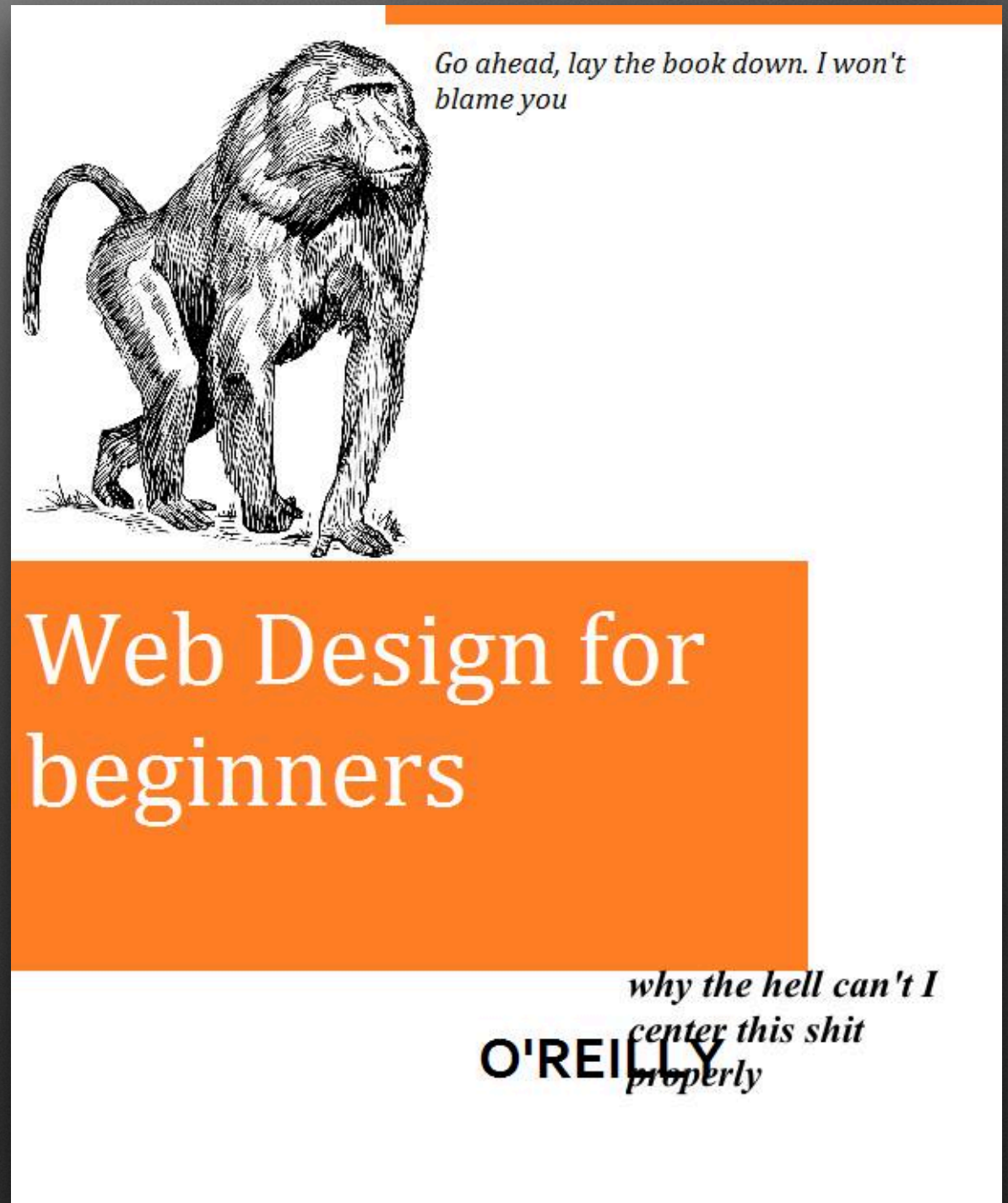


How To Internet

