

HTML, CSS, Javascript



Internet Technology



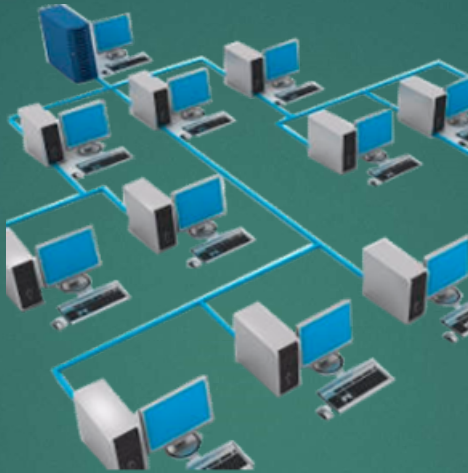
Welcome!

Please mention your info in the chat box. About your experience, background and motivation for taking up this course.

Introduction

- ▶ Internet happens to be the one of the primary application areas of Python programming language
- ▶ Python standard library has wide support for network protocols, data encoding/decoding and other things you need to make it work
- ▶ Writing network programs in Python tends to be substantially easier than C/C++

The Challenge



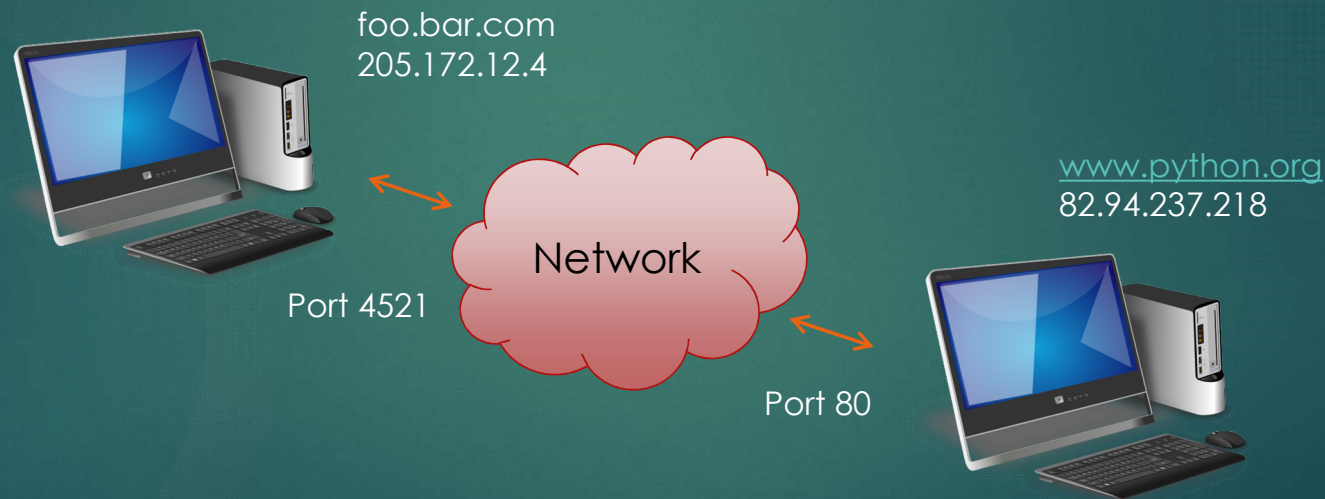
- ▶ Communication between computers
- ▶ It's just sending and receiving bits
- ▶ But how?

Two Main Issues

- ▶ Addressing
 - ▶ Specifying a remote computer and service
- ▶ Data Transport
 - ▶ Moving bits back and forth

Network Addressing

- ▶ Machines have a host name and IP address
- ▶ Programs/services have port numbers



Standard Ports

- ▶ Ports for common services are pre-assigned

21	FTP
22	SSH
23	Telnet
25	SMTP (Mail)
80	HTTP (Web)
110	POP3 (Mail)
119	NNTP (News)
443	HTTPS (web)

- ▶ Other port numbers may just be randomly assigned to programs by the operating system

Client/Server Concept

- ▶ Each endpoint is a running program
- ▶ Servers wait for incoming connections and provide a service (e.g., web, mail, etc.)
- ▶ Clients make connections to servers



