ACM CSIP Summer 2021

Meeting 4! Check-in pls: https://forms.gle/DfnphBugnRAt75PG9
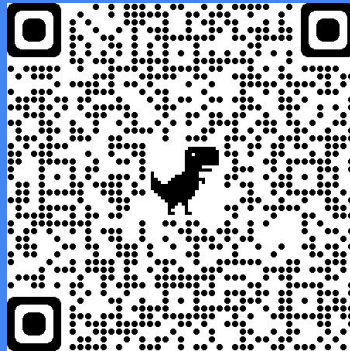
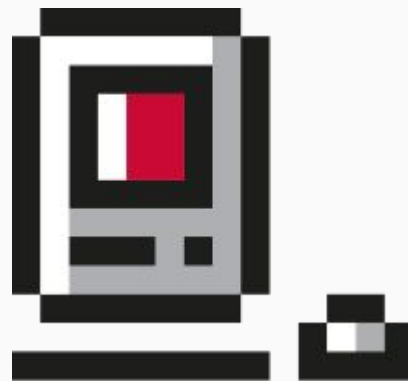# Welcome!

- Itinerary
    - Introduction
    - Polls
    - Python
    - String manipulation
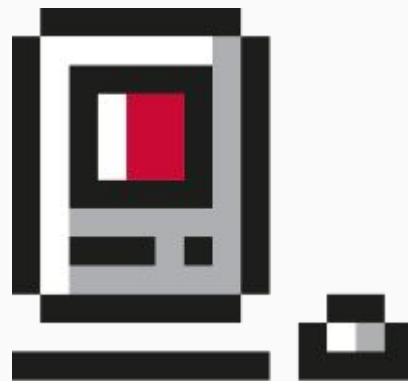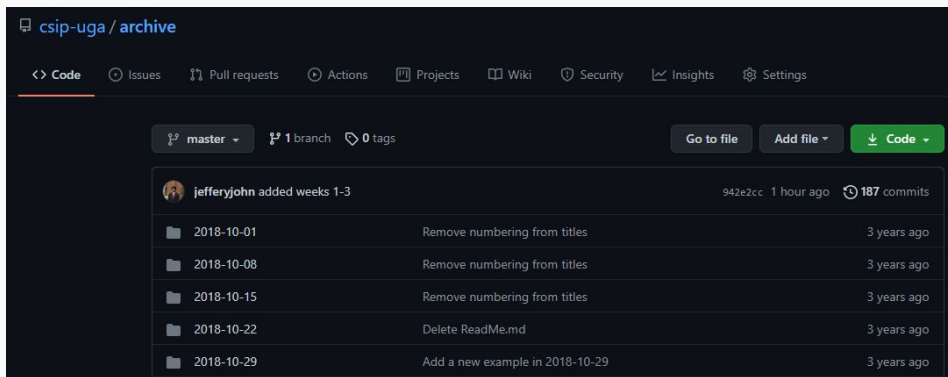   - Resources

Introduction

Introduction

- Computer Science Interview Prep (CSIP)
- Meeting Tuesdays @ 7PM, ACM Discord
- Focused on professional, personal, and technical development
- Will be focused on both behavioral and technical interviews

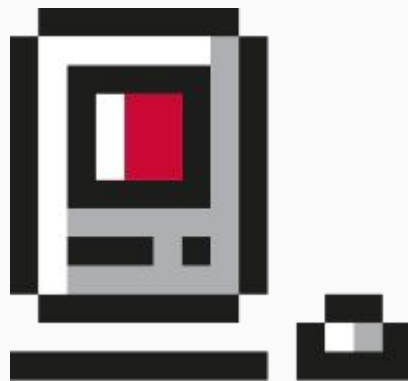# CSIP GitHub(!)

GitHub

- github.com/csip-uga

GitHub Pages

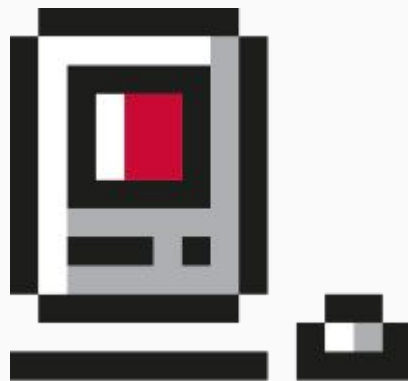- csip-uga.github.io

Resume Guide

Some words of wisdom to improve your resume. Compiled from our own experiences, CS Career Questions on Reddit, and other sources…

Polls

Polls

- See check-in form
- What languages have you used in a technical interview?
- How does programming language impact your approach?
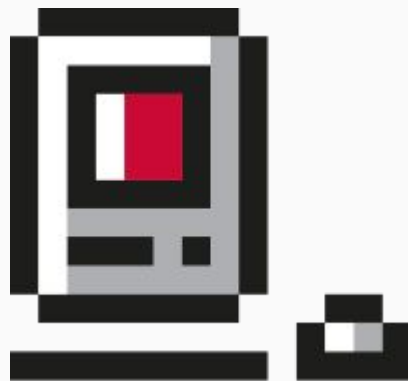- Why pick programming language x over y?

