Web System & Technology

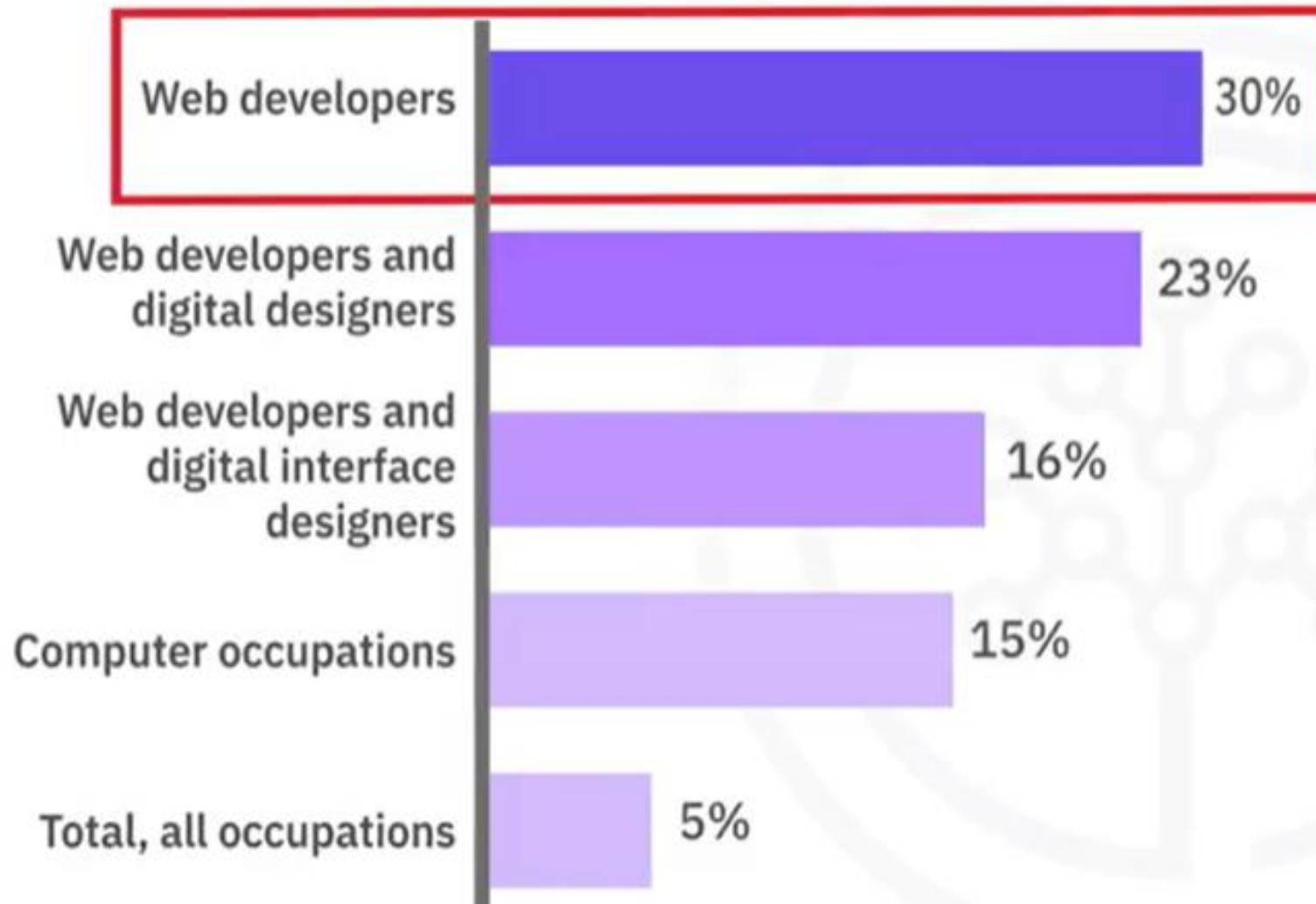Lecture # 1

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UOG

Web Developers and Digital Designers
Percent change in employment, projected 2021-31

