Welcome to Introduction To Python

Hello! A Bit About This Class

Lesson 1

Variables and Types
(Integers, Floats, Strings, Boolean)

Lesson 2

Flow Control
(If Else Statements, Conditions)

Lesson 3

Loops!
(For loops, While Loops)

Lesson 4

Turtle Graphics
(Art with Python)

Lesson 5

Functions and Collections
(Lists, Sets, Tuples, Dictionaries)

What is Python?

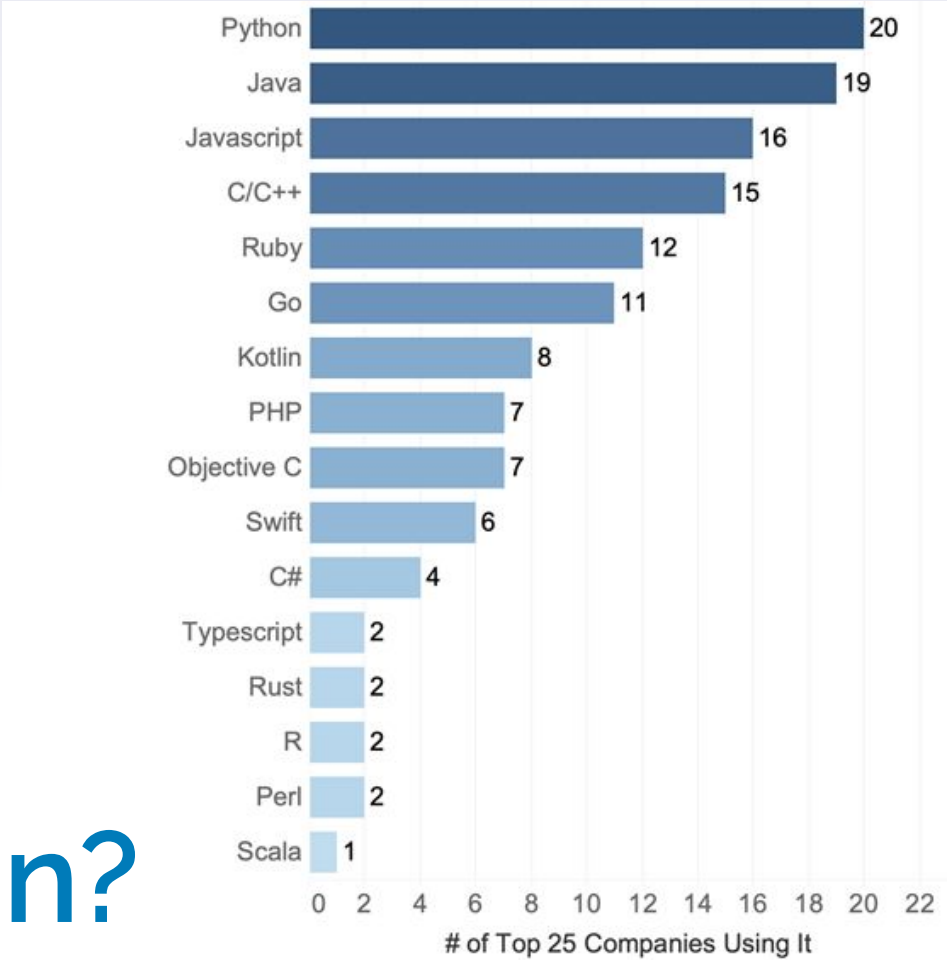
1. a large heavy-bodied non-venomous constrictor snake occurring throughout the Old World tropics.

2. **a high-level general-purpose programming language.**

What is Python?

- Available for all ages
- Good for lots of different points
- A fun programming language (whether beginners or not)

Why Python?

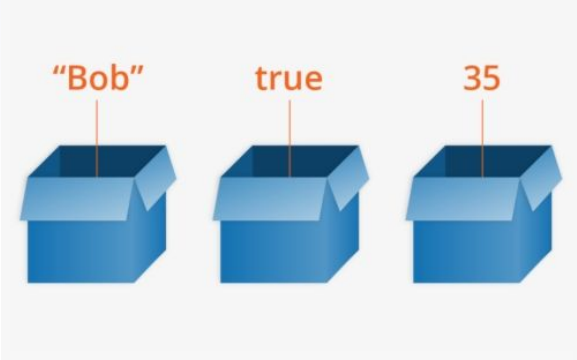


Data was gathered May 1st, 2019 - May 10th, 2019 using information from Indeed.com job postings and technologies listed on Stackshare.io

Variables

- Variable: A named container which holds a value

- Value Types: Int, Float, String, Bool



Naming Conventions

- A variable name must
  - start with a letter or the underscore character
  - cannot start with a number
  - Can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)