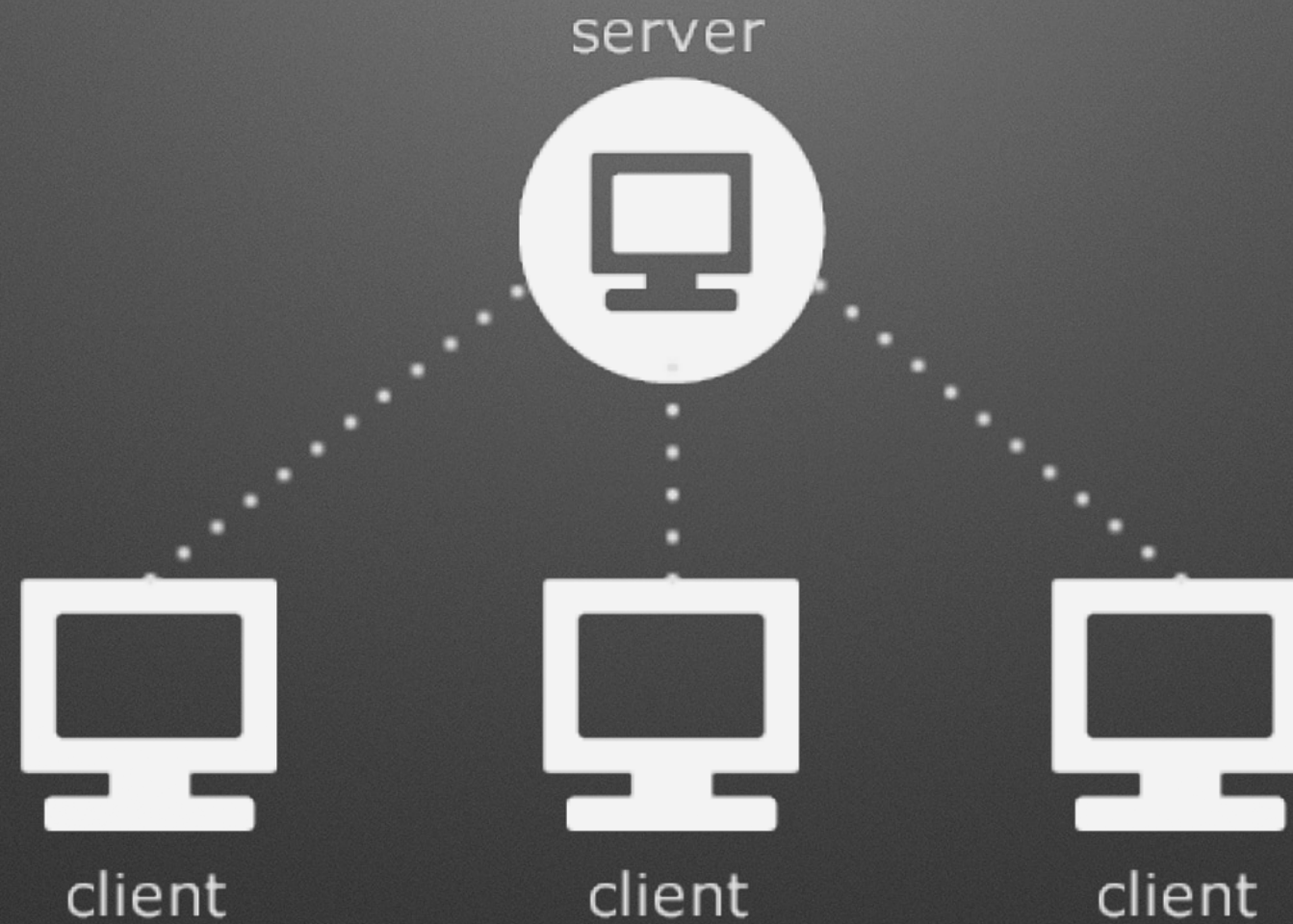
Introduction to Web Application Development