Web developers	30%
Web developers and digital designers	23%
Web developers and digital interface designers	16%
Computer occupations	15%
Total, all occupations	5%

Introduction

- Web developers are in high demand across various industries
- Freelancing has huge growth area

What you will learn

- The fundamentals of programming for the web

- Roles of front-end, back-end and full stack developers

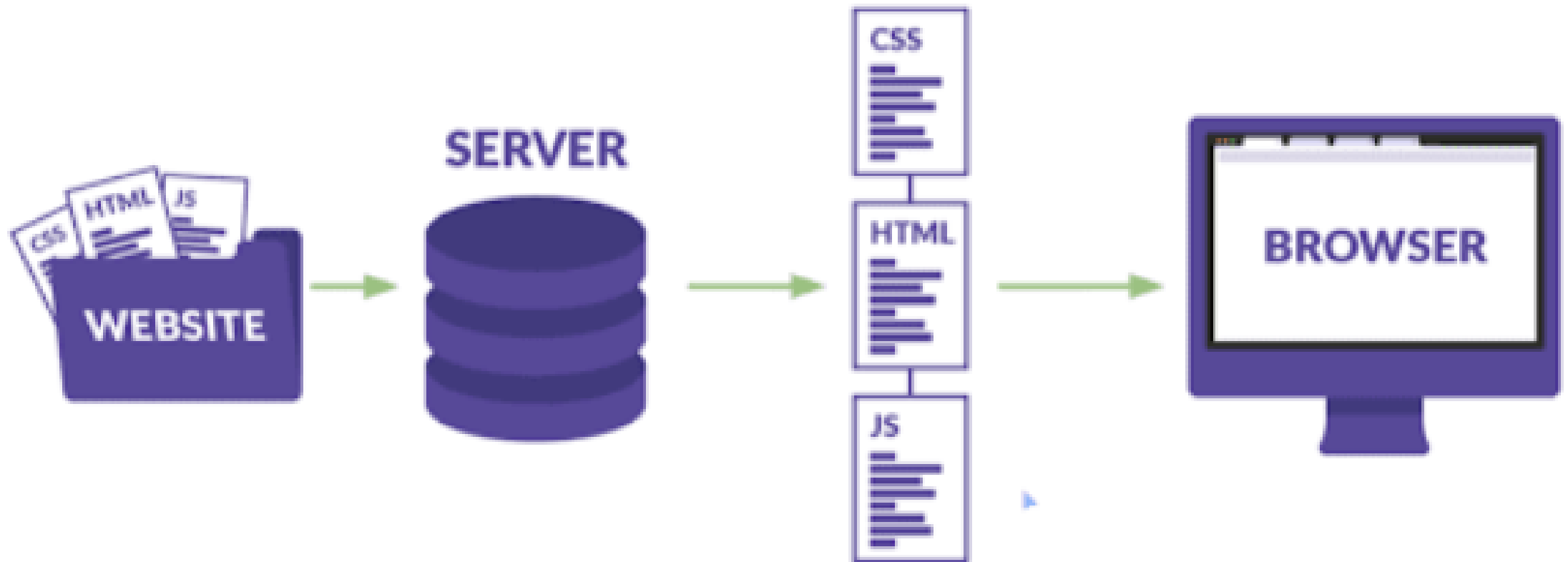- Languages and tools used by web developers

