



Introduction to Python Part 1

COMP 8347

Usama Mir

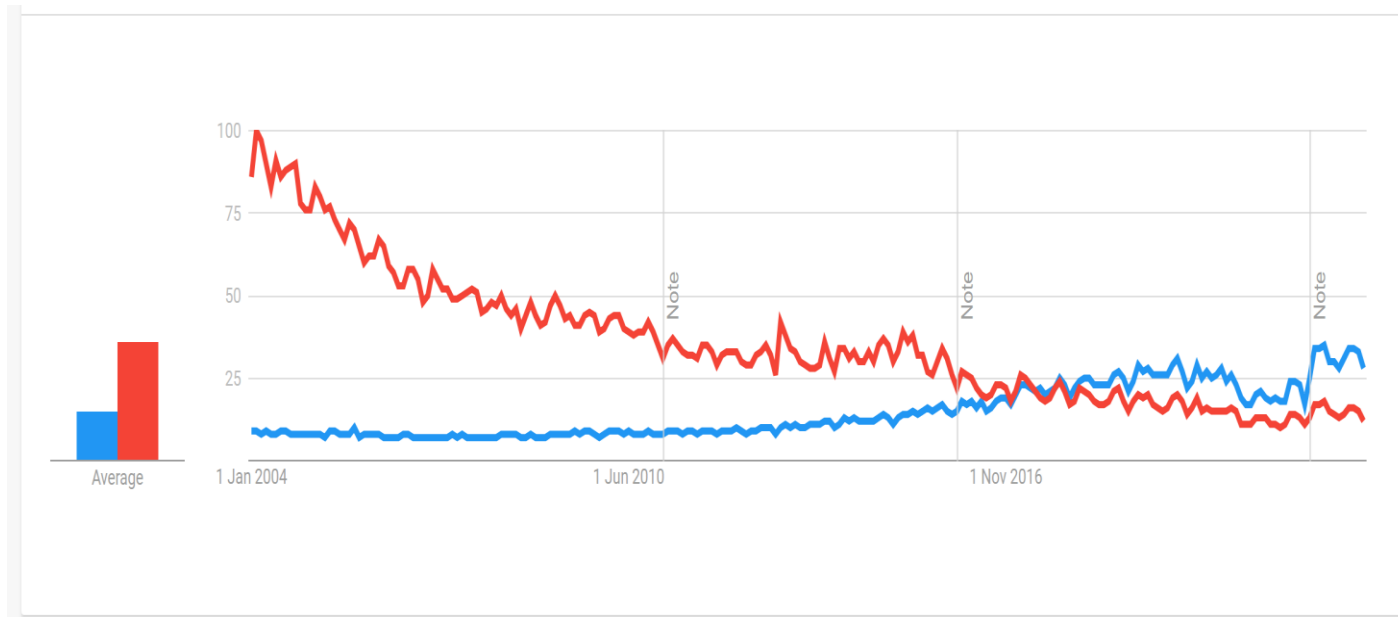
Usama.Mir@unwindsor.ca

Python Basics

- ▶ Topics
 - ▶ Why Python
 - ▶ Overview of IDLE
 - ▶ Input and Print in Python



Why Python?



Source: https://trends.google.com/trends/explore?date=all&geo=US&q=%2Fm%2F05z1_,%2Fm%2F07sbkfb



Why Python?

Developed by Guido Van Rossum

Simple syntax and easy to learn

It emphasizes readability

Used for:

- RAD and Scripting
- Process text
- Display images
- Making calculations and predictions

What we see today on our devices is because of Python

Supports object-oriented programming: with classes and multiple inheritance.

Dynamically typed language: Do not have to assign variable types

Python vs. Java?

Notable Features of Python

- ▶ **Elegant syntax and easy to use:** programs easier to read.
- ▶ **Large standard library:** supports many common programming tasks e.g. connecting to web servers, regular expressions, file I/O.
- ▶ A bundled development environment called IDLE.
- ▶ **Runs on different computers and operating systems:** Windows, MacOS, many brands of Unix, OS/2, ...
- ▶ **Free software:** Free to download or use Python - the language is copyrighted it's available under **an open source license**.



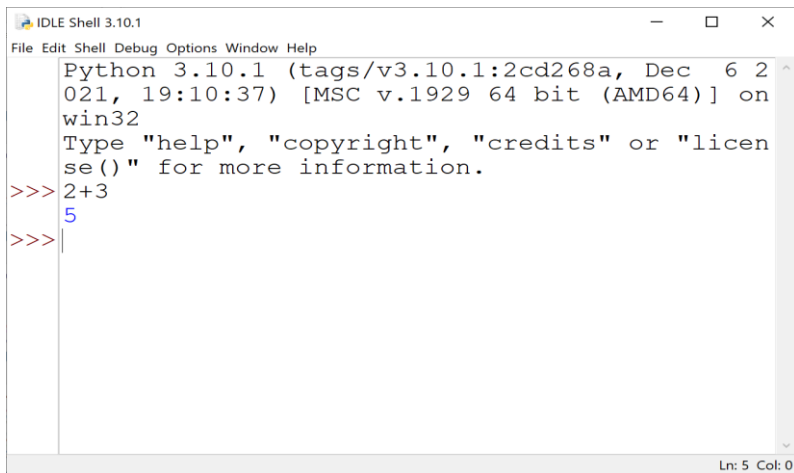
Indentation

- ▶ Python does not use brackets to structure code, instead it uses **whitespaces**
 - ▶ Tabs are not permitted.
 - ▶ Four spaces are required to create a new block,
 - ▶ To end a block simply move the cursor four positions left.
 - ▶ An example: Nested loop

```
for i in range(5):  
    for j in range(10):  
        print(j)  
    print(i)  
print('done')
```



