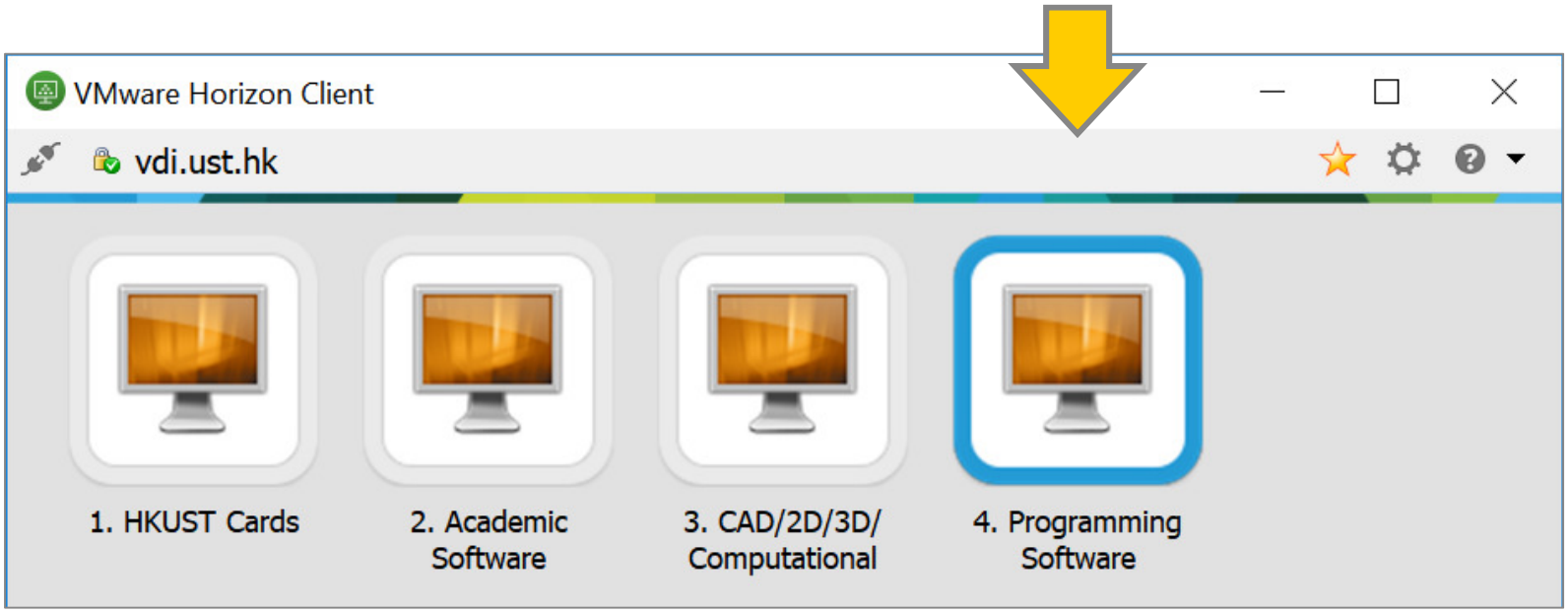
All users, optional but useful

The Virtual Barn

- The Virtual Barn is useful for several reasons
  e.g. it lets you access Python through the web
- It is optional
- See our guide:

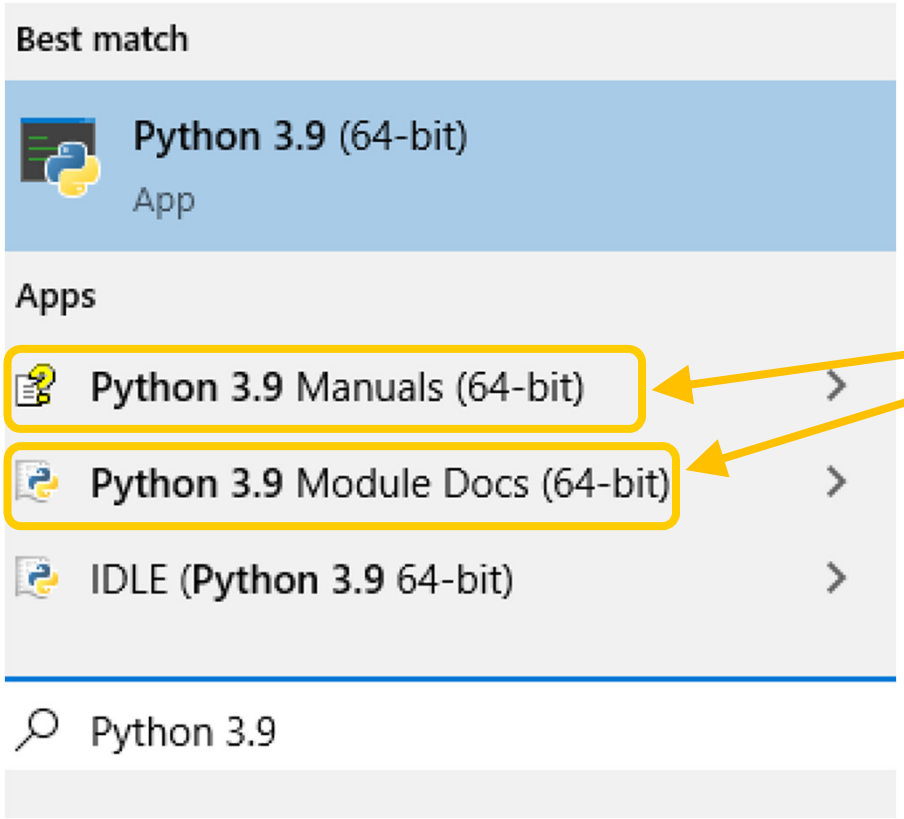


- After you run the software you can find Python here



After Installing Python 3.9

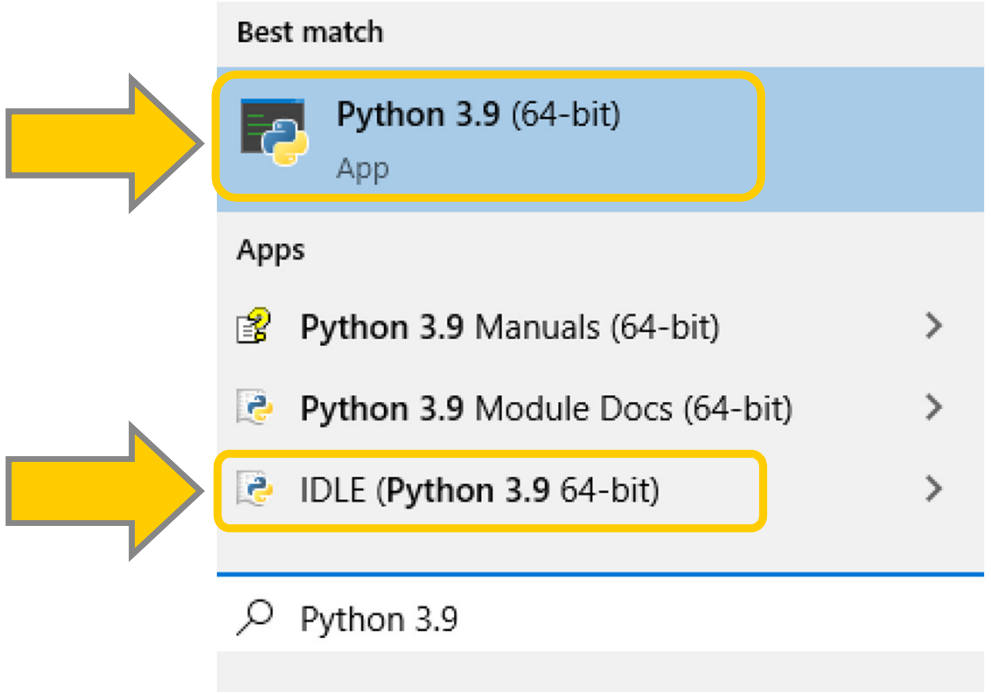
(These images are from a PC)