Who can take this course

- People with background as a developer

- IT person looking to develop new skills

- Fresh graduates looking for career in cloud or web development

- People with no programming experience

- Students doing bachelors in Computer Science

HOW THE WEB WORKS
IN ESSENCE

CSS
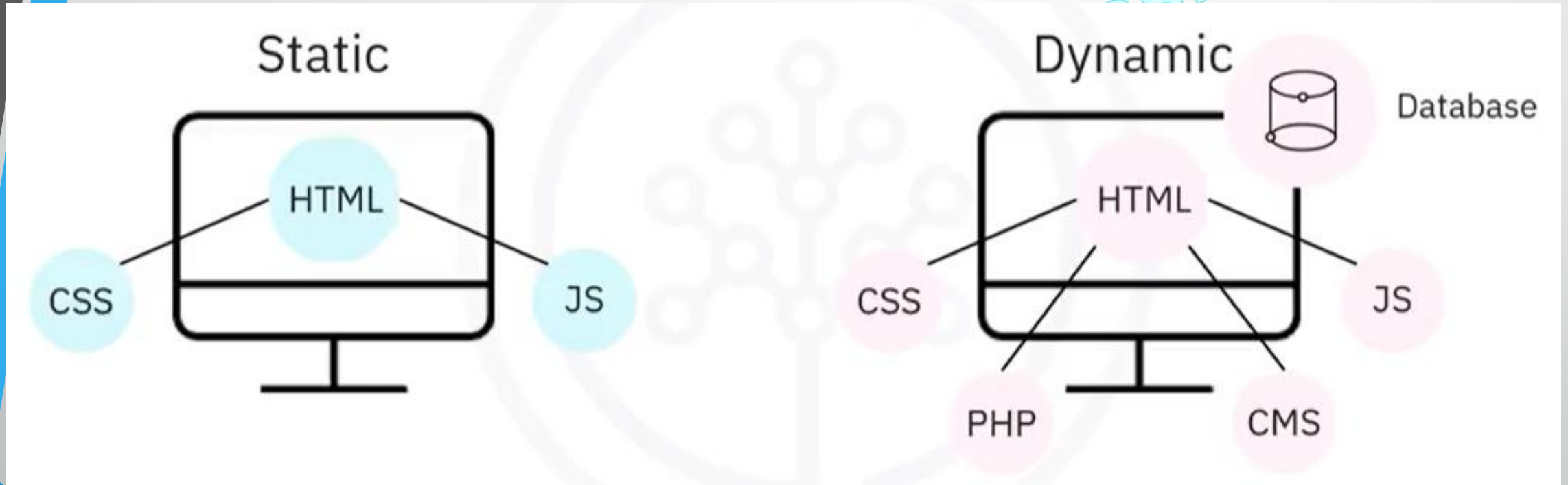
SERVER

HTML

JS

WEBSITE

BROWSER

Requirements to Build Websites

- HTML
  - Defines the structure and content of the page
- CSS
  - Adds style and beauty to the web page
- JavaScript
  - Adds interactivity and dynamic content

Basics of Website Interaction

Building Websites (Front-End)

Front-End

- Deals with everything that happens at the client-side
- Specializes in front-end coding, using HTML, CSS, JavaScript and related frameworks, libraries, and tools

Building Websites (Back-End)

Back-End

- Deals with the server before the code and data are sent to the client
- Handles the logic and functionality and the authentication processes that keep data secure
- Back-end developers may also work with relational or NoSQL databases

Full-Stack Web Developer

Full-stack developers have skills, knowledge, and experience in both front-end and back-end environments

Full-Stack

Developer Tools

- VSCode
- Sublime Text
- Atom
- Vim
- Visual Studio
- Eclipse
- NetBeans

Front-End Development

- HTML
  - HTML is used to create the physical structure of a website like:
  - Text
  - Links
  - Images
  - Videos
  - Page Dividers
  - Buttons

Front-End Development

- CSS

    - CSS allows to define, apply and manage different styles

    - It ensures uniformity in look and feel, style, colors, fonts, designs and layouts

    - Also helps in cross browser compatibility such as PC, mobile devices, iPads etc

