Back-end development

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Intro to Web Development

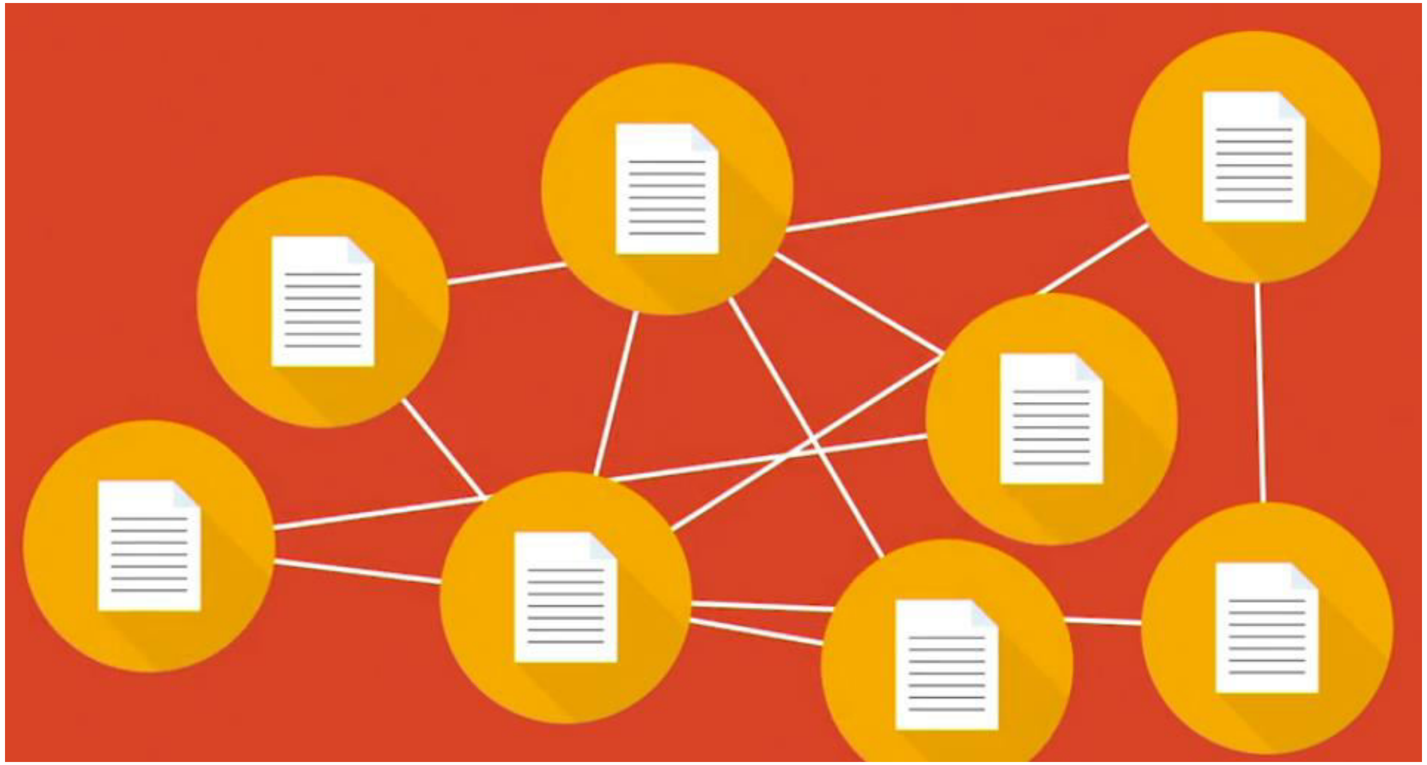
- Front-End technologies
  - HTML, CSS, and JavaScript
  - Represents what's in front of the user
- Back-End development
  - Some sites require a special server
  - Certain content has to be customized for each user based on their data
  - Action is not happening in front of the user, but on a server
- Full-Stack development
  - Works with all the different layers of web development
- All developers are expected to know enough from both but specialize on some part

HTML

- All devs need to know HyperText Markup Language
- Describes the content and defines the structure within a webpage
- Documents on the web are not meant to be consumed in a linear fashion
- Designed to be linked to other documents