- After installing, you will see several options if you search for *Python* or perhaps *Python 3.9* in Windows
- Here is some documentation about Python
  - Probably you won't need to look at this, the COMP1021 notes and labs should be enough

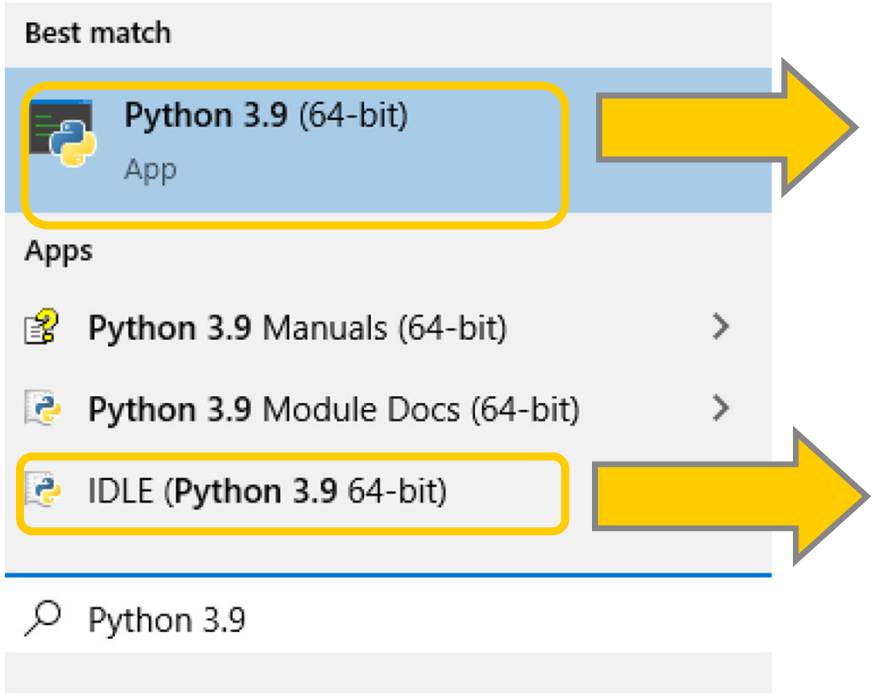
Using Python

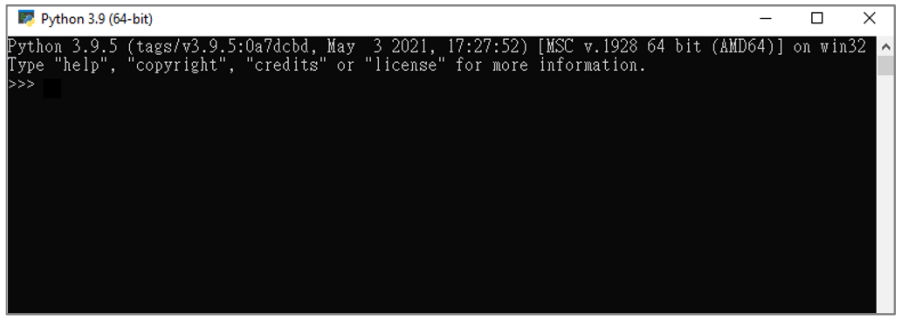
- Let's look at how we can start using Python
- There are two ways we will look at now

