Introduction to Python

December 7, 2020

Background

- Created by Guido Van Rossum in the late 1980's, released 1991
- 1999 Statement of Goals
  - An easy and intuitive language just as powerful as major competitors
  - Open source, so anyone can contribute to its development
  - Code that is as understandable as plain English
  - Suitability for everyday tasks, allowing for short development times
- Logo is a snake, but it was named after the British TV show, "Monty Python's FLying Circus"
- We now use Python 3.8.3. Python 2 reached its end of life at the end of 2020.

Uses

- Lots of things - it’s versatile!
  - Stats
  - Business Analytics
  - Security
  - AI/ML
  - Science
- Big ecosystem of tools built with Python
  - SciPy and Pandas for stats
  - Requests for web requests
  - Django and Flask for web development

Comparison with JS

More comparisons:
http://ryanpskiles.com/11/05/python-javascript-a-comparison-of-syntax/

Python	JavaScript
variable = “hello” constant = “hello”	let variable = “hello” const constant = “hello”
snake_case	camelCase

def my_function(arguments):
  //actions
	function myFunction (arguments) {
	  //actions }

for i in range:
  do_something(i)
	for (let i of range) {
	  doSomething(i) }

while a < 5:
  do_something(a)
	while (a < 5) {
	  doSomething(a) }

[“a”, “b”, “c”] is a list {“key”: “value, “other_key”:”other_value”} is a dictionary	[“a”, “b”, “c”] is an array {“key”: “value, “otherKey”:”otherValue”} is an object
print(“hello”)	console.log(“hello”)

Code Break

1. What is the difference between **10 / 3** and **10 // 3**?
2. What is the result of 10 ** 3?
3. Given (**x = 1**), what will be the value of after we run (**x += 2**)?
4. How can we round a number?
5. What is the result of **float(1)**?
6. What is the result of **bool(“False”)**?
7. What are the falsy values in Python?
8. What is the result of **10 == “10”**?
9. What is the result of **“bag” > “apple”**?
10. What is the result of **not(True or False)**?
11. Under what circumstances does the expression **18 <= age < 65** evaluate to True**?**
12. What does **range(1, 10, 2)** return?
13. Write a function that prints every fruit in this list fruits = [“apple”, “strawberry”, “grape”, “mango”]
14. Write a function called is_even that takes a number and returns True if it is even and False if it is odd.

Source: https://programmingwithmosh.com/python/python-exercises-and-questions-for-beginners/

JS-to-Python translation example

```
# let numbers = [1, 2, 3, 4]
numbers = [1, 2, 3, 4]

# function shift(numArray){
def shift(num_list):
#     let newNumbers = []
    new_numbers = []
#   for (let number of numArray){
    for number in num_list:
#       newNumbers.push(number + 1)
        new_numbers.append(number + 1)
#   }
#   console.log(newNumbers)
    print(new_numbers)
# };

# shift(numbers)
shift(numbers)
```