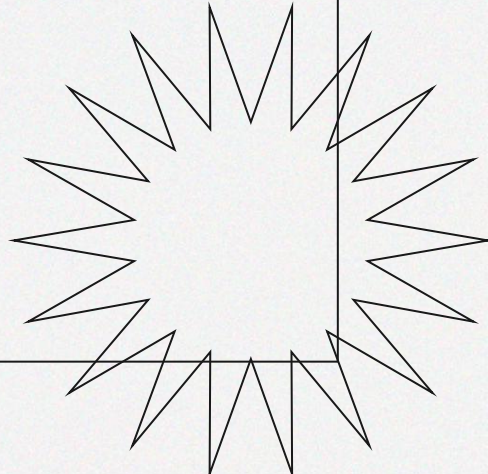
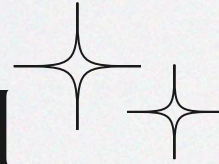


# INTRODUCTION TO COMPUTER PROGRAMMING IN PYTHON

Lesson 2  
Astro Scholars 2022





# REVIEW



## What is programming?

A process to write code, instructions to tell a computer, application, or software how to perform.

## Jupyter Notebooks

A web-based interactive computing platform that combines live code, equations, visualizations and narrative text.

## Why use Python?

It is an interpreted language with syntax that is easy to read and write.