- Variable names are case-sensitive

  Cat cat cAt caT

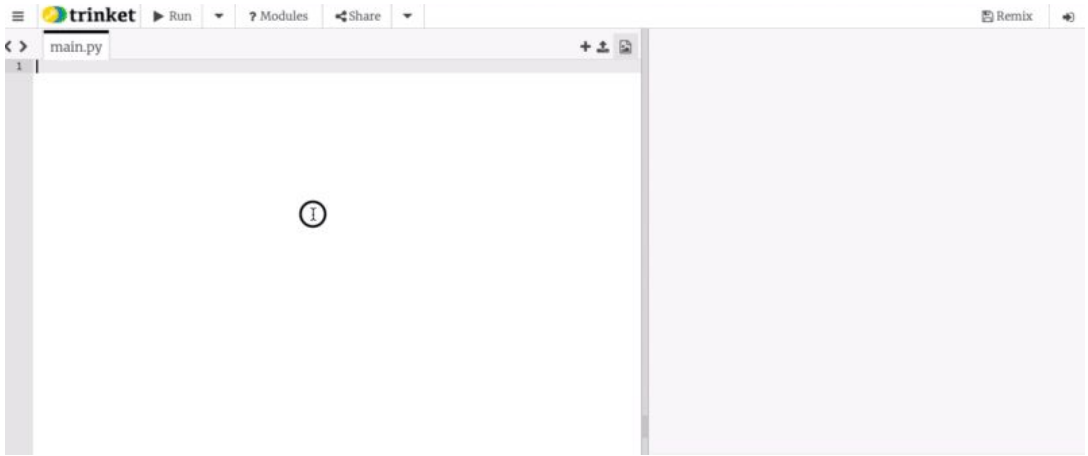
  Are all different variables!

main.py

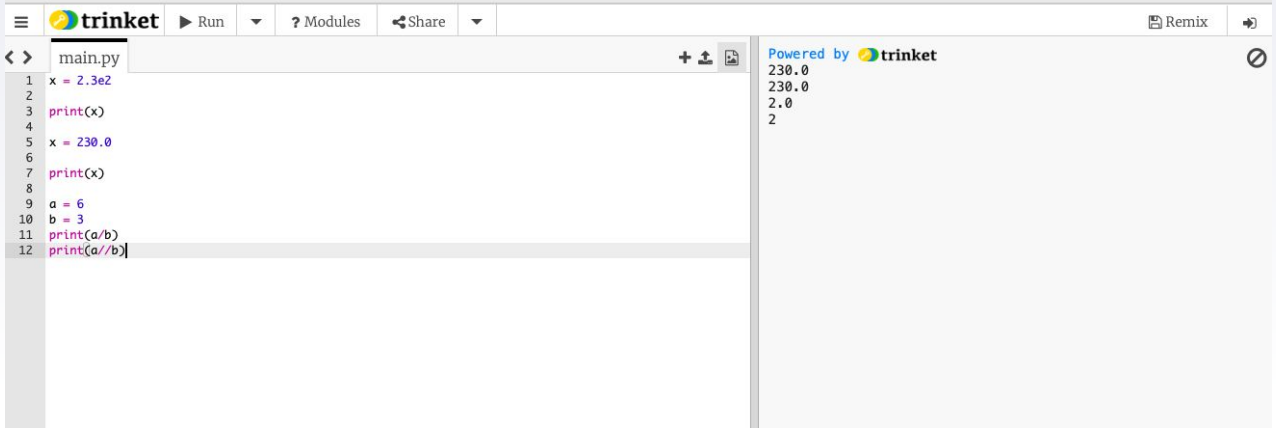
```
1  #Legal variable names:
2  myvar = "John"
3  my_var = "John"
4  _my_var = "John"
5  myVar = "John"
6  MYVAR = "John"
7  myvar2 = "John"
8
9  #Illegal variable names:
10 2myvar = "John"
11 my-var = "John"
12 my var = "John"
13
```

Integers and Operations

- Integer: Counting numbers, 0, and negative numbers (-2, -1, 0, 1, 2...)
- Integer Operations
  - +, -, *, /, //
  - "/" results in a float

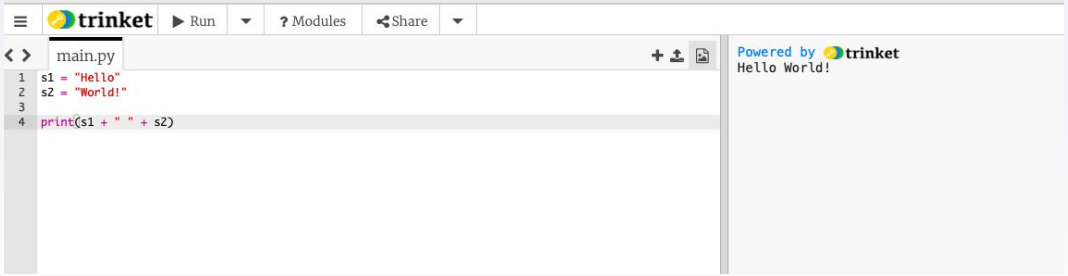


Floats



- Float: Decimals
- Different Representations
  - Decimal Way (standard)
  - Scientific Representation (10^2 = e2)
- "/" returns a float (even if int)

