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
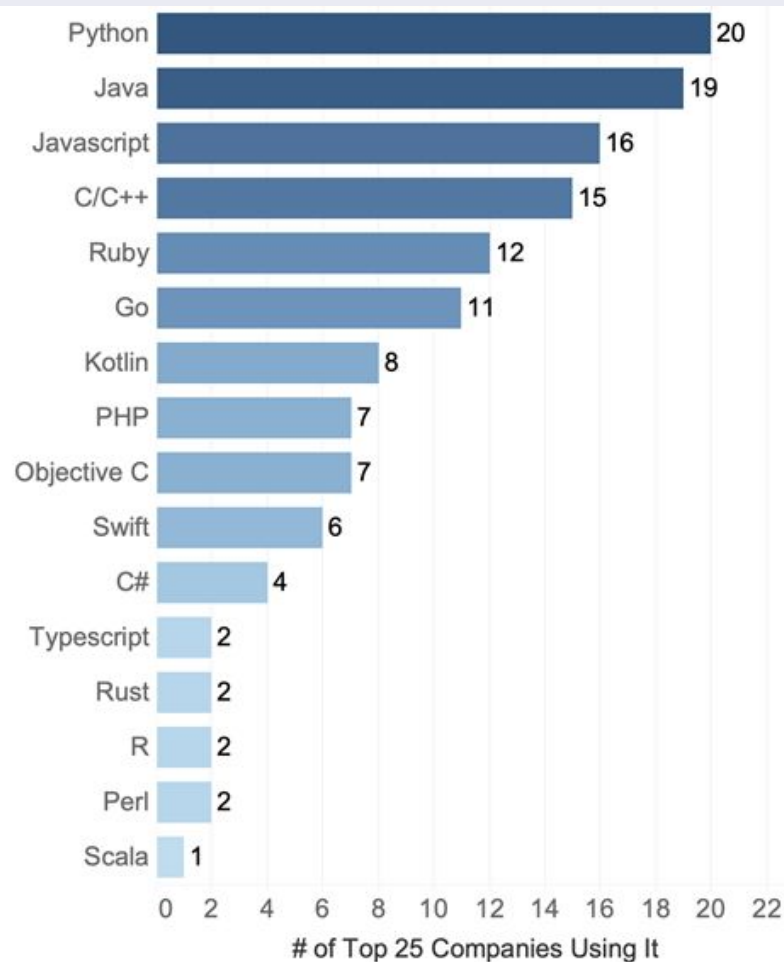Loops)

Lesson 4

Turtle Graphics
(Art with Python)

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)

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Why Python?

Language	# of Top 25 Companies Using It
Python	20
Java	19
Javascript	16
C/C++	15
Ruby	12
Go	11
Kotlin	8
PHP	7
Objective C	7
Swift	6
C#	4
Typescript	2
Rust	2
R	2
Perl	2
Scala	1

# of Top 25 Companies Using It

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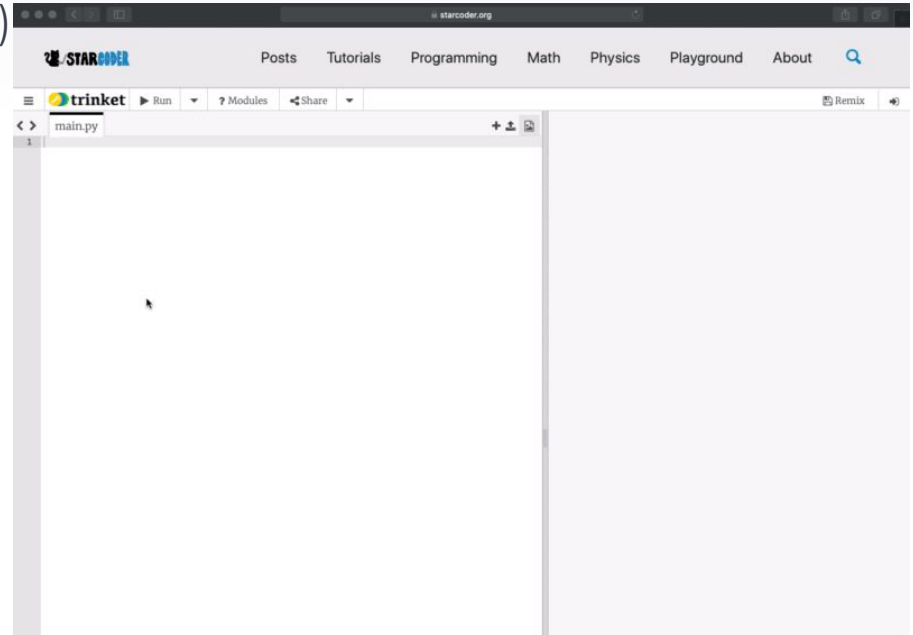
Where Should I Access Python?

