

Introduction to Web Technologies

Exploring the Foundations and
Future of the Web
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Fall 2025



Slide 2: What Are Web Technologies?



Definition: Tools, languages, and protocols used to create and interact with web content.



Components: Web browsers, servers, protocols (HTTP/HTTPS), and languages (HTML, CSS, JS).



Purpose: To enable interaction, communication, and information sharing via the internet.

Slide 3: Why Study Web Technologies?

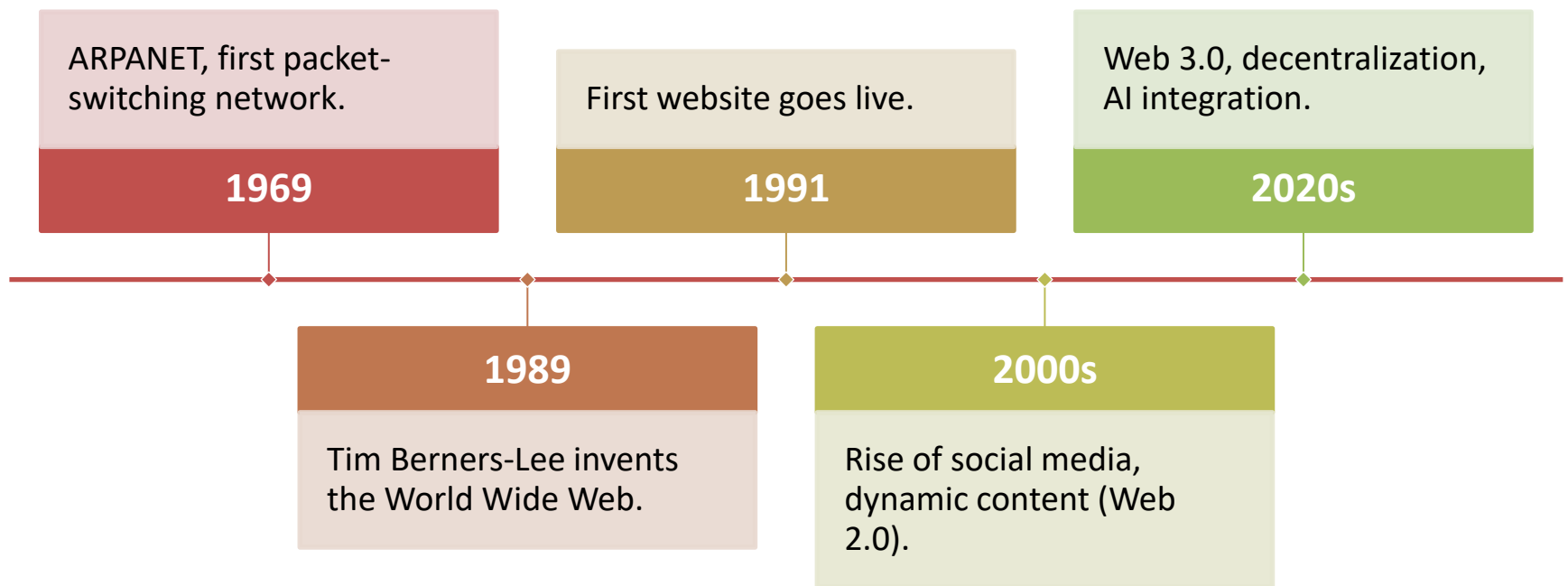
Web development is essential for all digital platforms.

High demand for web developers and designers.

Enables students to build websites, apps, and online platforms.

Foundation for understanding modern digital ecosystems.

Slide 4: Brief History of the Web



Slide 5: How the Web Works

- Client-Server Architecture:
- Client = Web Browser
- Server = Hosts websites/data
- Interaction via HTTP/HTTPS requests
- IP Address & DNS:
 - IP identifies a server;
 - DNS translates domain names to IPs.
- Example: Typing google.com --> DNS lookup --> IP Address --> Web page delivered.