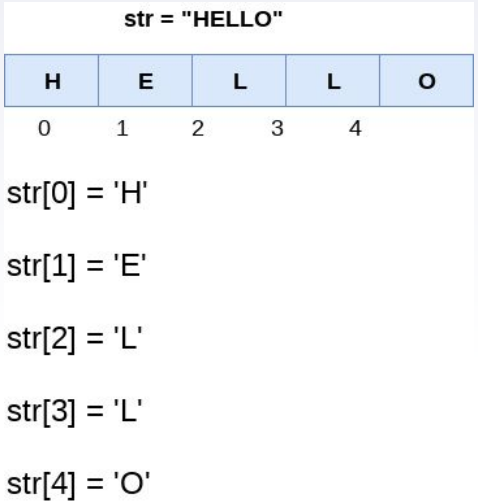
Strings



- String: a sequence of characters surrounded by quotation marks
  - Can be anything (alphabet, numbers, special characters, etc)
- “Hello World” = ‘Hello World’
  (“Hello World’ ← invalid!)
- String Concatenation using “+”

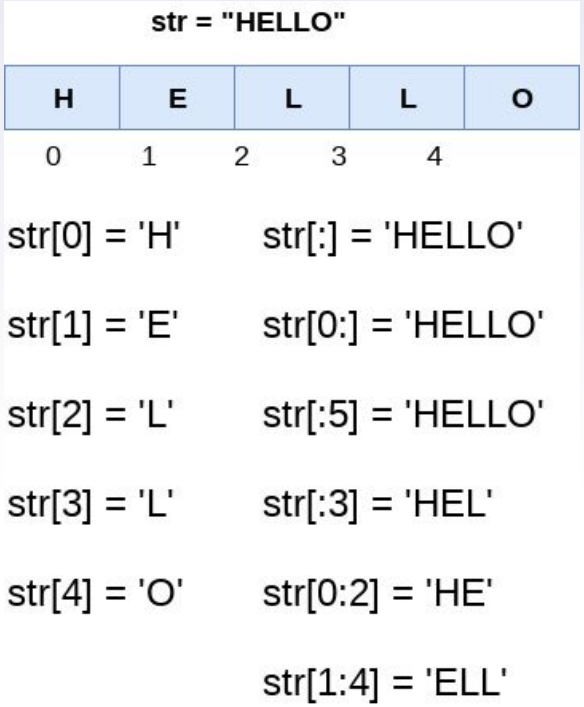
String Indexing

- Index: a single character in the string
  - Every character as an item
  - Starts at 0
  - “Hello World” Index 4 = “o”
- Indexing: Finding the Index at a certain position
- String length: len(stringName)
  - Final index
- Spaces do count as characters!



String Slicing

- Slicing - Cutting up a string into different pieces
  - Taking one portion
  - Substring
- [starting index:ending index + 1]

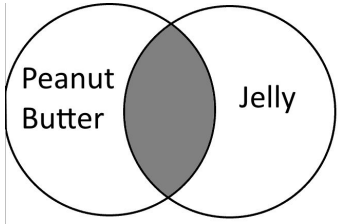


Boolean

```
a = 10 > 9

print(a)

b = 10 < 9

print(b)

And = a and b
Or = a or b

print(And, Or)

print(not And, not Or)
```

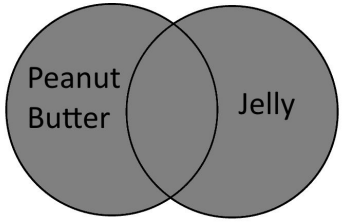
```
True
False
(False, True)
(True, False)
```

- Boolean: True or False value
- Boolean operators
  - And
  - Or
  - Not
- U and
- ∩ or



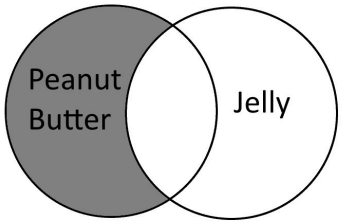
AND

Using AND, this search would only retrieve results with Peanut Butter and Jelly.



OR

Using OR, this search would retrieve results with peanut butter, with jelly, and with both.



NOT

Using NOT, this search would retrieve results with peanut butter, and exclude those with jelly or PB with jelly.

Examples and Problems!