- JavaScript

    - An object-oriented programming language

    - Used in conjunction with HTML and CSS to add interactivity to a website

Front-End Development – Example

- Use HTML to add a login button to a page

- Use CSS to style that button

- Use JavaScript to add log-in functionality to that button

SASS

- SASS stands for Syntactically Awesome Style Sheet

- New front-end development language

- An extension of CSS compatible with all versions of CSS

- SASS enables use to use variables, nested rules etc

- SASS allows us to create style sheets faster and more easily

LESS

- LESS stands for Learner Style Sheet

- Another front-end language

- LESS enhances CSS, adding more styles and functions

- Backward compatible with CSS

- Less.js is a JavaScript tool that converts the LESS styles to CSS styles

Reactive & Responsive Websites

- Reactive or adaptive websites are designed for a specific screen size

  - A website can provide more information on PC than mobile

- Responsive means that it will automatically resize to the device

  - Responsive website if opens in mobile device, it will adapt itself to small size and still shows all features

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JavaScript Frameworks

- Application frameworks written in JavaScript to design responsive applications

- Angular framework is an open-source framework maintained by Google

- It allows websites to render HTML pages quickly and efficiently

- It has built-in tools for routing and form validation

JavaScript Frameworks

- React.js framework has been developed and maintained by Facebook

- It is a JavaScript library that builds and renders components for a web page

- Not a complete suit of tools

  - E.g. routing is not a part of this framework

  - But can be added using third party tools

JavaScript Frameworks

- Vue.js is maintained by community

- Its main focus is the view layer which includes

  - User interface

  - Buttons

  - Visual components

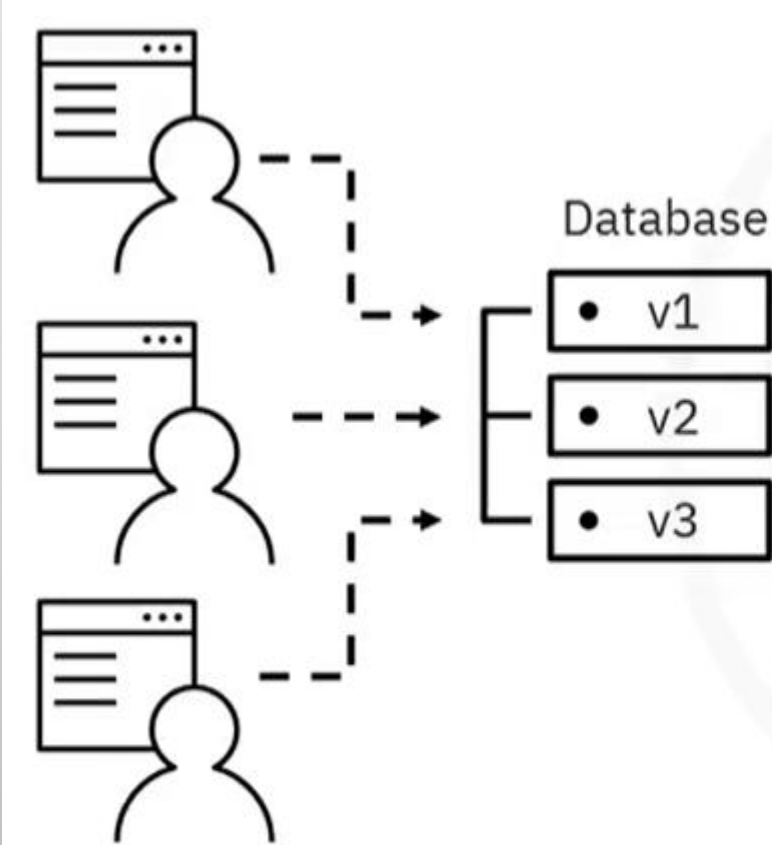- Flexible, scalable and integrates with other frameworks

Front-End Developer Role

- The task of a front-end developer evolves continuously

- So they have to keep updating the websites that they create

- The website they create should work in multiple:

  - Browsers

  - Operating systems

  - Devices

Version Control

- Keeps track of:
  - What changes were made
  - When they were made
  - Who made them
- Resolves change conflicts
- Provides a way to revert to an older version
- Examples:
  - Git
  - GitHub