Slide 6: Web Browsers and Web Servers

01

Browsers:
Chrome, Firefox,
Safari, Edge

02

Render
HTML/CSS/JS
into visual web
pages

03

Web Servers:
Apache, Nginx,
Microsoft IIS

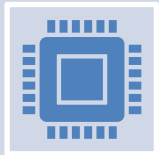
04

Serve data in
response to
browser
requests

Slide 7: Core Web Languages



HTML: Defines structure (headings, paragraphs, links)



CSS: Controls layout, design, and responsiveness



JavaScript: Adds interactivity and dynamic behavior

Slide 8: Web Development Workflow



Design: Planning structure and layout



Development: Writing code (HTML, CSS, JS)



Testing: Debugging and browser compatibility



Deployment: Hosting on a web server



Maintenance: Updates, bug fixes, security

Slide 9: Categories of Web Development

Front-End: HTML, CSS, JavaScript, React, Bootstrap

Back-End: Java, PHP, Node.js, Python, SQL

Full-Stack: Combines front-end and back-end

Slide 10: Front-End Technologies in Detail



HTML5: Semantic tags,
video/audio support



CSS3: Flexbox, Grid, Media
Queries



JavaScript: DOM
manipulation, event handling



Frameworks: React, Vue,
Angular

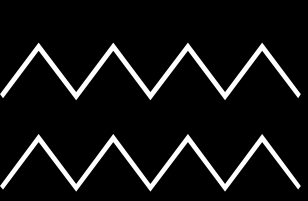
Slide 11: Back-End Technologies in Detail

Java (Spring), Node.js, Python (Django, Flask), PHP (Laravel)

Databases: SQL (MySQL, PostgreSQL), NoSQL (MongoDB, Firebase)

APIs: RESTful services, GraphQL

Servers: Apache, Nginx



Slide 12: What Is an API?



Application Programming
Interface



Communication between
applications



REST: HTTP methods



GraphQL: Flexible queries



Example: Weather app data fetch

Slide 13: Web Development Tools



Code Editors: VS Code, Sublime Text



Version Control: Git, GitHub



Design Tools: Figma, Adobe XD



Deployment: Netlify, Heroku, Vercel

Slide 14: Current Trends in Web Development

PWAs, SPAs,
Serverless
Architecture

AI/ML
Integration,
Motion UI

WebAssembly,
Low-Code/No-
Code

Voice Search
Optimization

Slide 15: Trend 1 – Progressive Web Apps (PWAs)

1

Combine web
and mobile app
features

2

Offline support,
fast loading,
installable

3

Examples:
Twitter Lite,
Uber Lite

Slide 16: Trend 2 – Single Page Applications (SPAs)

