Network Programming

In Dark Mode cause Light Mode attracts bugs

Rules of the presentation

- This is a discussion you have a question shoot your hand up
  - If your on zoom please use chat
    - just shout at me
- The Unwritten Rule

Disclaimer

Any code that you see on the following slides is ment as an example and not as code that should be used in any production envs or interviews

I also do not endorsing running phishing scams it just seemed topical

Code, slides & paper (soon) are available @

github.com/gadzygadz/Networking_Presentation

Starting Simple / Contextualizing

- The Internet is like a
  - Really
  - Really
  - Really
  - Really
  - Large File System
    - Collection of Hard Drives

Cont ...

https://www.york.ac.uk/teaching/cws/wws/webpage1.html

york.ac.uk:\teaching\cws\wws\webpage1.html

Or

/york.ac.uk/teaching/cws/wws/webpage1.html

Python CSV

```
import requests


f =
requests.get("https://raw.githubusercontent.com/ga
dzygadz/Networking_Presentation/main/example.csv")
.text.split("\n")


for i in f:
    print(i)
```

Modern Languages can pull from the net (GO)

```
func csvReaderNoError() {
    resp, _ := http.Get("https://raw.githubusercontent..." )

    defer resp.Body.Close()
    reader := csv.NewReader(resp.Body)
    reader.Comma = ','
    data, _ := reader.ReadAll()

    fmt.Println(data)
}
```

Modern Languages Node / Deno && Java

```
// Node
require "http"
let request = http.get("https://jake.dev/a.csv", function(response) {
 // csv parser
}


// Java
import java.io.BufferedInput;
import java.net.URL;
var csv = new BufferedInput(new URL("https://jake.dev/a.csv"));
```

Modern Languages C# && Rust

```
// C# (.NET)
using System.Net;
var csv = new WebClient("https://jake.dev/a.csv", "my.csv");

// Rust
let mut csv = request::get("https://jake.dev/a.csv");
```

Modern Languages Ruby && R

```ruby
# Ruby
require "open-uri"
open("https://jake.dev/a.csv") do |file|
 # whatever you want to do
end

# R
library (RCurl)
data <- read.csv(getURL("https://jake.dev/a.csv"))
# naturally can load http files without RCurl
```

Senario

- My name is 4chan
  - I am a russian hacker
- I have decided to do a cyber-crime on various small - mid sized colleges in eastern PA
  - Phishing seems like the best idea
- Father always said “To best fish one must cast a large net”
  - So I will send out a phishing email to all staff @ a desales university
- How will I get their email addresses?
  - With python
    - Causes snakes are cool

Python: More Advanced & Practical

```
from requests_html import HTMLSession
from bs4 import BeautifulSoup
# reads start up an html session like a webpage
session = HTMLSession()
resp = session.get("https://www.desales.edu/directory")
resp.html.render() # forces js to run
# library for easy reading of htlm files
soup = BeautifulSoup(resp.html.html, "lxml")

for td in soup.find_all('td'):
    if "@desales.edu" in td.text:
        print(td.text)
```

General Idea

Using code you can scrape the web to pull down content and manipulate data.

- User → Web → Site
- Dev → Site → Web

Web Hosting Frameworks

- Python
  - Django ★
  - Flask ★
  - Tornado
  - Pyramid
- Go
  - Gin ★
  - Beego
  - Iris
  - Echo
- Node / Deno (Javascript)
  - Express.js ★
  - Meteor.js
  - Nest.js
- Java
  - Spring ★
  - JSF
- C#
  - .NET ★
  - Mono
- Rust
  - Actrix-web (project on hold)
  - Rocket ★
- Ruby
  - Ruby-on-Rails ★
- R
  - Shiny ★

Overall Idea (applies to most but not all frameworks)

- Create Routes
- Bundle Data
- Give Routes Logic (unbundle data)
- Generate HTML or some variant for the view

Flask

- The python isn’t impossible
- Light-ish weight
- Easy scriptable
- Code is easy enough to display
- We will now be looking into the app.py file

Initial imports and setup

```
# Head
from flask import Flask
app = Flask(__name__)

# all the functions go here

# Tail
if __name__ == '__main__':
    app.run()
```

