Web Servers 101

AGENDA

What is a Web Server

Minimal Server Demo

HTTP Refresher

Express.js

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The Internet is Built on a Client-Server Model

- Most of the time, the client is a browser, the server is the website

- **Clients** want to make requests to **servers**

  - As a client, I want to get some information

  - As a client, I want to take some action

- I want to see the page at https://www.lighthouselabs.ca

- I want to search for "cute cats" on https://duckduckgo.com

- I want to submit my login information to https://instagrammaphone.com/login

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Clients

- **note that** "client", "browser", "user" are all used kind-of interchangeably with each other.

- In fact, there are many types of clients

Terminal Clients

```
lighthouse@idb-lenovo  >  ~/development/today  >  curl https://www.qwantz.com
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd"><html><head><link rel="SHORTCUT ICON" href="
/favicon.ico"><link rel="alternate" type="application/rdf+xml" title="RSS .91" href="https://qwantz.com/rssfeed.php"><link rel="alternate" type="a
pplication/rss+xml" title="Dinosaur Comics" href="https://qwantz.com/rssfeed.php"><meta name="title" content="dinosaur comics"><meta name="descrip
tion" content="this comic... might be the best comic?"><meta name="keywords" content="dinosaur, comics, utahraptor, t-rex, dromiceiomimus, funny,
humour, humor, constrained writing, extremely sexy dinosaurs, wait is that gross"><meta name="twitter:card" content="summary_large_image"><meta na
me="twitter:site" content="@dinosaurcomics"><meta name="twitter:title" content="Dinosaur Comics!"><meta name="twitter:description" content="fun fa
ct: electrical ions, or &quot;electrolions&quot; was what electrions were called for a decade until we all decided to switch.  and since other ele
mentary particles (proton, neutron) take their &quot;on&quot; ending from &quot;electron&quot;, if we HADN'T switched, we could've been living in
a world of protolions and neutrilions.  sounds more scifi to ME"><meta name="twitter:creator" content="@ryanqnorth"><meta name="twitter:image:src"
 content="https://www.qwantz.com/comics/comic2-4063.png"><meta property="og:url" content="https://www.qwantz.com/index.php?comic=3861" /><meta pro
perty="og:determiner" content="a" /><meta property="og:title" content="Dinosaur Comics!" /><meta property="og:description" content="fun fact: elec
trical ions, or &quot;electrolions&quot; was what electrions were called for a decade until we all decided to switch.  and since other elementary
particles (proton, neutron) take their &quot;on&quot; ending from &quot;electron&quot;, if we HADN'T switched, we could've been living in a world
of protolions and neutrilions.  sounds more scifi to ME" /><meta property="og:type" content="website" /><meta property="og:image" content="https:/
/www.qwantz.com/comics/comic2-4063.png" /><link rel="stylesheet" type="text/css" href="style18.css" media="screen" title="Default" /><link rel="st
ylesheet" type="text/css" href="/style18.css" media="screen" title="Default" />
<!--[if lt IE 7]>
<link rel="stylesheet" type="text/css" href="/iesucks.css" />
<![endif]--><title>Dinosaur Comics - February 18th, 2022 - awesome fun times!</title>
<script type="text/javascript">
```
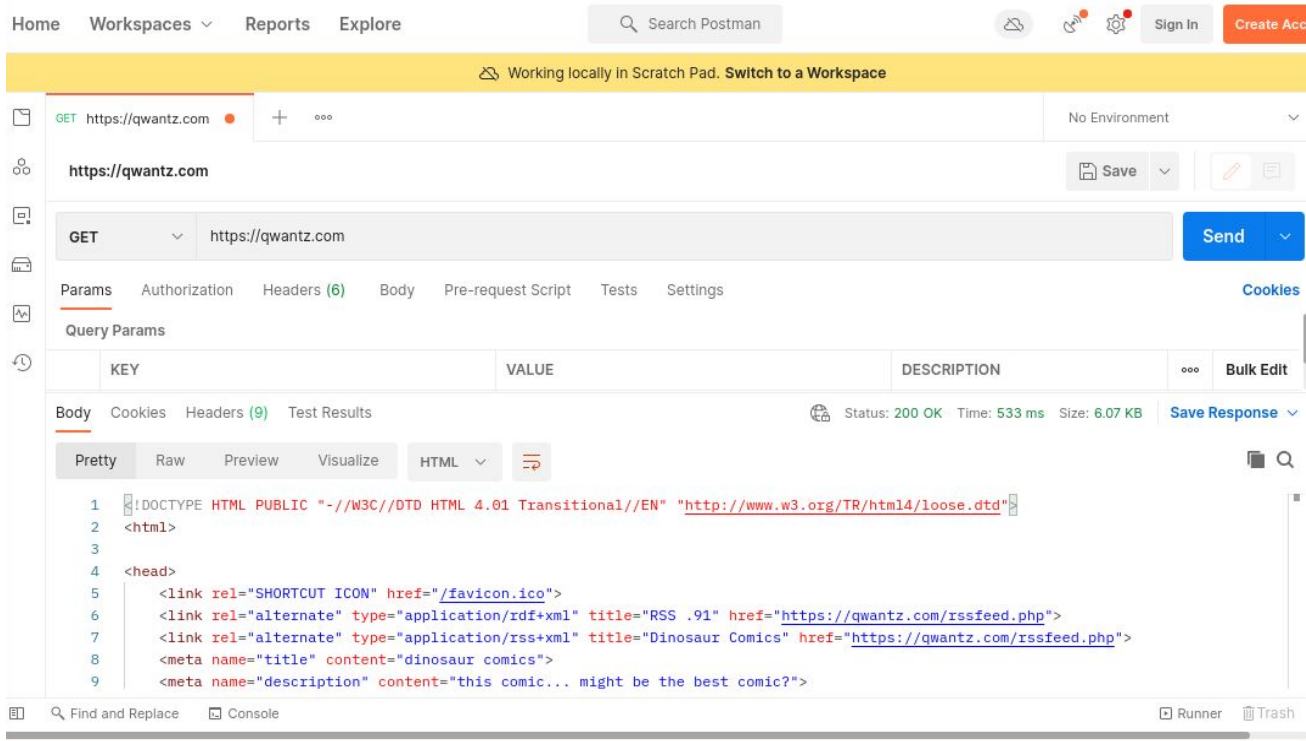
CURL, wget

