

COMP1021
Introduction to Computer Science

Getting Started with Python

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Outcomes

- After completing this presentation, you are expected to be able to:
 1. Understand some background information about the Python programming language
 2. Install Python and start IDLE
 3. Appreciate that Python code is given to a Python interpreter for execution

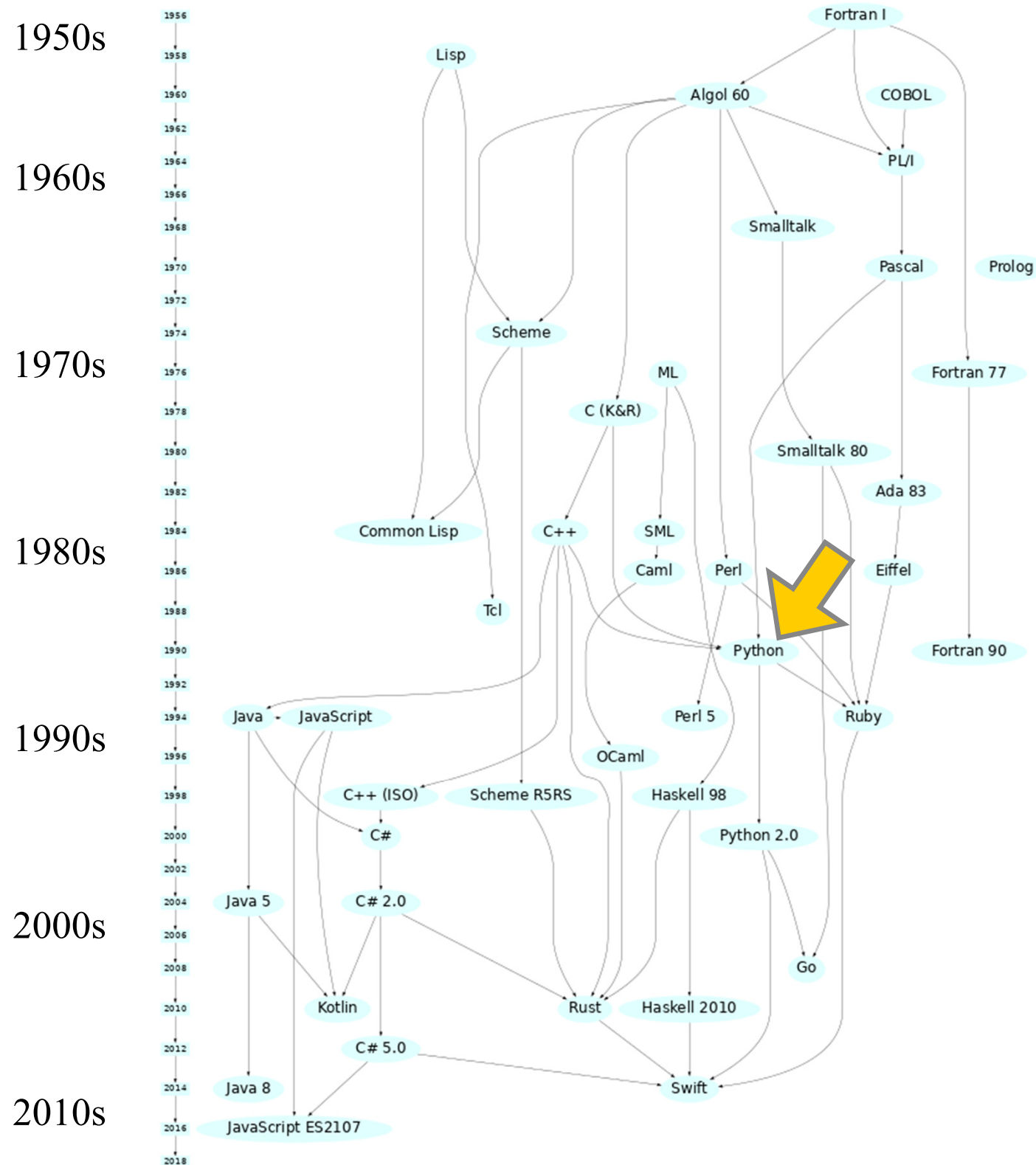
Computer Programming Languages

- 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

Different Versions of Python

- Python version 1 – this version disappeared a long time ago
- Python version 2 – this version officially died in 2020
- Python version 3 – this version is what we use
- Python 3.11 is the version we will use this semester (3.11.3)
- You can install it in your own computer, see next slide
 - This is probably the way most students use Python
- We asked ITSC to install it in all the computer barns
- We asked ITSC to install it in the Virtual Barn
 - details two slides later

