Introduction to Python Part 1

COMP 8347

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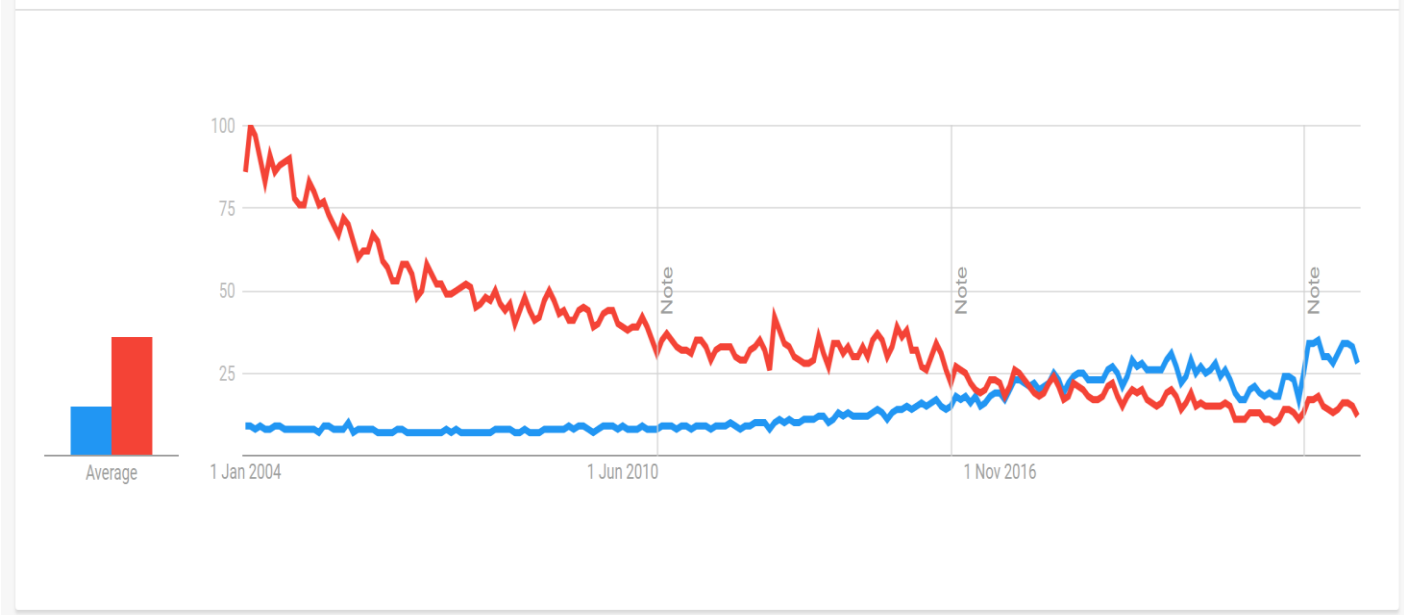
Python Basics

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

Why Python?



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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

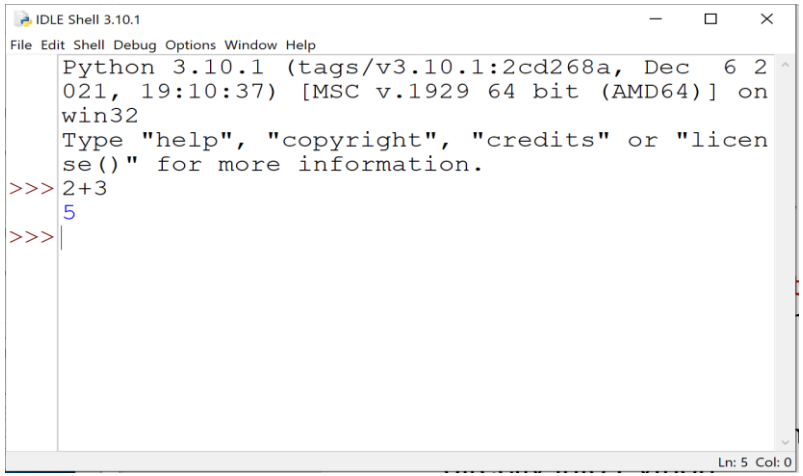
- Elegant syntax and easy to use: programs easier to read.
- Large standard library: supports many common programming tasks e.g. connecting to web servers, regular expressions, file I/O.
- A bundled development environment called IDLE.
- Runs on different computers and operating systems: Windows, MacOS, 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

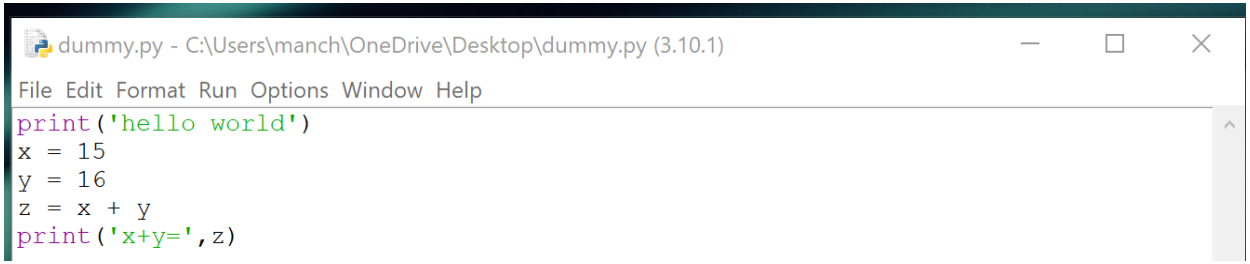
```
for i in range(5):
    for j in range(10):
        print(j)
    print(i)
print('done')
```

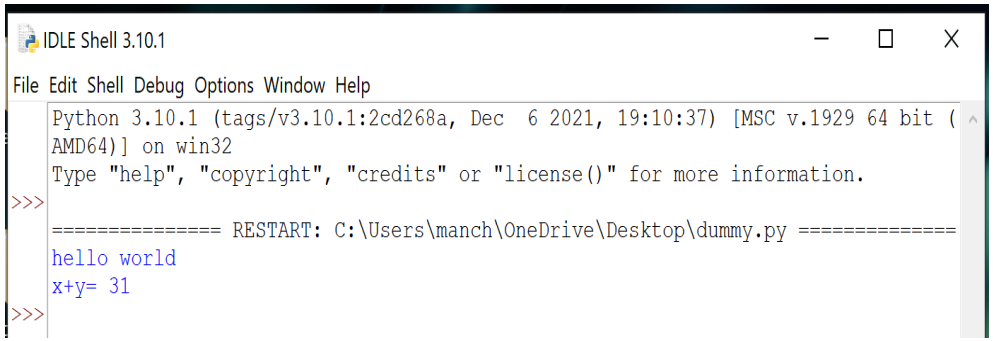
IDLE



- 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





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 → 5.0
  - // (integer division) truncates any fractional part — 25//3 → 8
  - % (remainder) gives the remainder after integer division. — 25%3 → 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