Outline

- Internet Lingo
- Web Dev Languages
- How to Host & Demo

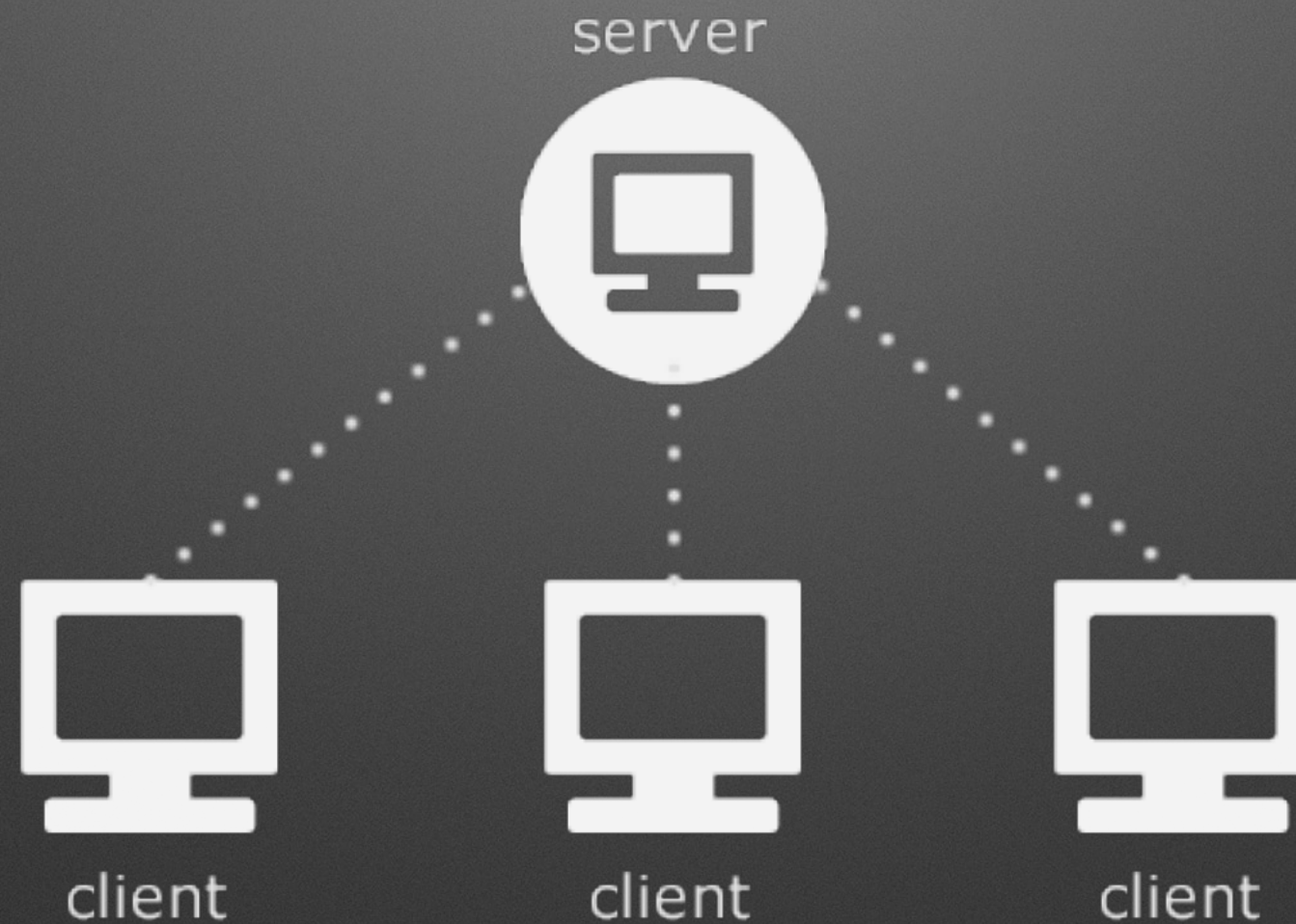


Client and Server