Load single HTML page

Dynamic updates without full reloads

Examples: Gmail, Facebook, Trello

Slide 17: Trend 3 – Serverless Architecture

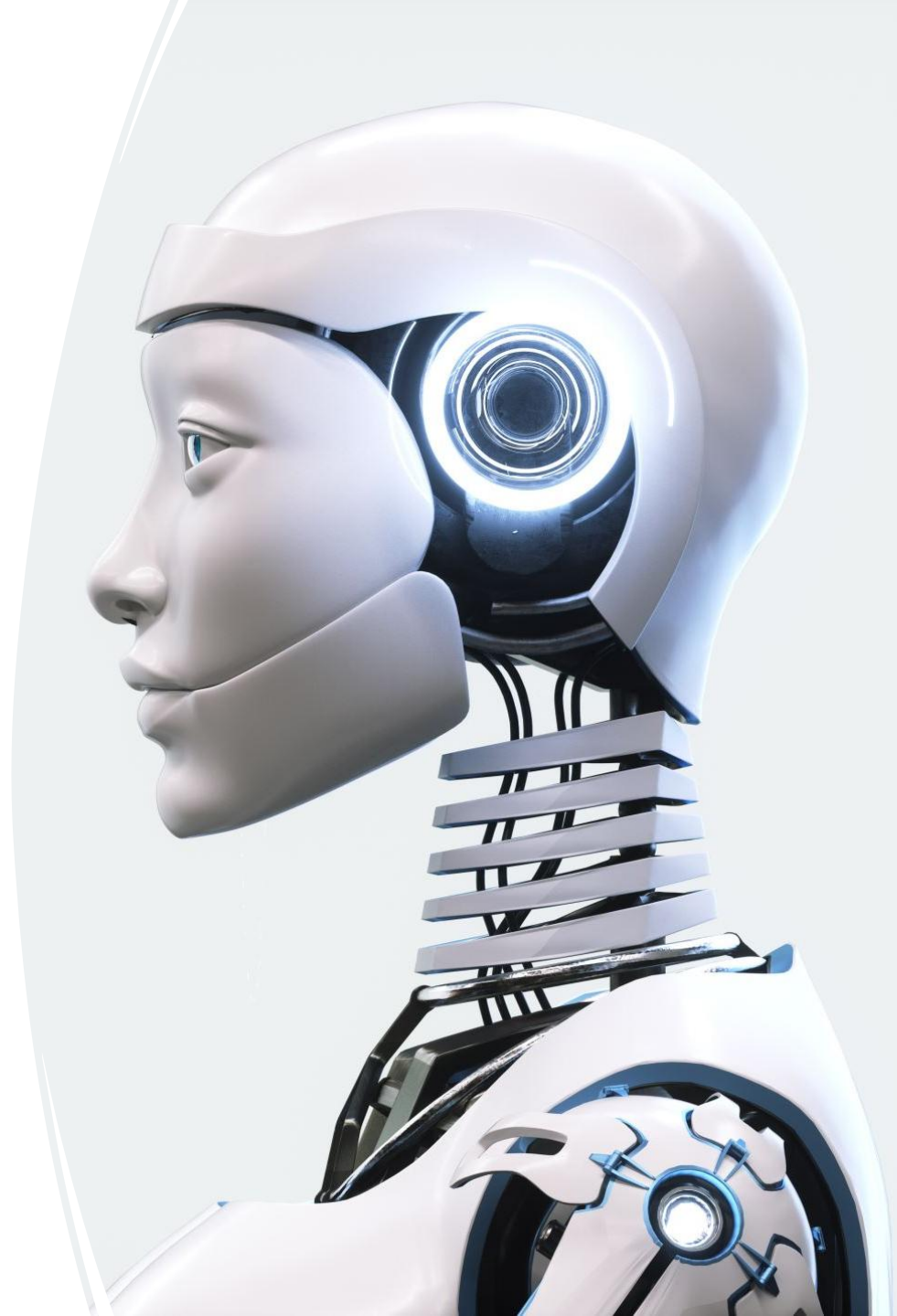
No server management needed

Cloud functions (AWS Lambda, Azure)

