Go Systems Programming

CS 240: Computing Systems and Concurrency
Lab 1
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Go Intro

"Go is a
**compiled,
concurrent,
statically typed,
garbage-collected**
language developed at Google"

- Rob Pike, 2012

Go Intro

- **Compiled** (Python Interpreted)

- **Concurrent** (Python Global Lock)

- **Statically typed** (Python Dynamically Typed)

- **Garbage-collected** (C++ Free space by hand)

Why Go? Already Know C++ Java Python…

- Why C++? Fast, Memory manipulation…
- Why Java? Framework, developing…
- Why Python? Library, Easy to write…

So **GoLang**:
- Built for Systems
- Preserves efficiency but has good abstractions
- Easy multi threading and IO communication
- Developing quickly

Go Trend

- Highly supported by Google

- Who is using go?
  Go Wiki: GoUsers - The Go Programming Language

- 3rd most popular language on GitHub in terms of stars
  Github Language Stats (madnight.github.io)

- Best Paid Programming Language (Ranked by Octoparse)
  15 Best Paying Coding Languages You Should Know | Octoparse

Go Trend

- Why did they choose Go?

  "We built everything in Python because it was easy,
  but now it's slow. So we switched to Go."

                                              - Most companies using Go

Go Tutorials

- Best learning is from practice

- Start here: Welcome to a tour of Go

- Didn't install Go? Use the web IDE: Go Playground - The Go Programming Language

- Other Resources:
  - Go for Pythonists: Go for Pythonistas
  - Go for Distributed Systems: Go, for Distributed Systems
  - Official Go Talks: Go Wiki: Go talks - The Go Programming Language

Practice
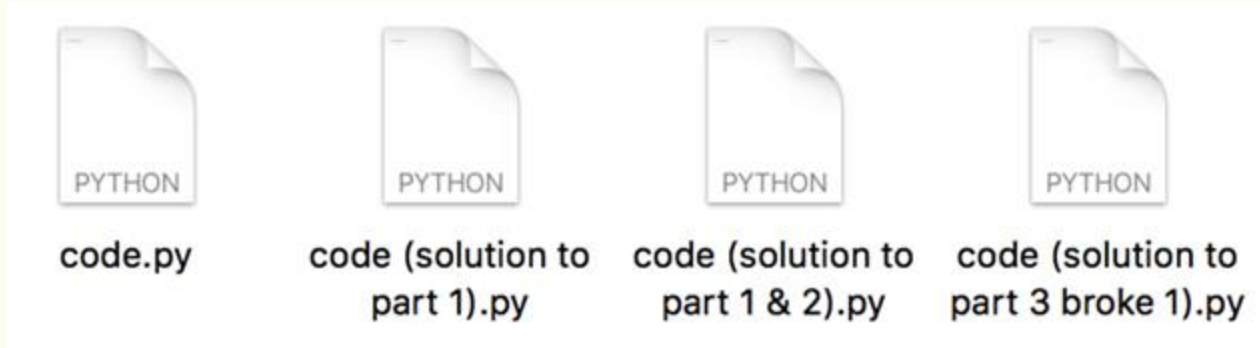
- **Setup Go by *Lab 1 - Practice.pdf***
- **Finish "A Tour of Go"**

Assignments Advices - Version Control:

- Stop Saving File Versions Like this:

PYTHON
code.py

PYTHON
code (solution to part 1).py

PYTHON
code (solution to part 1 & 2).py

PYTHON
code (solution to part 3 broke 1).py

Assignments Advices - Version Control:

- As a CS Major - Using Git & Github!
  https://docs.github.com/en/get-started/quickstart/hello-world

- Learning from git commands in **CLI**

- Try **Github Desktop** and **IDE** integrated git support

Assignments Advices - Terminal:

- Be good at using terminal

- Make it a comfortable workspace

- Plugins such as highlighting and auto suggestions

- Iterm2 + Plugins
  https://medium.com/weekly-webtips/my-terminal-setu-iterm2-zsh-powerlevel10k-f7101ffc72c2

- Warp - AI powered Terminal

Assignments Advices - Community:

- Go's official "Frequently Asked Questions (FAQ)"
  https://golang.org/doc/faq

- Ask via Github issues

Assignments Advices - AI:

- AI Chatbot for algorithm understanding ✅

- AI Agent to complete the coding ❌