Welcome to 61A Lab!

We will begin at **5:10**!

cs61a.bencuan.me

The Plan

▫ Some lab info

▫ Python syntax review

    ▫ Variables

    ▫ Control (if, while)

    ▫ Short Circuiting (or, and)

▫ Lab demo (+ free hints)

▫ Work time!

About labs

- Available online at cs61a.org

- Designed to be completed within the given time

- Collaboration policy: work with whoever you want, as long as you're learning!

- Intended as exploration, we'll talk about everything in depth during discussion

- Attendance: will be taken after review

Problem Types

- WWPD (What Would Python Do):

  - Figure out what the interpreter would output given some input!

  - Most effective if you work through it yourself, rather than plugging it in

- Parsons:

  - Drag and drop the lines in the right order

  - Intended to give you a guided example before coding

Problem Types

- Coding Problems
    - Write your own code in the lab's python file!
    - Insert demo here

Some syntax things

Basic arithmetic

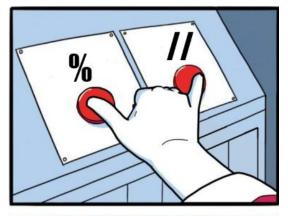- +, -, and * all work as you'd expect
  - Example: 1 + 2 * (3 - 4)
- Order of operations: same as math
  - Inside out, left to right, PEMDAS, etc etc

Division, floor division, modulo

- Single slash /

  - Divides into decimals. 5 / 2 == 2.5

- Double slash //

  - Chops off the decimal. 5 // 2 == 2

- Modulo

  - Takes the remainder. 5 % 2 == 1

Digit Chopping

- Very common problem pattern
- Suppose you have big number
  - n = 123456789
  - n % 10 == 9
  - n // 10 == 12345678

Functions

- Can be defined and called

```
def oreo(n):
    # do stuff
    return 1

...
a = oreo(5)
```

Booleans

Boolean = either **True** or **False**

- **0 == False** (falsy type)

Use **and** / **or** operators to combine booleans

Short circuiting: stop evaluating when you're 100% sure of the answer

- **or**: first truthy type (True, nonzero)
- **and:** first falsy type (False, zero)

Control

- if statements: do something if condition is true

```
if condition:
    do stuff
elif other condition:
    do other stuff
else:
    do other other stuff
```

Control

- while statements: do something until condition is false

```
while condition:
    do stuff


do stuff after while
```

Errors

Error Types	Descriptions
SyntaxError	Contained improper syntax (e.g. missing a colon after an `if` statement or forgetting to close parentheses/quotes)
IndentationError	Contained improper indentation (e.g. inconsistent indentation of a function body)
TypeError	Attempted operation on incompatible types (e.g. trying to add a function and a number) or called function with the wrong number of arguments
ZeroDivisionError	Attempted division by zero

Debugging Tips

- **Remember to save the file!! (ctrl/cmd+S)**
- Use debug print statements! `print('DEBUG:', x)`
- Test often! (no penalty for submitting n times)
- It's ok to be stuck! Pls ask for help and work collaboratively!

Work Time!

- **Want to discuss?** Join breakout room for corresponding question

- **Want to work individually?** Stay in the main room

- **Want to ask me a question?** go.cs61a.org/ben-queue