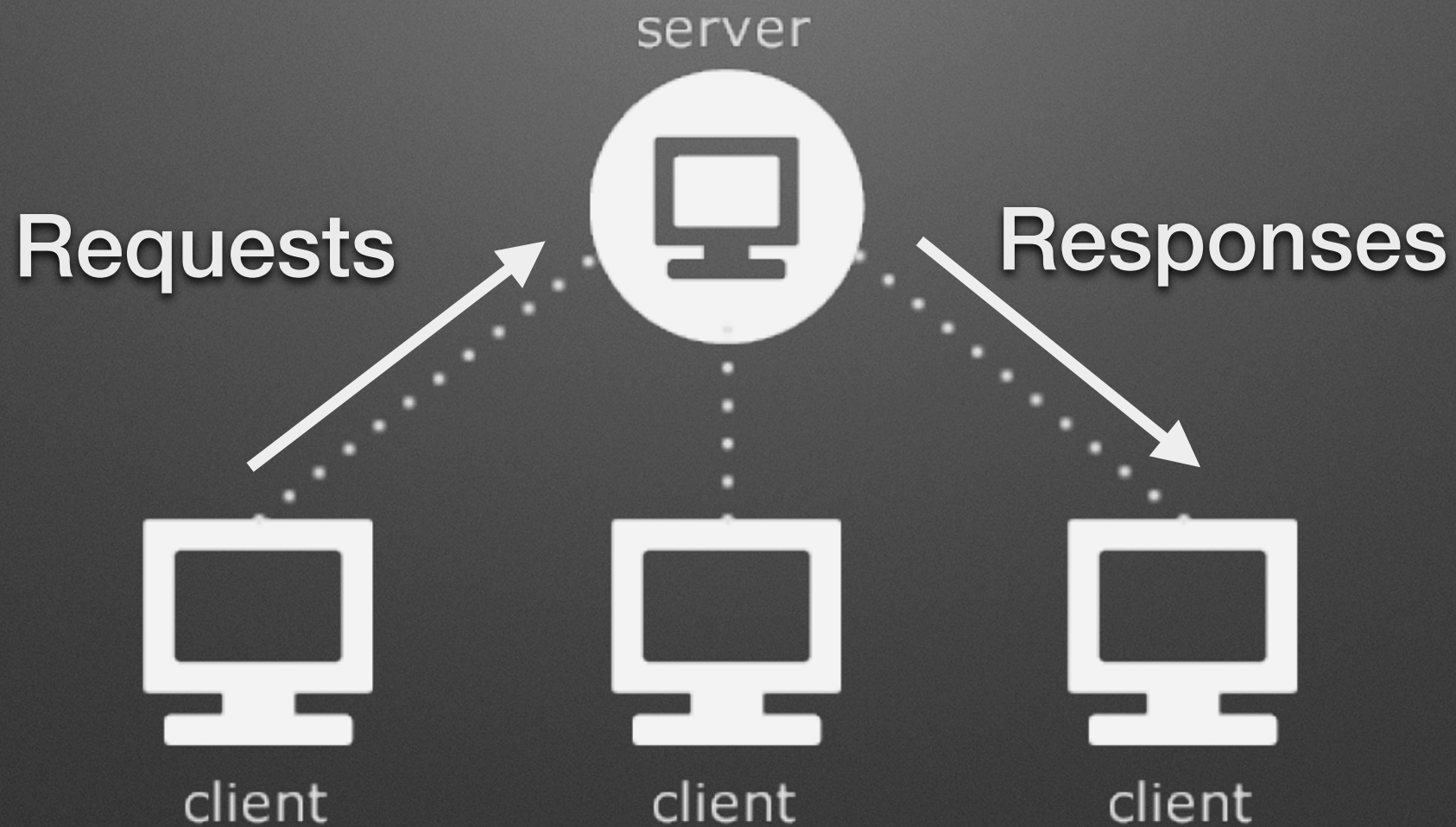
Client and Server

Store your projects



View your projects

Client and Server

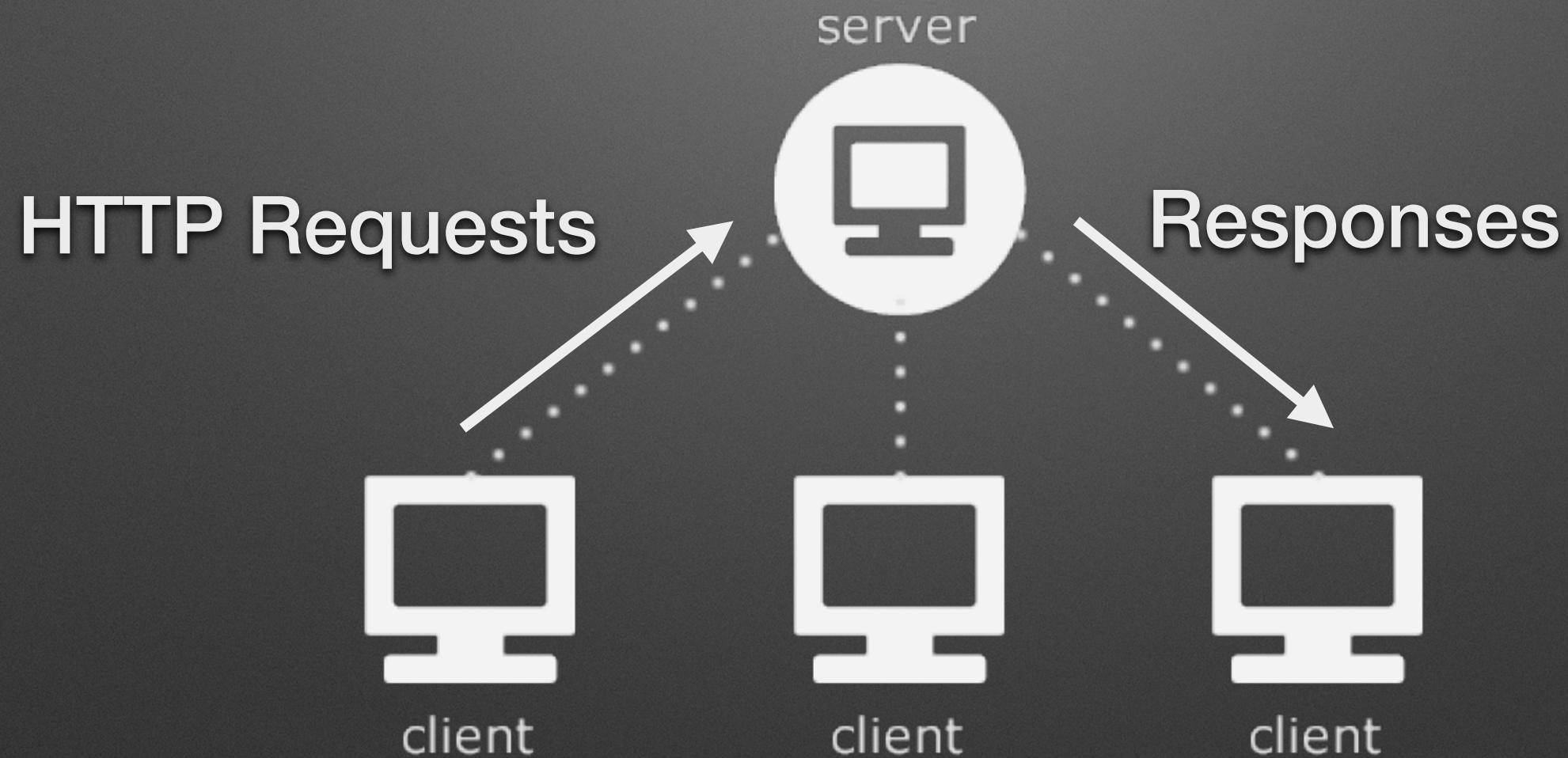


The Hypertext Transfer Protocol (HTTP)

- Foundation of communication on the internet
- Status codes
 - 200 - Good
 - 404 - Missing
 - 500 - Error
 - ...