Our First Page

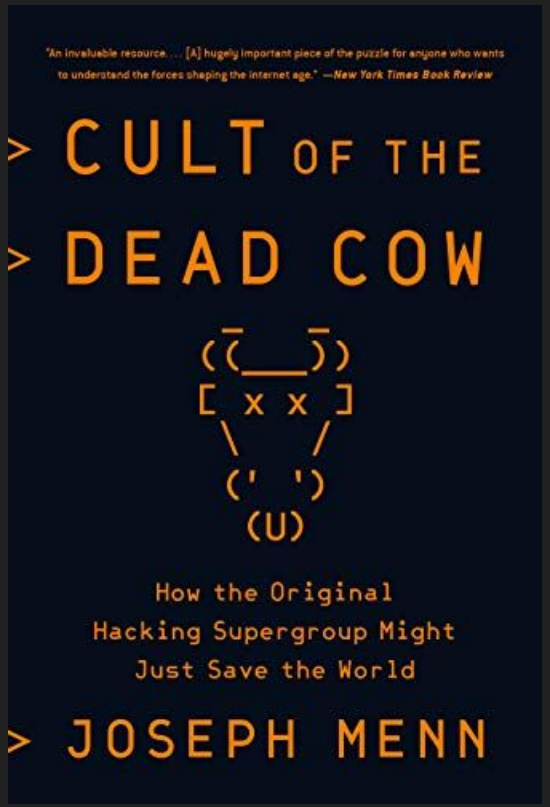
```
@app.route('/')
def hello():
    return "<h1>Hello World!</h1>"
```

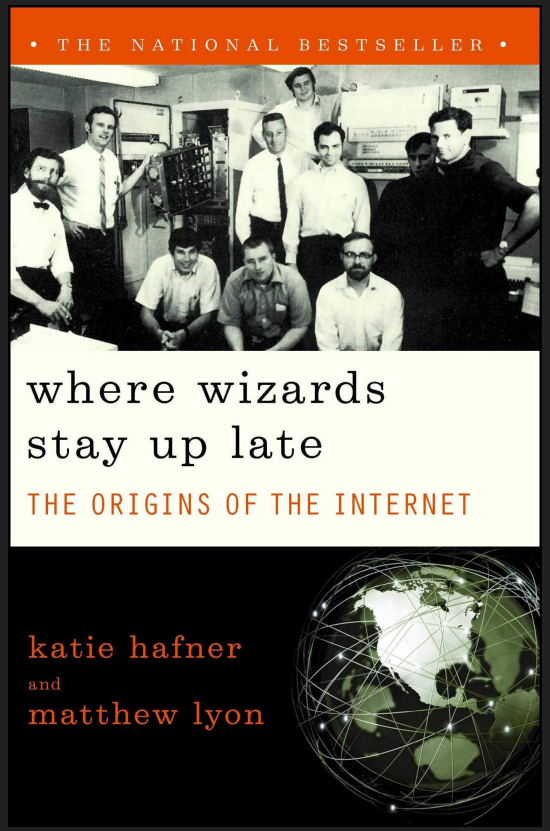
Sub Note:

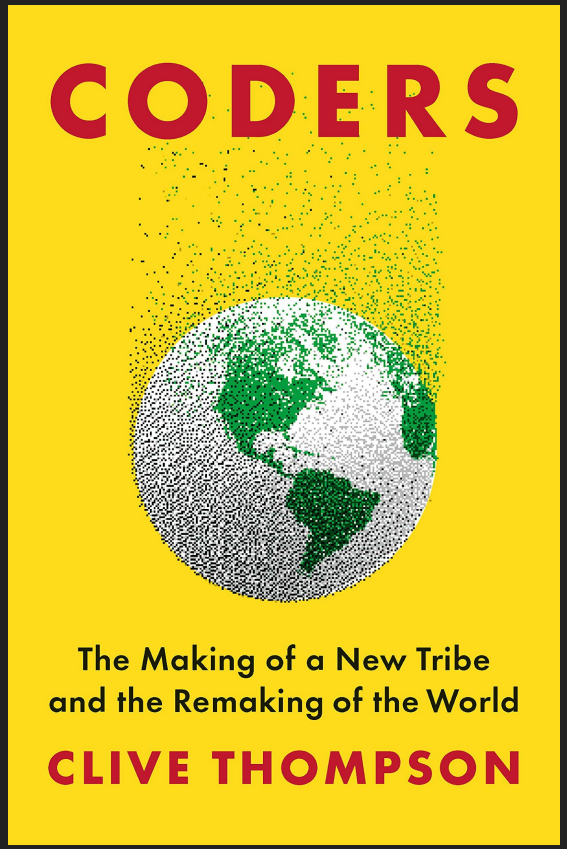
If you are setting this up yourself the easiest way is to have a layer that redirects to this port number.

If you are hosting a lot of services can handle this for you (aws, pythonanywhere)

Live Demo


"An invaluable resource. . . . [A] hugely important piece of the puzzle for anyone who wants to understand the forces shaping the internet age." —New York Times Book Review
CULT OF THE DEAD COW
How the Original Hacking Supergroup Might Just Save the World
JOSEPH MENN


• THE NATIONAL BESTSELLER •
where wizards stay up late
THE ORIGINS OF THE INTERNET
katie hafner
and
matthew lyon


CODERS
The Making of a New Tribe and the Remaking of the World
CLIVE THOMPSON