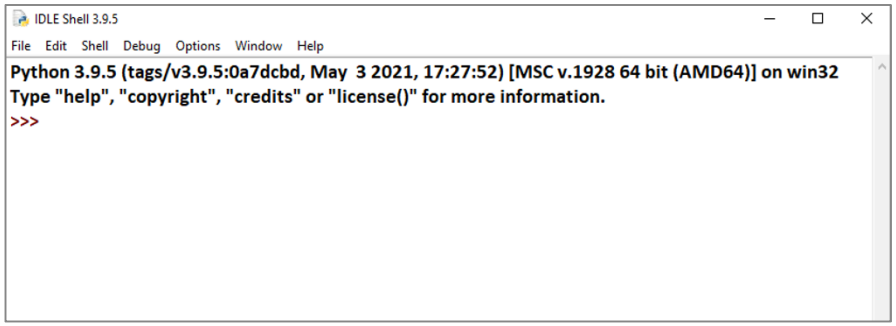


Using Python

- Both options give you a *shell*







The Basic Idea of Using a Python Shell

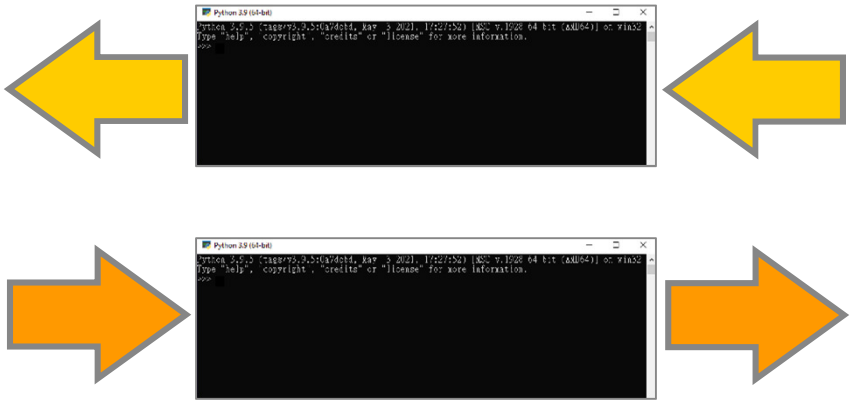
2. The shell passes whatever you type to Python

1. User types things one line at a time, in the Python shell

The User

Python interpreter

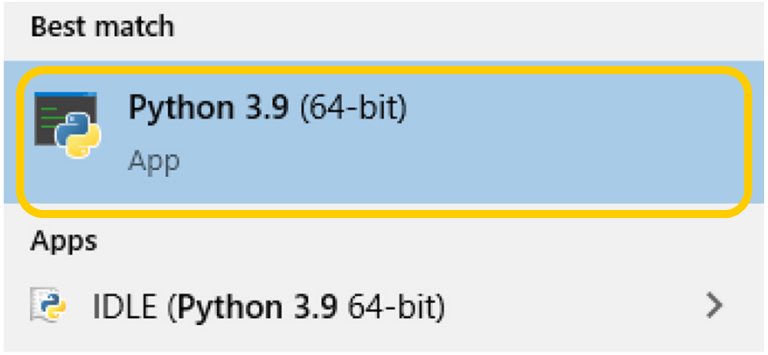
python.exe



3. The Python interpreter executes whatever is given to it

4. The interpreter outputs the results, which are shown in the shell

Using a Python Shell – Some Simple Python Code

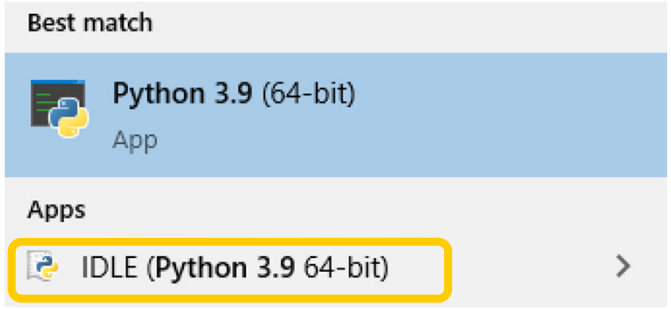


Python 3.9 (64-bit)

```
Python 3.9.5 (tags/v3.9.5:0a7dcbd, May  3 2021, 17:27:52) [MSC v.1928 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print(1000 * 21)
21000
>>> print("there are these many seconds in one lecture:", 60 * 50)
there are these many seconds in one lecture: 3000
>>> print("Payment for 8 weeks, 15 hours per week =", 8 * 15 * 45)
Payment for 8 weeks, 15 hours per week = 5400
>>>
```

>>> is generated by the shell,
it means ‘this is where your input is shown’

Using the IDLE Environment



- The IDLE environment is better
- One reason is that colours are automatically used, which is sometimes very helpful for understanding
- We'll see other useful features of IDLE soon, especially in the lab work that we'll do