Scalable, cost-effective

Slide 18: Trend 4 – AI and ML in Web

- Chatbots, personalization, automation
- Examples: Netflix, ChatGPT, Canva AI



Slide 19:
Trend 5 –
Motion
UI

Animations and
transitions

Improves user
experience

Tools: Framer
Motion, GSAP

Slide 20: Trend
6 –
WebAssembly

Run C++/Rust in
the browser

High-performance
applications

Used in games,
video editors

Slide 21:
Trend 7 –
Low-
Code/No-
Code

Build apps with
minimal coding

Tools: WordPress,
Wix, Bubble

Ideal for rapid
prototyping

Slide 22:
Trend 8 –
Voice Search
Optimization

Optimize for spoken
queries

Use natural
language, local SEO

Driven by Alexa, Siri,
Google Assistant

Slide 23: Web Security Basics

Threats: SQL Injection,
XSS, CSRF

Protocols: HTTPS,
SSL/TLS

Practices: Input
validation,
authentication, updates

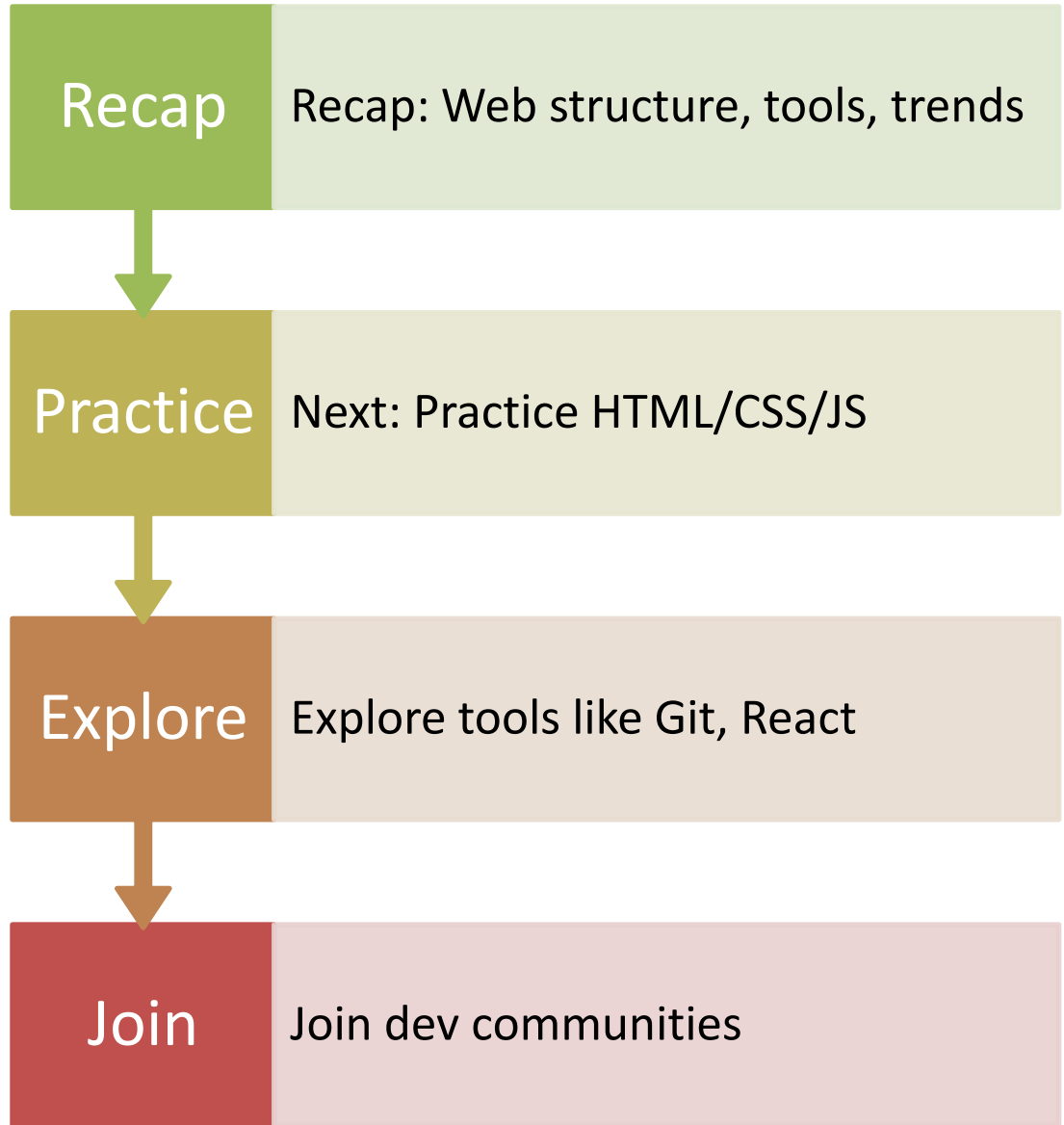
Slide 24:
Future of
Web
Technologies

Web 3.0,
decentralization, AI
automation

Data ownership, privacy

Immersive, accessible UX

Slide 25: Summary & Next Steps



Slide 26: Q&A and Discussion



OPEN FLOOR FOR
QUESTIONS



SUGGEST RESOURCES
AND TUTORIALS



ENCOURAGE SMALL
PERSONAL PROJECTS