Client and Server

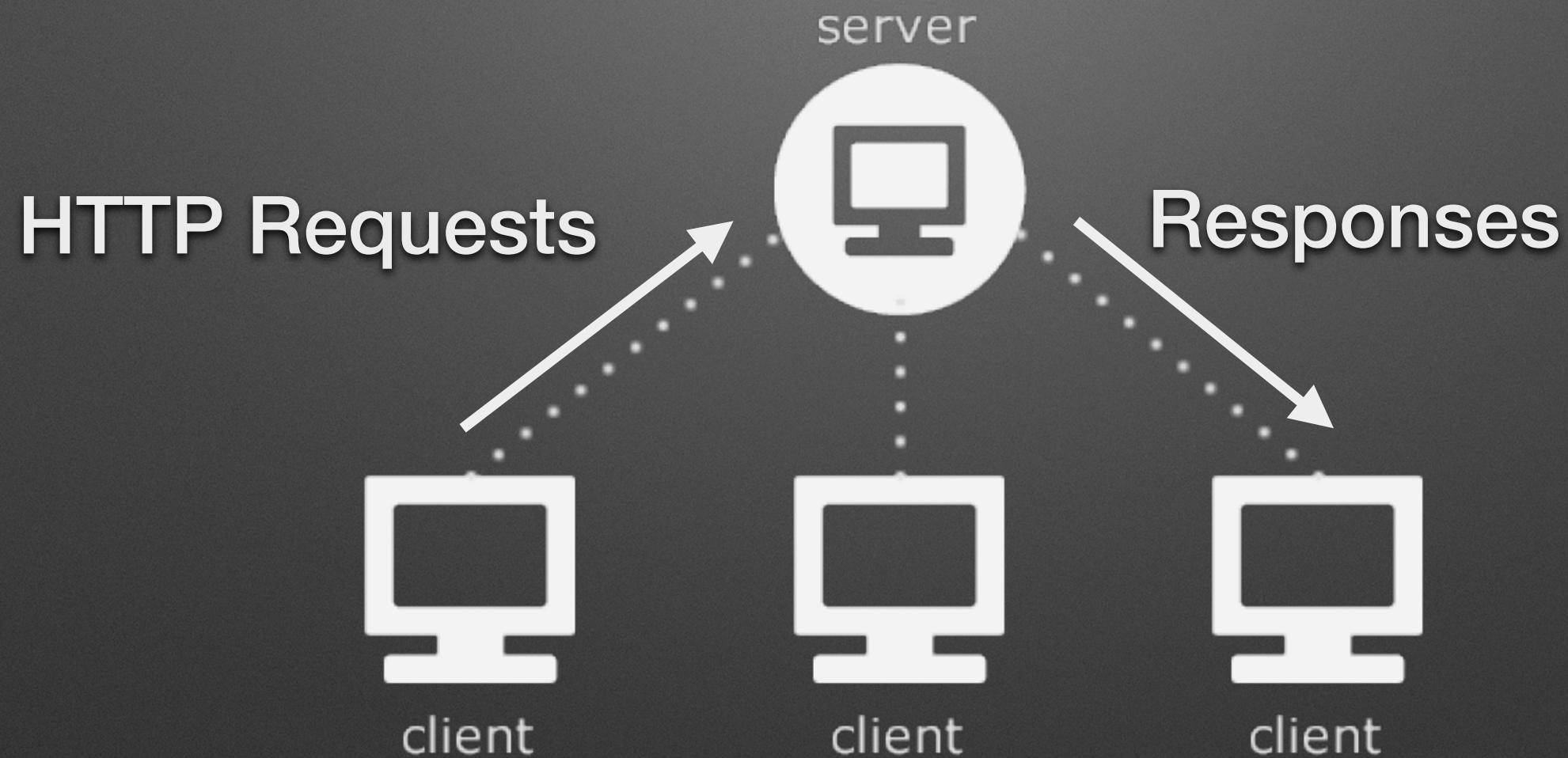
Apache (HTTP Server)



Web Browser

Client and Server

Apache (HTTP Server) \longleftrightarrow MySQL



Web Browser

LAMP

- Linux
- Apache
- MySQL
- PHP
- On a Linux machine you have an Apache web server running PHP code that accesses your MySQL database

Web Dev Languages

- **HTML** - HyperText Markup Language
Web page layout
- **CSS** - Cascading Style Sheets
Web page styling
- **JavaScript** -
Web page scripting
- **PHP** - PHP: Hypertext Preprocessor
Server side coding
- **SQL** - Structured Query Language
Database communication