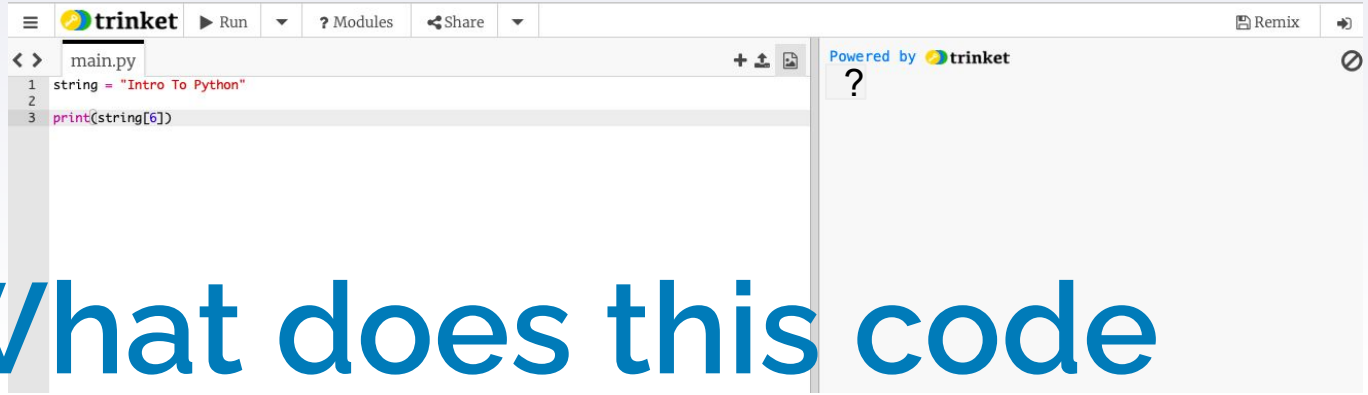
Type Your Answers in the Chat

Is 123cat a valid variable name?

No, it starts with a number.

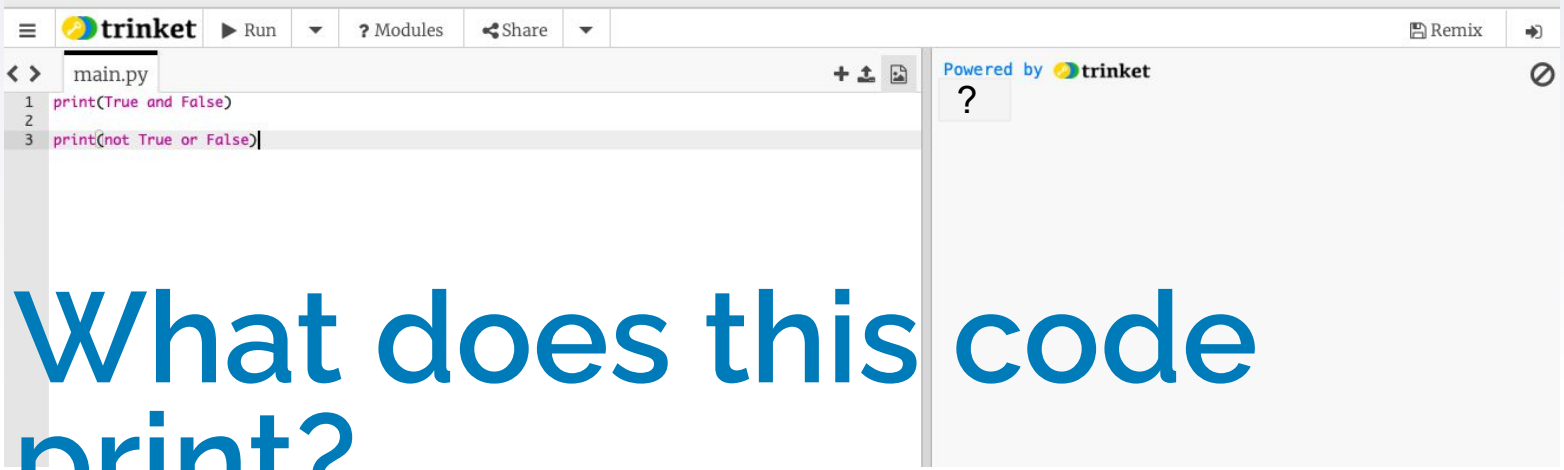
Is num$1 a valid variable name?

No, it contains a non-alphanumeric item.



What does this code print?

It prints out T



What does this code print?

It prints out False, False

Bonus: What does “e” stand for in floats? Give an example

e stands for the scientific notation, or 10^x. I.e. 2e2 = 200, or 3e1 = 30

Extra Content

Conversions

- Turning one type into another
  - Only applies to certain types
- type()
- int(), str(), bool(), float()