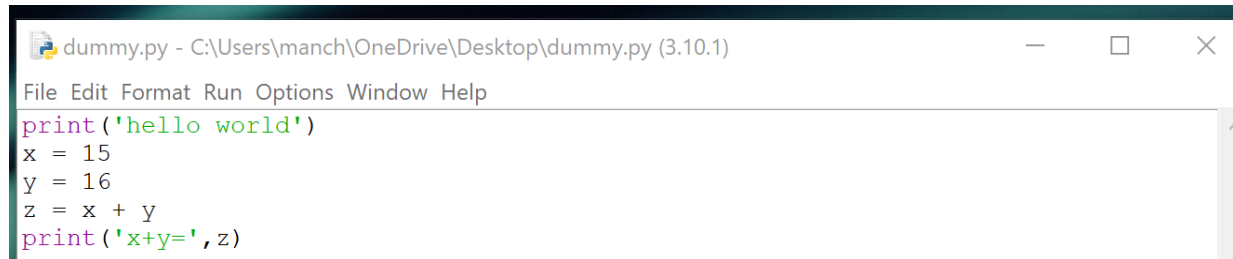
IDLE



```
Python 3.10.1 (tags/v3.10.1:2cd268a, Dec 6 2021, 19:10:37) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> 2+3
5
>>>
```

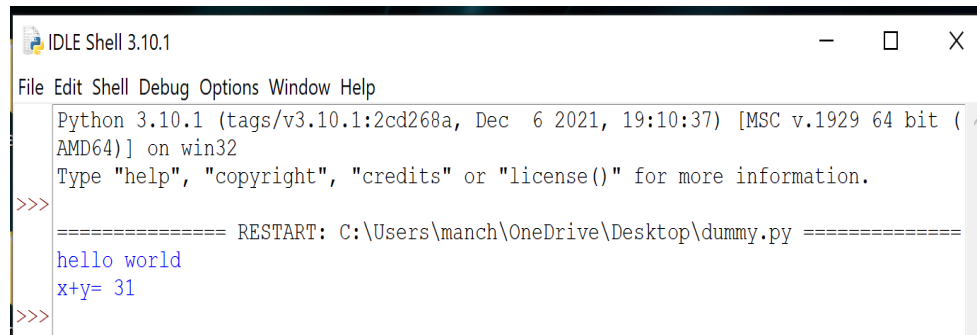
- ▶ IDLE: Basic IDE that comes with Python
 - ▶ Should be available from Start Menu under Python program group.
 - ▶ Main "Interpreter" window.
 - ▶ Allows us to enter commands directly into Python
 - ▶ As soon as we enter in a command Python will execute it display the result.
 - ▶ '>>>' signs act as a prompt.

IDLE EXAMPLE



The screenshot shows the IDLE Python editor window. The title bar reads "dummy.py - C:\Users\manch\OneDrive\Desktop\dummy.py (3.10.1)". The menu bar includes "File", "Edit", "Format", "Run", "Options", "Window", and "Help". The code editor contains the following Python code:

```
print('hello world')
x = 15
y = 16
z = x + y
print('x+y=', z)
```



The screenshot shows the IDLE Shell window. The title bar reads "IDLE Shell 3.10.1". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The shell displays the following output:

```
Python 3.10.1 (tags/v3.10.1:2cd268a, Dec 6 2021, 19:10:37) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Users\manch\OneDrive\Desktop\dummy.py =====
hello world
x+y= 31
>>>
```


Numeric Data Types

- ▶ *int*: represents positive and negative whole numbers.
 - ▶ Written without a decimal point
 - ▶ e.g., 5, -2, 5555555555, 7
- ▶ *float*: written with a decimal point
 - ▶ e.g., 3.0, 5.8421, 0.0, -32.5 etc.
- ▶ Rest in part 2.....



Arithmetic Operators

- ▶ Basic arithmetic operators: $+$ (addition), $-$ (subtraction), $*$ (multiplication), $/$ (division)
 - $/$ (division) produces floating point value $15/3 \rightarrow 5.0$
 - $//$ (integer division) truncates any fractional part $25//3 \rightarrow 8$
 - $\%$ (remainder) gives the remainder after integer division. $25\%3 \rightarrow 1$
 - Augmented assignment operators: $+=$, $-$, $=$, $*=$, $/=$



Basic Input/Print

- ▶ Built-in `input()` function accepts input from user.
 - ▶ Takes optional string argument to print on console
 - ▶ Waits for user to type response and hit Enter
 - ▶ If no text, user just hits enter: return empty string
 - ▶ Otherwise, return string containing entered text
 - ▶ Example: `i = input("Enter an integer: ")`
- ▶ Built-in `print()` function for output.
 - ▶ Example: `print("int = ", i)`



References

- ▶ Slides from Dr. Arunita and Dr. Saja
- ▶ <https://www.linkedin.com/learning/python-quick-start/python-vs-java?autoAdvance=true&autoSkip=true&autoplay=true&resume=false&u=56973065>
- ▶ <https://www.coursera.org/articles/python-vs-java>