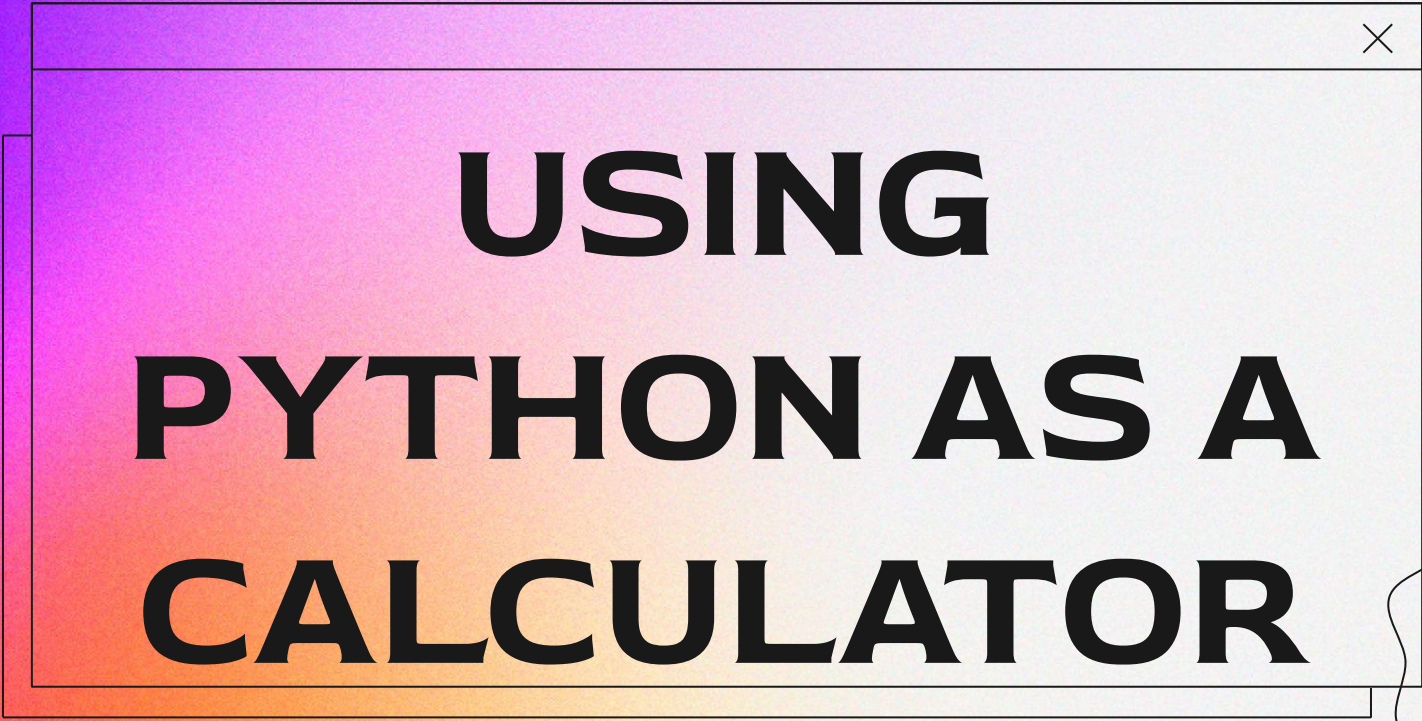
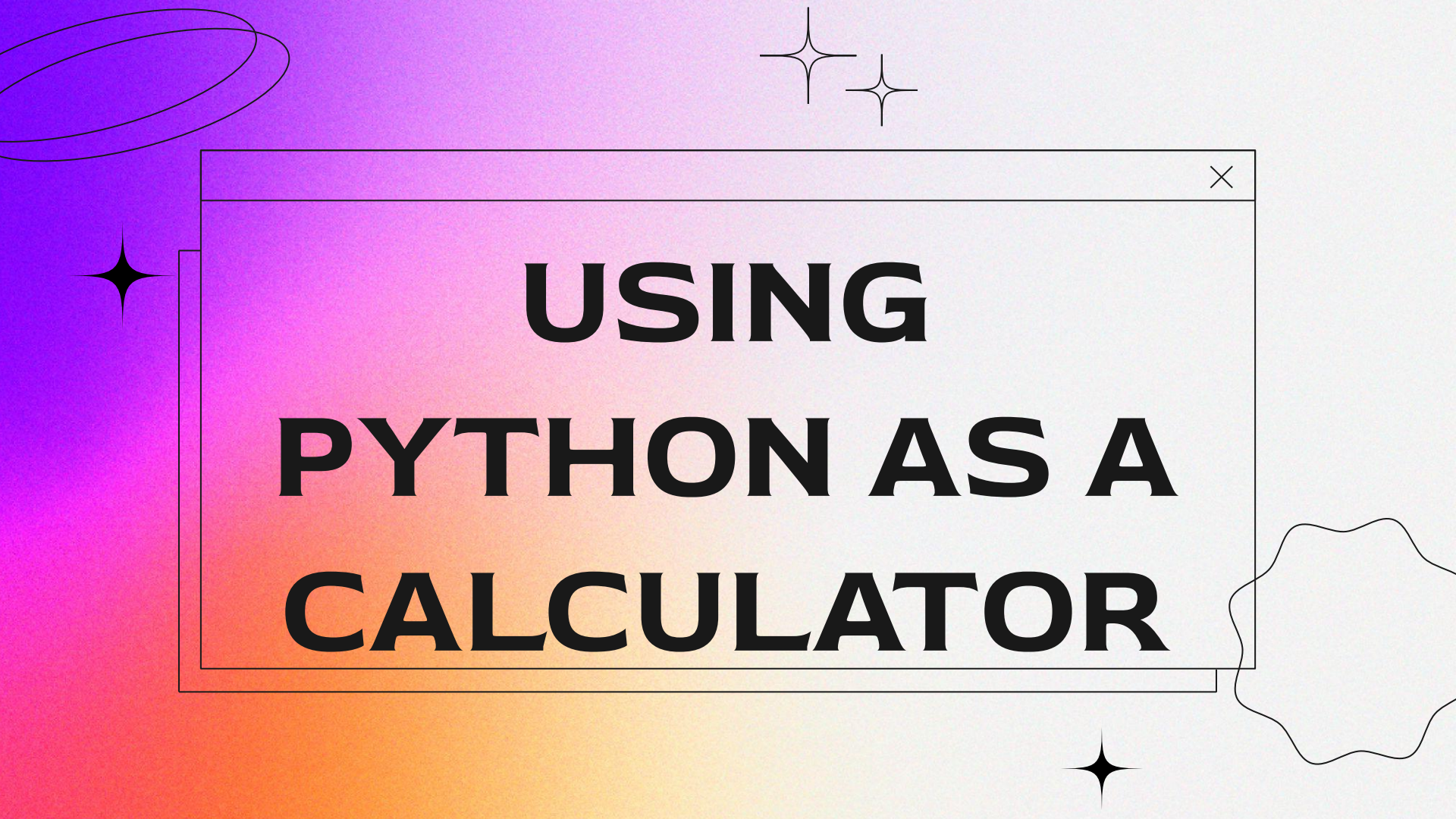