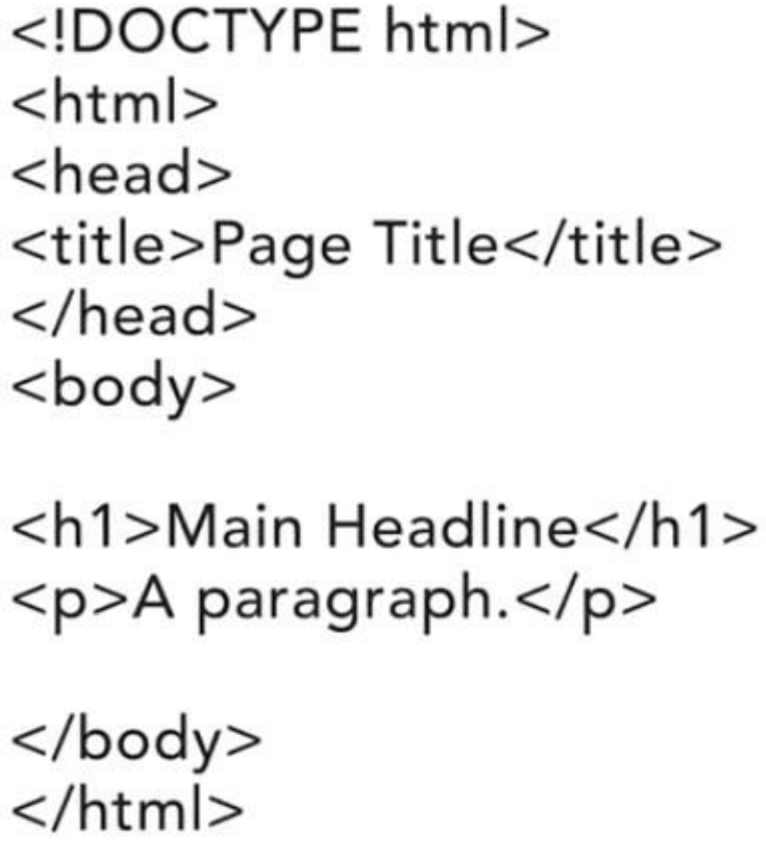
HTML

- HyperText



HTML

- Markup language



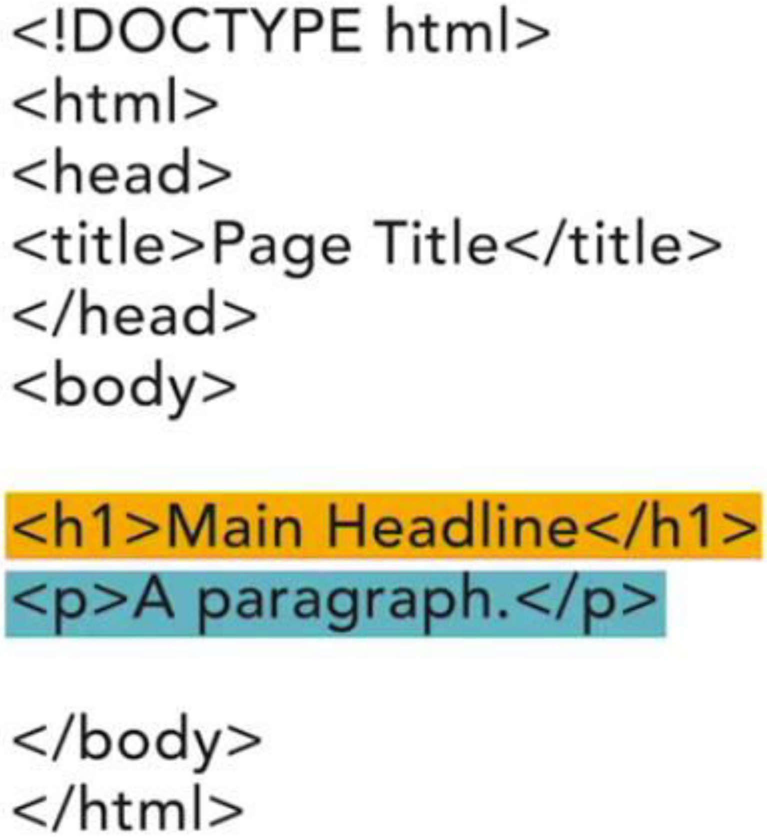
```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>Main Headline</h1>
<p>A paragraph.</p>

</body>
</html>
```

Markup language

- Defines the role each piece of content will have
- Main headline
- Some part is a navigation
- Images and videos
- Links
- Etc.
- Generates DOM (Document Object Model)
- DOM is a map of a content within a website



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CSS

- Cascading Style Sheets
- Design
- UX, UI
- Navigation
- How to present a content
- Set of rules or style sheet for how to translate DOM into visual form
- Rules for defining look & behavior
- Colors, sizes, fonts, etc
- csszengarden.com
- css, css2, css3 – always evolves
- “askew” – google search

JavaScript

- Responsible for managing interaction within a browser
- Every web developer should know (Front-End, Back-End)
- Handling events, loading and unloading media, creating, modifying, deleting elements
- Always evolves
- Browser support challenges
- “play snake”, “breathing exercise”, “buble level” (mobile)

Backend essentials

- Each receives a slightly different experience depending on the data stored by those websites
- Using a database to manage the flow of information sent to the user
- Machine that runs specialized software sends content to your browser
- Called servers because they serve up information
- For a basic setup, this is as simple as sending the HTML, CSS, and JavaScript files

Backend essentials

- PHP
- Python
- NodeJS
- Ruby
- ASP.NET
- Java
- Etc.

Database languages

- Relational Database Management System (RDBMS)
    - SQL (Sequel)
    - Has some standards (ANSI SQL)
    - Works like series of tables like Excel spreadsheets
    - Can links different fields to create relations between data
    - MSSQL, MySQL, Oracle, PostgreSQL, etc …
- NoSQL (not only SQL)
    - Without specific structure
    - Referred as document store
    - Great for storing large documents
    - Ex: Mongodb, Google’s Big table, google analytics, maps, gmail, firebase

NodeJS

- Opensource, cross-platform, runtime environment for server-side and networking applications
- Built on top of Chrome's JavaScript runtime, the V8 engine, and so applications for Node are written in JavaScript
- Same syntax on front-end and back-end
- Shared library (a lot of them, millions)
- Custom function or algorithm (ex: same algorithm for anti-cheat in games)
- Ease maintenance (among front-end and back-end)
- Works well with JSON
- Dynamic language

npm – Node Package Manager

- Comes pre-installed with Node.js
- Dependencies are packages that are used in all of your projects and come with a package.json file
- Map of your project
- Author
- Version
- Package (module, framework, library) that needs to be installed

Packages and NPM

- What is really a package or a module or a dependency?
- Nearly the same thing
- They're simply a file or multiple files combined together to form a package that represents a specific function
- NPMJS.com
- “moment” for dates related operations

Idea behind

- Easily share across development team
- Install the dependencies or packages locally on our machines when we use the project
- Install only what we need

Installing node.js

- nodejs.org
- LTS – Recommended for most users (stable)
- Current – Latest features
- Open terminal
- “node –v”

VS Code

- code.visualstudio.com

Command line

- Command option(s) arguments