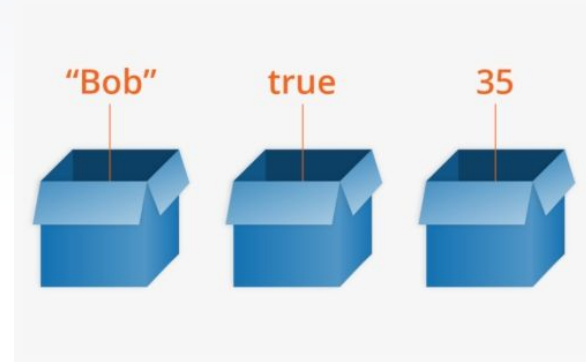https://starcoder.org/playground/

Your First Program

- Open Playground (https://starcoder.org/playground/)
- Type in print("Hello World!")
- Click Run!

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

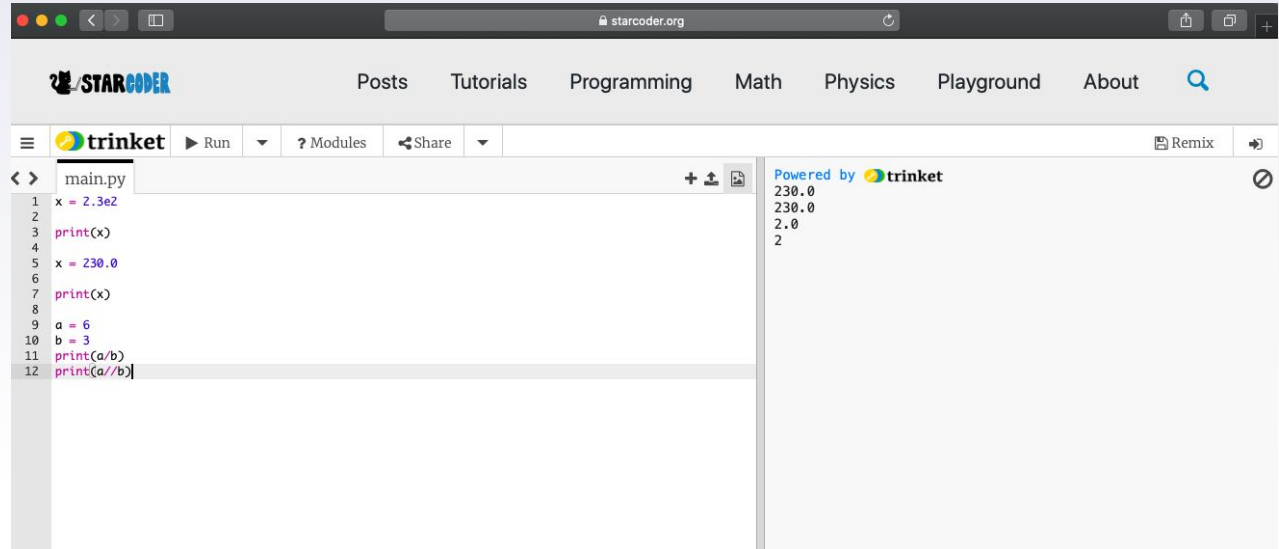Cat   cat   cAt   caT

Are all different variables!

```python
#Legal variable names:
myvar = "John"
my_var = "John"
_my_var = "John"
myVar = "John"
MYVAR = "John"
myvar2 = "John"

#Illegal variable names:
2myvar = "John"
my-var = "John"
my var = "John"
```