HTML

- Made up of tags
ex.
 <div>
 <h1>
 <image>
- Has some built in styles
- Base of any website

```
<!DOCTYPE html>
<html>
<head>
  <link rel="stylesheet" href="styles.css">
  <script type="text/javascript" src="code.js"></script>
</head>
<body>
  <div class="section" id="welcome-section">
    <h1 id="title">My Website Guest Book</h1>
    <p class="text">
      Guests of my website are able to come in and sign
      their name so that
      they are forever remembered.
    <!--
      Notice how this new line did not change the
      style of the website
      that is because HTML ignores white space. If
      you wish to add a new
      line, then use the <br> tag or type in a new </
      p> tag.
    -->
    </p>
    <button onclick="changeColors()">Change Colors</button>
  </div>
  <div class="section" id="entry-section">
    <!--*****
      Add text here asking the user to enter their name
      *****-->
    <p class="text">Please enter your name below</p>
    <form>
      <input id="name-entry" type="text" name="name">
      </br>
      <input id="name-submit" type="button" name="
      submitBtn" value="Sign">
    </form>
```


CSS

- Style for HTML tags
- Can apply to certain parts
ex:
 - . - class
 - # - id
 - none - tag
- Compiled in order, last takes priority

```
.text {  
    font-size: 20px;  
}  
  
/*  
    hash tags refer to item ids  
*/  
#welcome-section{  
    background-color: red;  
    color: white;  
}  
  
#entry-section{  
    background-color: yellow;  
}  
  
#history-section{  
    background-color: blue;  
    height: 200px;  
    overflow-y: scroll;  
}  
  
#name-entry{  
    border: 1px solid black;  
    margin: 10px;  
    height: 20px;  
    width: 20%;  
}  
  
#name-submit{  
    background-color: white;  
    border: 1px solid black;  
    width: 60px;  
    font-size: 18px;  
}
```


JavaScript

- Client side scripting
- NOT Java
- Able to edit HTML and CSS
- Able to make HTTP Requests

```
function changeColors() {  
  
    console.log("Button Pressed");  
  
    var sections = document.getElementsByClassName('section');  
    for (var i = sections.length - 1; i >= 0; i--) {  
        var randomColor = getRandomColor();  
        sections[i].style.background = randomColor;  
        if(i == 1){  
            /******  
            We want to change the title color to white when  
            the background color is dark, and black when the  
            background color is light.  
            Create an if statement here to make this happen  
            *****/  
            if(isColorLight(randomColor)){  
                document.getElementById('title').style.color = 'white';  
            }else{  
                document.getElementById('title').style.color = 'black';  
            }  
        }  
    }  
}  
  
/*  
Returns a randomized hex code for a color  
*/  
function getRandomColor() {  
    var letters = '0123456789ABCDEF';  
    var color = '#';  
    // Chooses 6 random hex digits to create the hex code with  
    for (var i = 0; i < 6; i++) {  
        color += letters[Math.floor(Math.random() * 16)];  
    }  
}
```


SQL

- Queries to your databases
- Able to insert, edit, delete data
- Returns query results

```
CREATE DATABASE GuestBook;

CREATE TABLE guests(name VARCHAR(120),
    date DATE);

INSERT INTO guests (name, date) VALUES
    ("Lucas", "2017-03-01");

SELECT * FROM guests;

DELETE * FROM guests WHERE name = "
    Lucas";
```


PHP

- Server side code
- Output is returned when requested
- Response can be an HTML file
- Makes the SQL requests

```
<?php
//The is the HTML that will be added to the page
$tableHTML = "";

//SQL query to submit the signature
$query = "SELECT * FROM guests";
// Execute the query
$stmt->execute();

/* resultset */
$result = $stmt->get_result();

// Get the number of rows returned
$num = $result->num_rows;
$rows = array();
if($num>0){
    // loop for each row returned, adding it to an array
    while ($row = $result->fetch_assoc()) {
        array_push($rows, array(
            'name' => $row['name'],
            'datetime' => $row['datetime']
        ));
    }
    buildRows($rows);
}

/*
    PHP Function for creating the HTML for each
    row in the guests table
*/
function buildRows($rows){
    foreach ($rows[0] as $row) {
        $tableHTML.= "<tr><td>";
        $tableHTML.= $row['name']. "</td><td>";
        $tableHTML.= $row['datetime']. "</td><td>";
    }
}
```


Demo Time!

- Set up a Linux instance with Amazon Web Services (AWS)
- Set up LAMP on the instance
- Upload the project