Installing Python on Your Machine

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



- 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-3.11.3-amd64.exe](#)
 - Python for MacOS X (11 or later) - [python-3.11.3-macos11.pkg](#)

 **PC users**

 **Mac users**

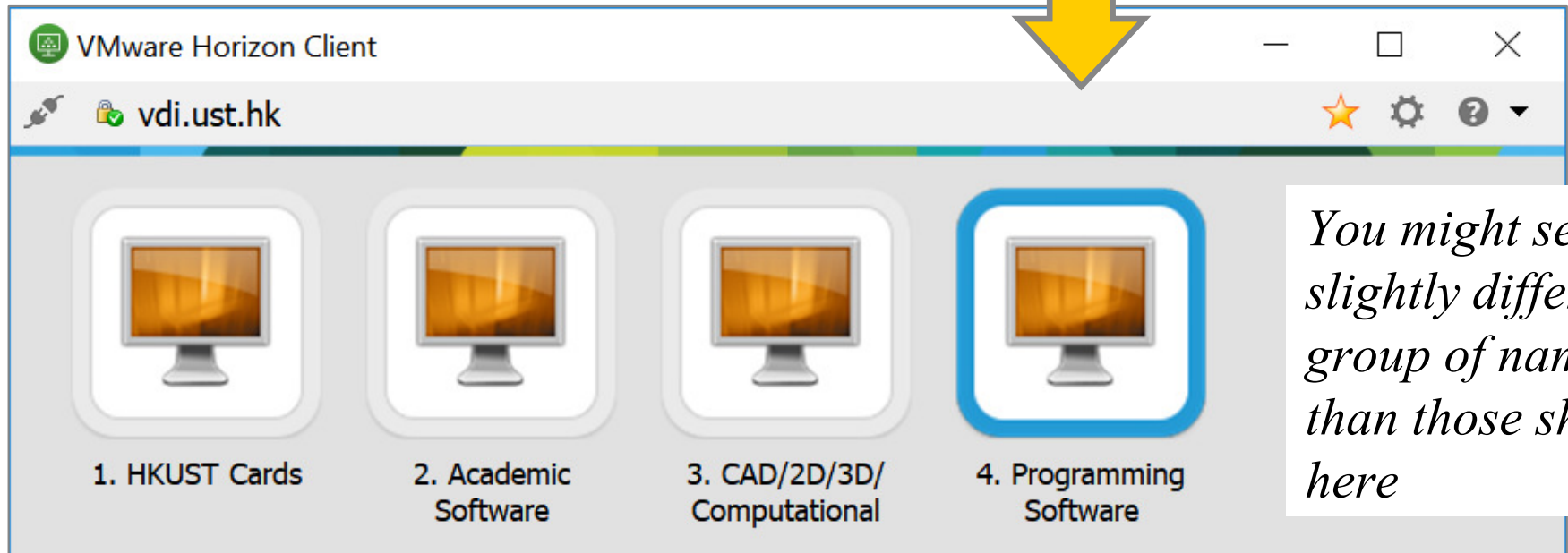
2. We asked ITSC to install Python 3.11.3 in the **Virtual Barn**:

- Please see [here](#) for more information about the Virtual Barn

 *All users,
optional but useful*

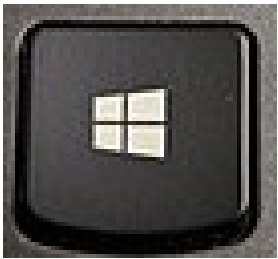
The Virtual Barn

- 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



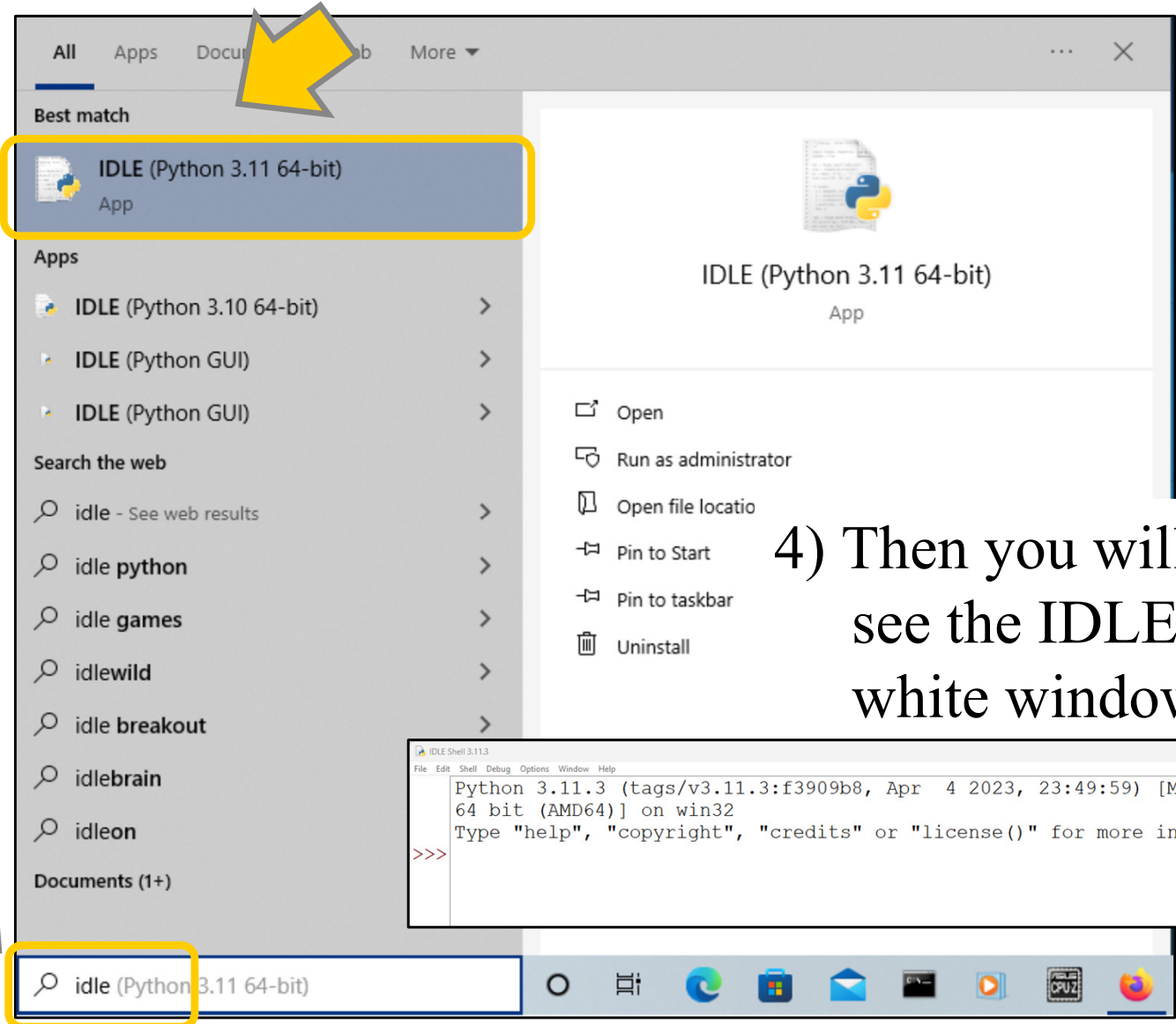
Using Windows 10

3) Choose IDLE Python 3.11 - click to start



1) Press the
Windows key

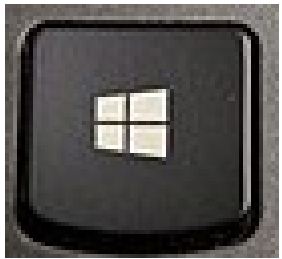
2) Search for 'idle'



4) Then you will
see the IDLE
white window:

Using Windows 11

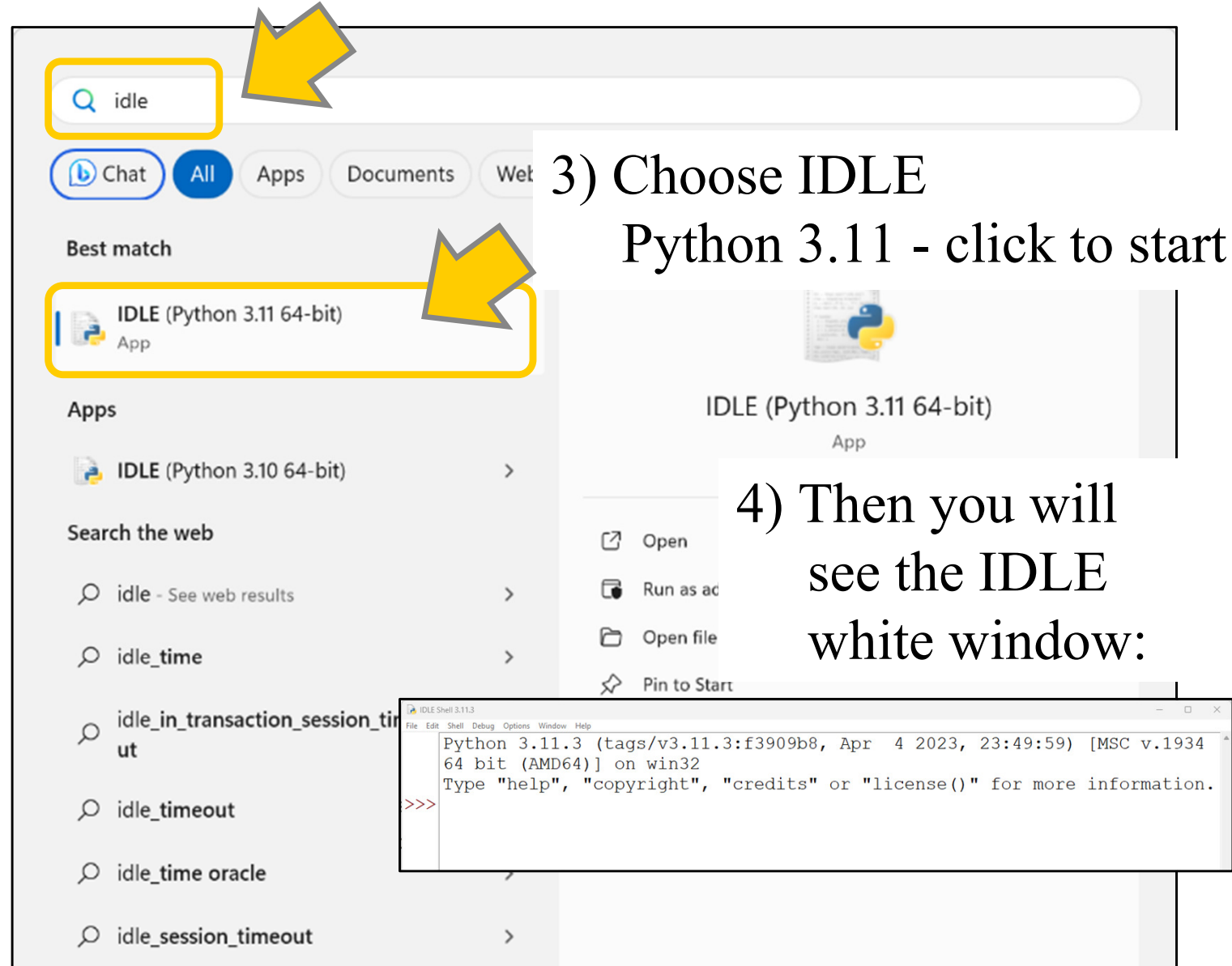
2) Search for 'idle'



1) Press the
Windows key

3) Choose IDLE
Python 3.11 - click to start

4) Then you will
see the IDLE
white window:

A screenshot of the Windows 11 search interface. The search bar at the top contains the text 'idle'. Below the search bar, there are tabs for 'Chat', 'All', 'Apps', 'Documents', and 'Web'. The 'All' tab is selected. Under the 'Best match' section, the first result is 'IDLE (Python 3.11 64-bit)' with a yellow box around it and a yellow arrow pointing to it. Below this, there is a list of 'Apps' including 'IDLE (Python 3.10 64-bit)'. Under the 'Search the web' section, there are several search results including 'idle - See web results', 'idle_time', 'idle_in_transaction_session_timeout', 'idle_timeout', 'idle_time oracle', and 'idle_session_timeout'. On the right side of the search results, there is a preview of the 'IDLE (Python 3.11 64-bit)' app, showing the Python logo and the text 'IDLE (Python 3.11 64-bit) App'. Below the preview, there are buttons for 'Open', 'Run as administrator', 'Open file', and 'Pin to Start'. In the bottom right corner, there is a small window titled 'IDLE Shell 3.11.3' showing the Python 3.11.3 shell interface with the text 'Python 3.11.3 (tags/v3.11.3:f3909b8, Apr 4 2023, 23:49:59) [MSC v.1934 64 bit (AMD64)] on win32' and 'Type "help", "copyright", "credits" or "license()" for more information.' followed by a prompt '>>>>'.