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

str = "HELLO"				
H	E	L	L	O
0	1	2	3	4

str[0] = 'H'

str[1] = 'E'

str[2] = 'L'

str[3] = 'L'

str[4] = 'O'

- ▸ 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!
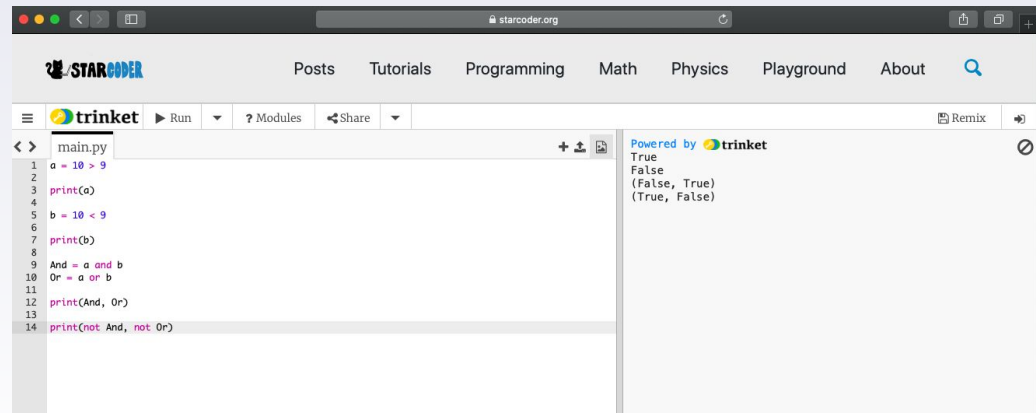
String Slicing

str = "HELLO"

H	E	L	L	O
0	1	2	3	4

str[0] = 'H'   str[:] = 'HELLO'

str[1] = 'E'   str[0:] = 'HELLO'

str[2] = 'L'   str[:5] = 'HELLO'

str[3] = 'L'   str[:3] = 'HEL'
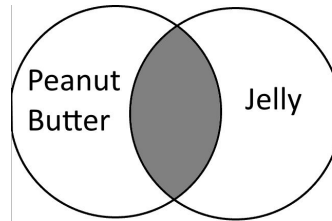
str[4] = 'O'   str[0:2] = 'HE'

str[1:4] = 'ELL'

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

Boolean

- ▶ Boolean: True or False value
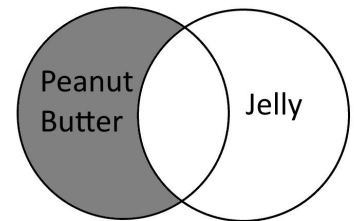- ▶ Boolean operators
  - ▷ And
  - ▷ Or
  - ▷ Not

AND
Using AND, this search would only retrieve results with Peanut Butter and Jelly.
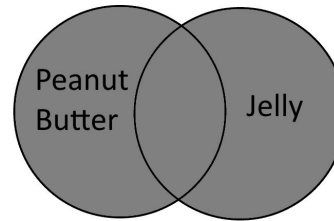
OR
Using OR, this search would retrieve results with peanut butter, with jelly, and with both.

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.

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Is num$1 a valid variable name?

No, it contains a non-alphanumeric item.

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What does this code print?

It prints out T

Posts   Tutorials   Programming   Math   Physics   Playground   About

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‹ › main.py   ✚ ⬆ 🖼

```
1   print(True and False)
2
3   print(not True or False)
```

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?

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()

Quick Quiz!

https://forms.gle/TwavN1ivsttCKrxWA