Request/Response Cycle

- ▶ Most network programs use a request/response model based on messages
- ▶ Client sends a request message (e.g., HTTP)

```
GET /index.html HTTP/1.0
```

- ▶ Server sends back a response message

```
HTTP/1.0 200 OK
```

```
Content-type: text/html
```

```
Content-length: 48823
```

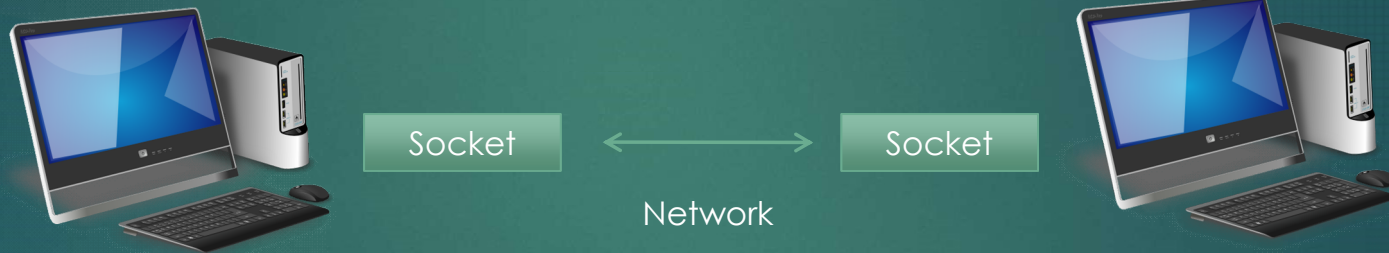
```
<HTML>
```

```
...
```

- ▶ The exact format depends on the application

Sockets

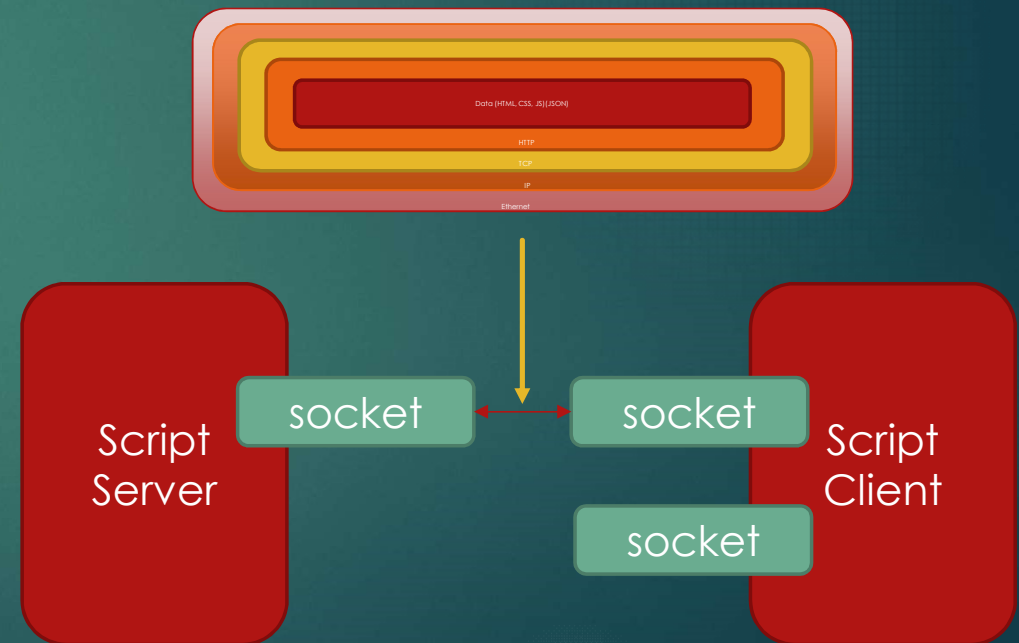
- ▶ Programming abstraction for network code
- ▶ Socket: A communication endpoint



- ▶ Supported by socket library module
- ▶ Allows connections to be made and data to be transmitted in either direction

Using a Socket

- ▶ Server
 - ▶ Listen for incoming connections
- ▶ Client
 - ▶ Make an outgoing connection





Data (HTML, CSS, JS)(JSON)

HTTP

TCP

IP

Ethernet

MVC Architecture