Using the Mac OS

2) Search for 'idle'



3) Click on
IDLE to start

1) Click and
open Launchpad



4) Then you will
see the IDLE
white window:

```
*IDLE Shell 3.11.3*

Python 3.11.3 (v3.11.3:f3909b8bc8, Apr 4 2023, 20:12:10) [Clang 13.0.0 (clang-1300.0.29.30)] on darwin
Type "help", "copyright", "credits" or "license()" for more information.
>>>
```

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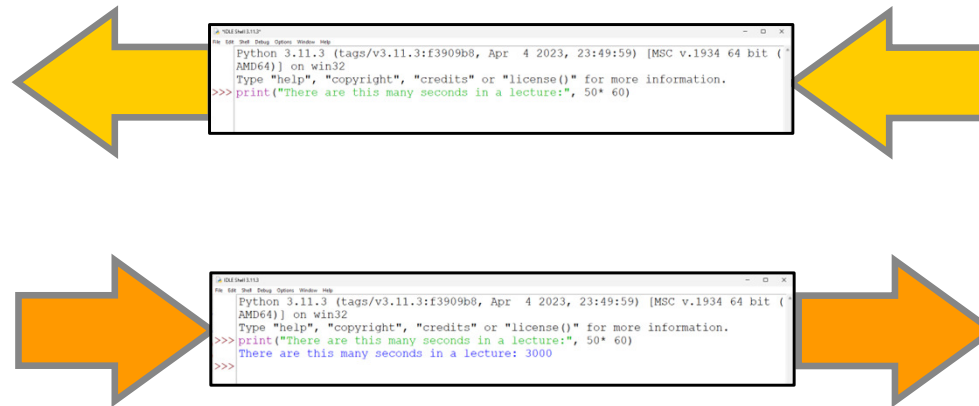
The Basic Idea of Using a Shell

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 result, which is shown in the shell

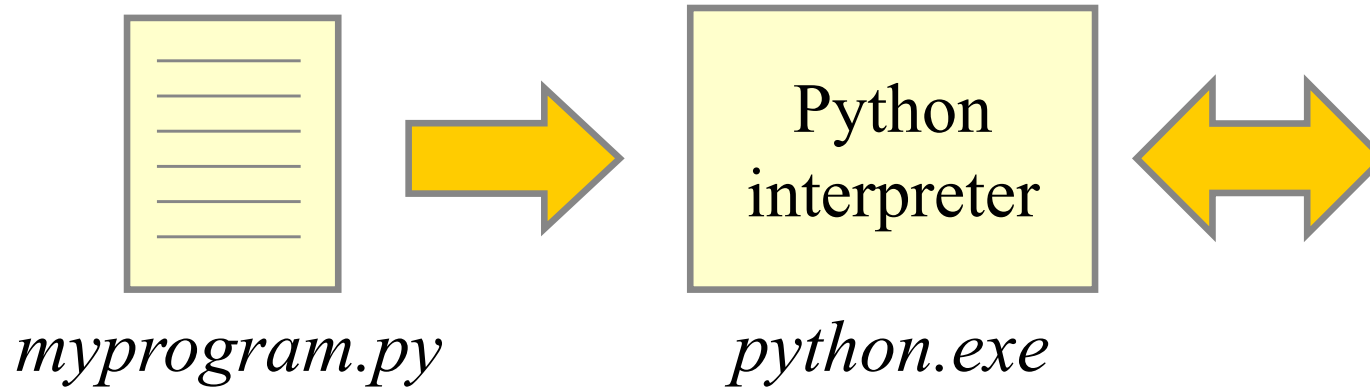


Executing a Python Program

- Instead of executing one line of code at a time, you can put lots of lines together in a *program*
- Python programs are given to a Python *interpreter* for execution

User

Python source code



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

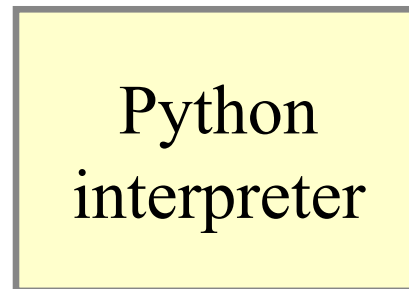
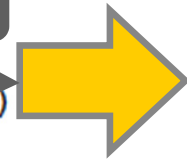
Python is Interpreted

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

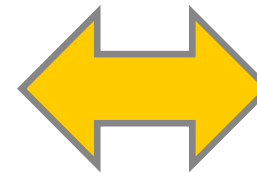
Python
source code

```
import turtle
turtle.speed(0)
turtle.pencolor("red")
for i in range(120):
    turtle.forward(160)
    turtle.left(121)
turtle.done()
```

myprogram.py



python.exe



User