## Write Python in Different Environments

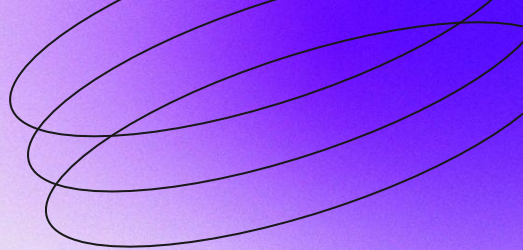
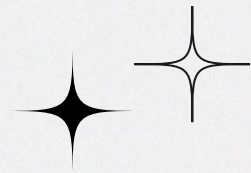
You can write Python programs from many different environments, like the terminal or Jupyter Notebook.







# **USING PYTHON AS A CALCULATOR**



# **Open up Day 2 Jupyter Notebook**



# ORDER OF OPERATIONS



- P** - Parentheses
- E** - Exponents
- M** - Multiplication
- D** - Division
- A** - Addition
- S** - Subtraction



# TYPES



# DATA TYPES



Variables can store data of different **types**, and different types can do different things.

## Text Type

`string`

## Sequence Type

`list, tuple, range`

## Boolean Type

`bool`

## Numeric Type

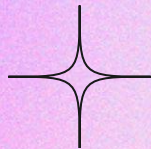
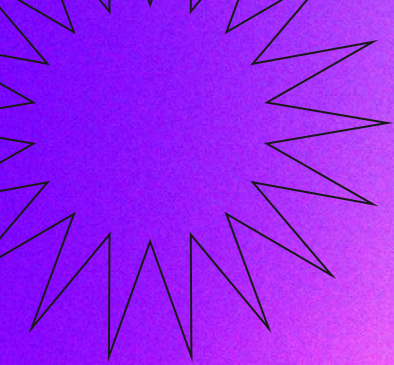
`integer, float,  
complex`

## Mapping Type

`dictionary`

## And more!





# ITERATION





# USEFUL TOOLS FOR ITERATION



- Check the length of an object to see how many elements it has
  - `len`
- **Index** an object to access specific elements by using square brackets
  - `object[index]` will return the element located at this index in the object
- Python counts elements starting from 0!
  - An object that has `len(object) = 3` will have indices 0, 1, 2
- **Slice** an object to access multiple elements at once
  - `object[start:stop]` will return values from start to stop EXCLUSIVE of stop

# RESOURCES



Read more about the libraries we imported today:

Numpy: <https://numpy.org/>

Scipy: <https://scipy.org/>

Matplotlib: <https://matplotlib.org/>

Astropy: <https://www.astropy.org/>

And the Python types we worked with:

<https://www.w3schools.com/python/default.asp>

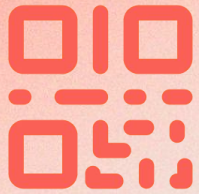






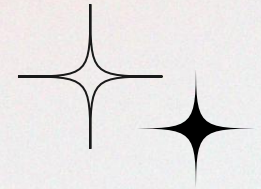
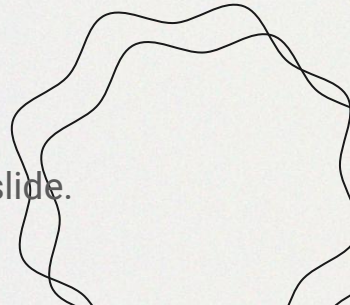
# Exit Ticket





**Join at [slido.com](https://slido.com)  
#531063**

① Start presenting to display the joining instructions on this slide.







# **1. At what point(s) were you most engaged as a learner?**

① Start presenting to display the poll results on this slide.





**2. What concept from today's lecture would you like more elaboration or understanding about?**

① Start presenting to display the poll results on this slide.





### **3. At what point(s) were you least engaged as a learner?**

① Start presenting to display the poll results on this slide.





**Questions?**