Browsers
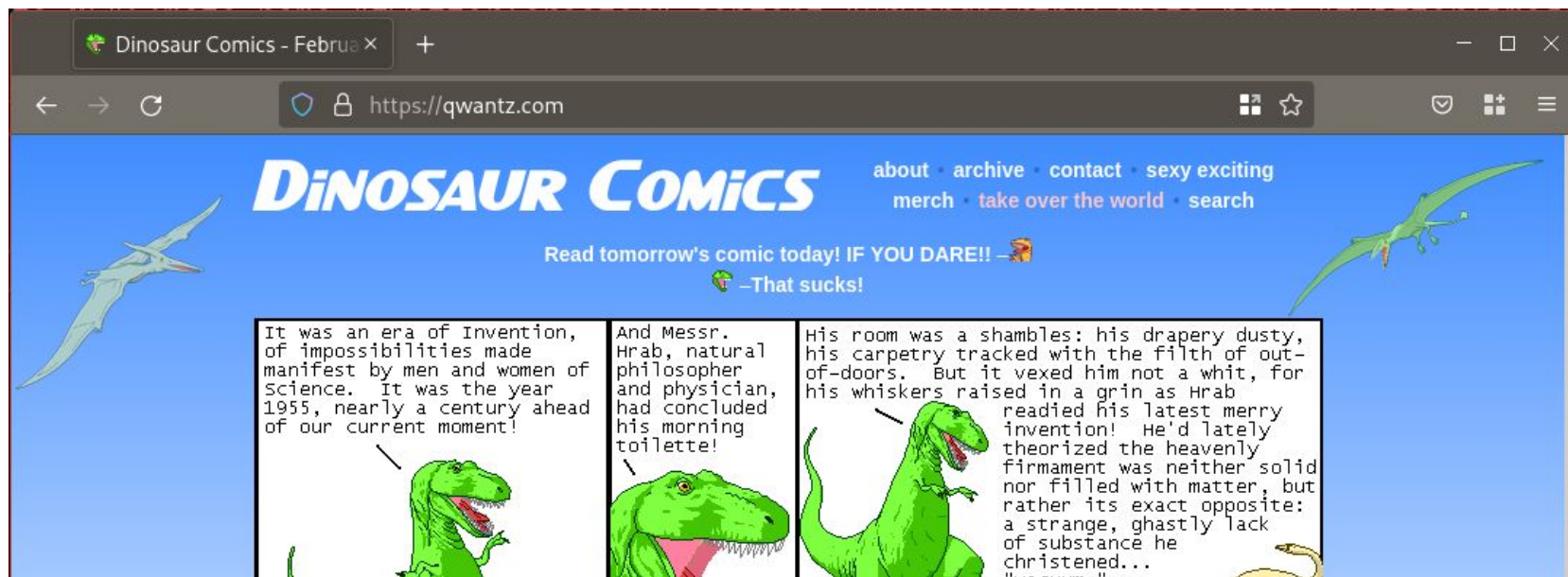
Chrome, Firefox, Safari

Developer Applications

Postman

Application Code

```js
import fetch from 'node-fetch';
async function getQwantz() {
    fetch("https://qwantz.com").then((response) => {
        return response.text();
    }).then((text) => {console.log(text)});
}
getQwantz();
```
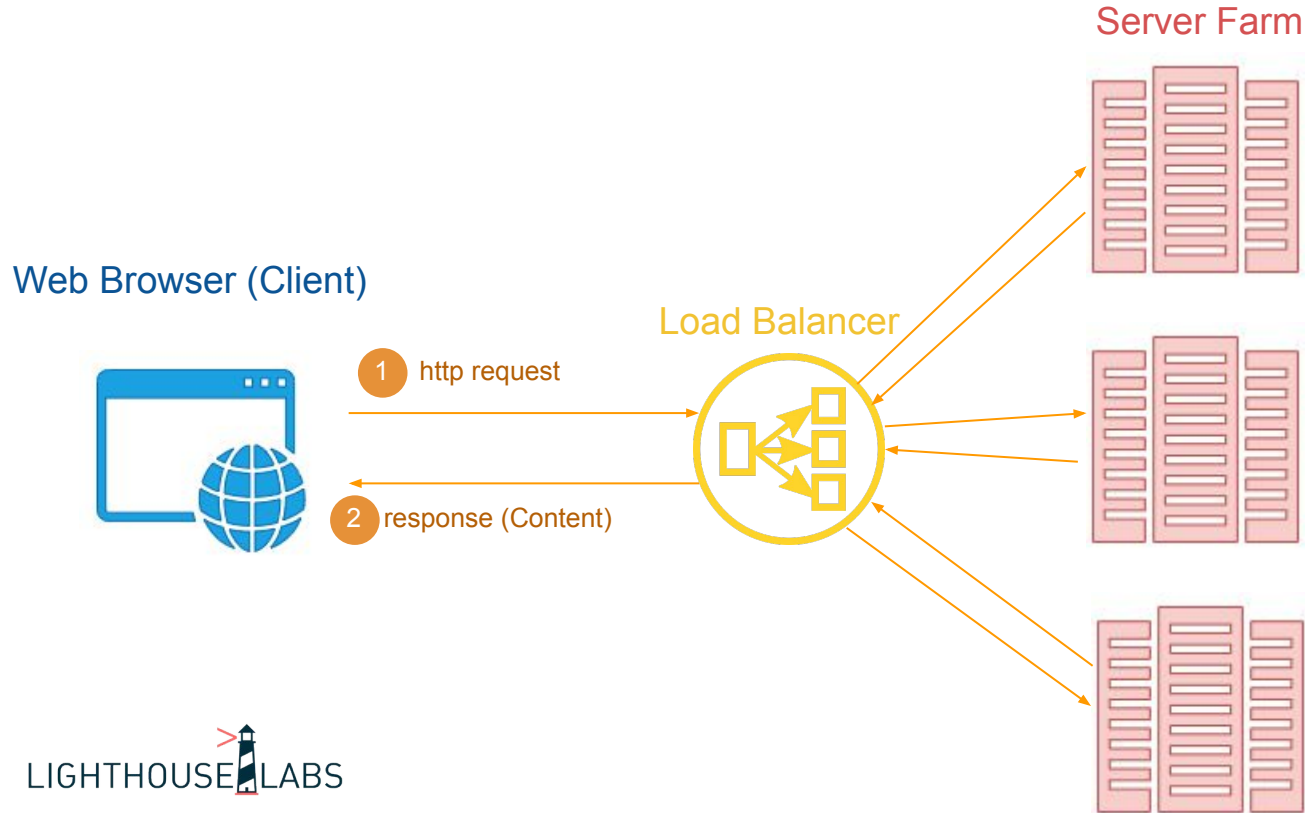
PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**

```
lighthouse@idb-lenovo  ~/development/today  node demo.js
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org
/TR/html4/loose.dtd"><html><head><link rel="SHORTCUT ICON" href="/favicon.ico"><l
ink rel="alternate" type="application/rdf+xml" title="RSS .91" href="https://qwan
tz.com/rssfeed.php"><link rel="alternate" type="application/rss+xml" title="Dinos
aur Comics" href="https://qwantz.com/rssfeed.php"><meta name="title" content="din
```

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Server

- A generic word that refers to any computer that handles requests

- This term refers to all of:

  - Load balancers

  - Application Servers

  - Web Servers

- As Web Developers, we will mostly be worrying about Application Servers

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Hardware Servers

Server Farm

Web Browser (Client)