Python

What is Python?

- Python is a programming language that lets you work quickly and integrate systems more effectively.
- Easy to learn, as a beginner or expert in other languages
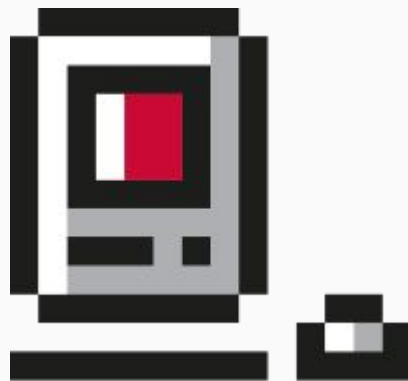- Ideal language for scripting and rapid application development

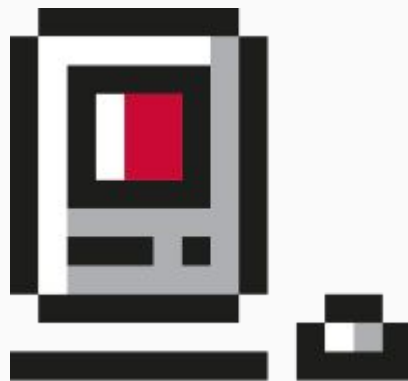   -docs.python.org

String Manipulation

What is a String?

- Strings are an array of characters
- The string "Hello" is also [H][e][l][l][o]
- Strings may be a primitive type, mutable, or immutable

Java and Strings

- Object type, not primitive
  - Use equals(), not ==
- Immutable
  - Can't modify a string, only create a copy
- String operations are not constant-time
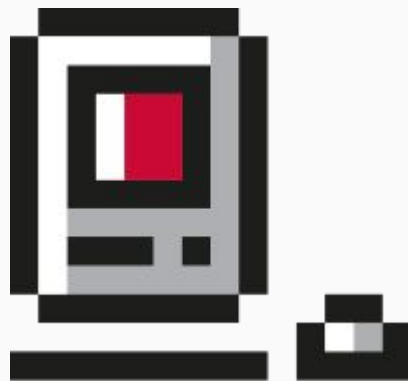
C(++) and Strings

C

- Mutable
- Null-terminated
- Must allocate size in advance

C++

- Similar to Java
- == works to compare due to overloading

Python and Strings

- Immutable
- Primitive
- Linear time built-in operations
  - Slicing
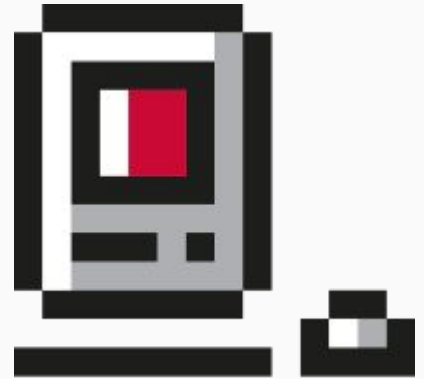
Types of manipulation

- Is Unique
- Check Permutation
- URLify
- Palindrome Permutation
- One Away
- String Compression
- String Rotation
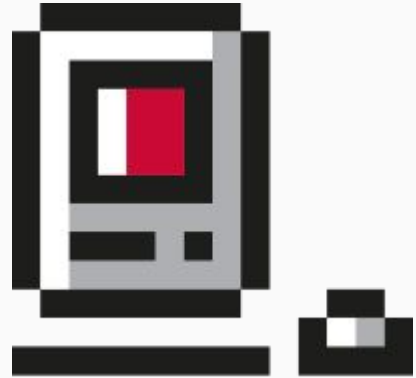
Approach