Load Balancer

1 http request

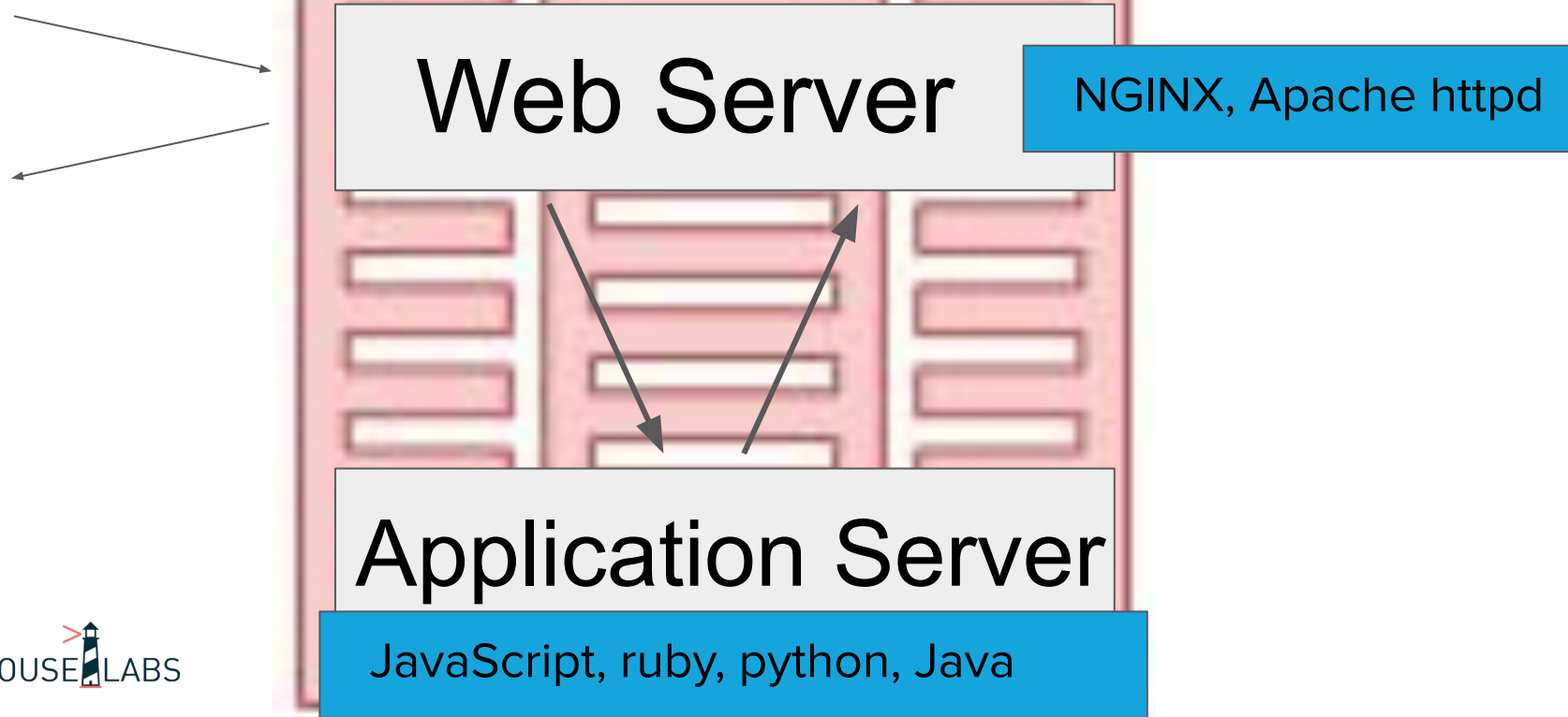2 response (Content)

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Software Servers

Web Server

NGINX, Apache httpd

Designed to be incredibly efficient at handling
1. HTTP Requests
2. Serving Static Content
3. Handling Redirects
4. Security

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Software Servers

Web Server

NGINX, Apache httpd

Application Server

JavaScript, ruby, python, Java

Software Servers

This is where the business logic lives
1. Database Requests
2. API Requests
3. Sessions
4. Algorithms

This is what we're learning how to build!

d

Application Server

JavaScript, ruby, python, Java

Minimal Web Server

demo

An HTTP Request

```
localhost:9876: GET / HTTP/1.1
Host: localhost:9876
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:97.0)
Gecko/20100101 Firefox/97.0
Accept: text/html,image/avif,image/webp
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
```

HEADERS

BODY

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METHOD

- GET - A request to **read** resource

- POST - A request to **write** resource

- PUT - A request to **update** resource

- PATCH - A request to **partially update** resource

- DELETE - A request to **delete** resource

- OPTION - A request to **read** information about a path

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Questions?

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