Approach

- Cracking the Coding Interview (p. 88)
- Consider strings and arrays interchangeable
  - Hash Tables
  - Sorting
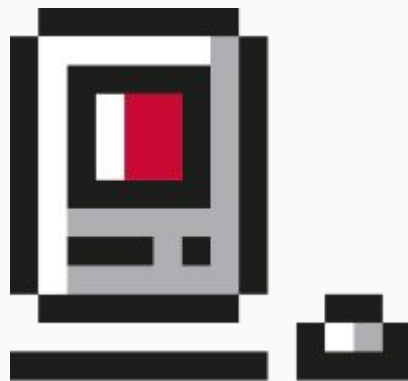
Slicing

Common Case

- "Make the common case fast"
  - MIPS Assembly Language Design Principle
- Slicing
  - str.substr(1,9)   // C++
  - str.substring(1,9)   // Java
  - str[1:9]   // Python

Cheatsheet

Cheat sheet to slice Python list

Disclaimer: These patterns of usage to slice Python list is entirely based on my personal experience. Your experience may vary.

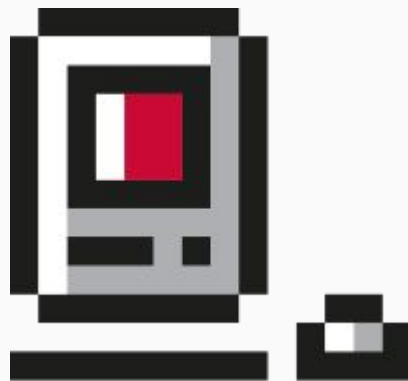| Index from right	-9	-8	-7	-6	-5	-4	-3	-2	-1
Index from left	0	1	2	3	4	5	6	7	8
	A	B	C	D	E	F	G	H	I
Slice from left		1	2	3	4	5	6	7	8
Slice from right		-8	-7	-6	-5	-4	-3	-2	-1

Frequency of usage: VERY REGULAR

```
list[-4]      = 'F'
list[4]       = 'E'
list[:]       = ['A', 'B', 'C', 'D', 'E', 'F',
                 'G', 'H', 'I']
list[-4:]     = ['F', 'G', 'H', 'I']
list[4:]      = ['E', 'F', 'G', 'H', 'I']
list[:4]      = ['A', 'B', 'C', 'D']
list[:-4]     = ['A', 'B', 'C', 'D', 'E']
list[-12:1]   = ['A']
list[-12:3]   = ['A', 'B', 'C']
list[-12:-3]  = ['A', 'B', 'C', 'D', 'E', 'F']
list[1:-8]    = []
list[1:-11]   = []
list[2:6]     = ['C', 'D', 'E', 'F']
list[-7:6:2]  = ['C', 'E']
list[2:7:4]   = ['C', 'G']
list[2:7:5]   = ['C']
list[3:8:2]   = ['D', 'F', 'H']
```

Frequency of usage: REGULAR

```
list[-1::]    = ['I']
list[-3::]    = ['G', 'H', 'I']
list[3::]     = ['D', 'E', 'F', 'G', 'H', 'I']
list[::-1]    = ['I', 'H', 'G', 'F', 'E', 'D',
                 'C', 'B', 'A']
list[::-4]    = ['I', 'E', 'A']
list[::2]     = ['A', 'C', 'E', 'G', 'I']
list[::4]     = ['A', 'E', 'I']
```
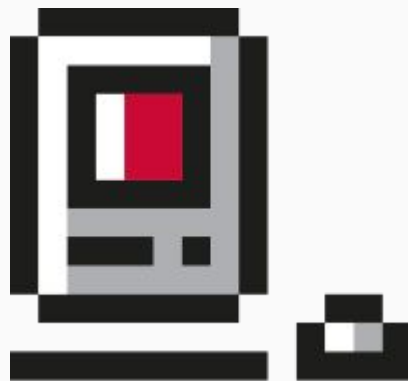
Frequency of usage: ONCE IN A WHILE

```
list[-7::2]   = ['C', 'E', 'G', 'I']
list[-7::3]   = ['C', 'F', 'I']
list[1::-1]   = ['B', 'A']
list[1::-2]   = ['B']
list[1::-7]   = ['B']
list[6::-3]   = ['G', 'D', 'A']
```

Featured LeetCode

14. Longest Common Prefix

- leetcode.com/problems/longest-common-prefix
- Write a function to find the longest common prefix string amongst an array of strings.
  - If there is no common prefix, return an empty string "".

Conclusion

Questions?

- Find ACM on:
  - [CS GroupMe](#)
  - [GitHub](#)
  - [LinkedIn](#)
  - [Instagram](#)
  - [Discord](#)
  - [Calendar](#)
- Consider becoming a member!