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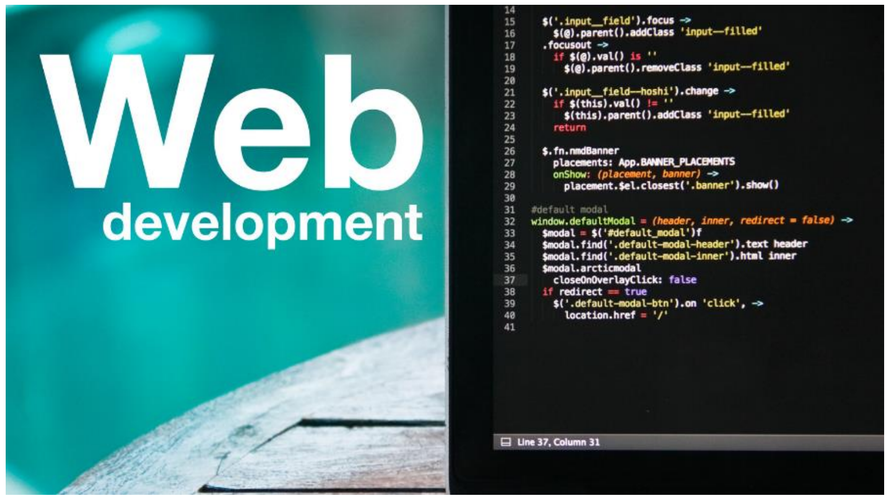
INTRODUCTION TO WEB DEVELOPMENT

Introduction to Web Development

Course Outline

- What does a web developer do?
- What software do I need to install to get started?
- What do I need to know about my computer and the Internet to get started with web development?



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Part 1: What does a Web Developer Do?

Why Web Development & Who It's For?

Web development is packed with challenging concepts, theories and projects.
Above all, this is one of the few jobs, where demand increases faster than supply.
There is a reasonable entry barrier.
Once you overcome it, new doors open for you that are unlikely to close throughout your career.
Web development is your entry ticket to IT.

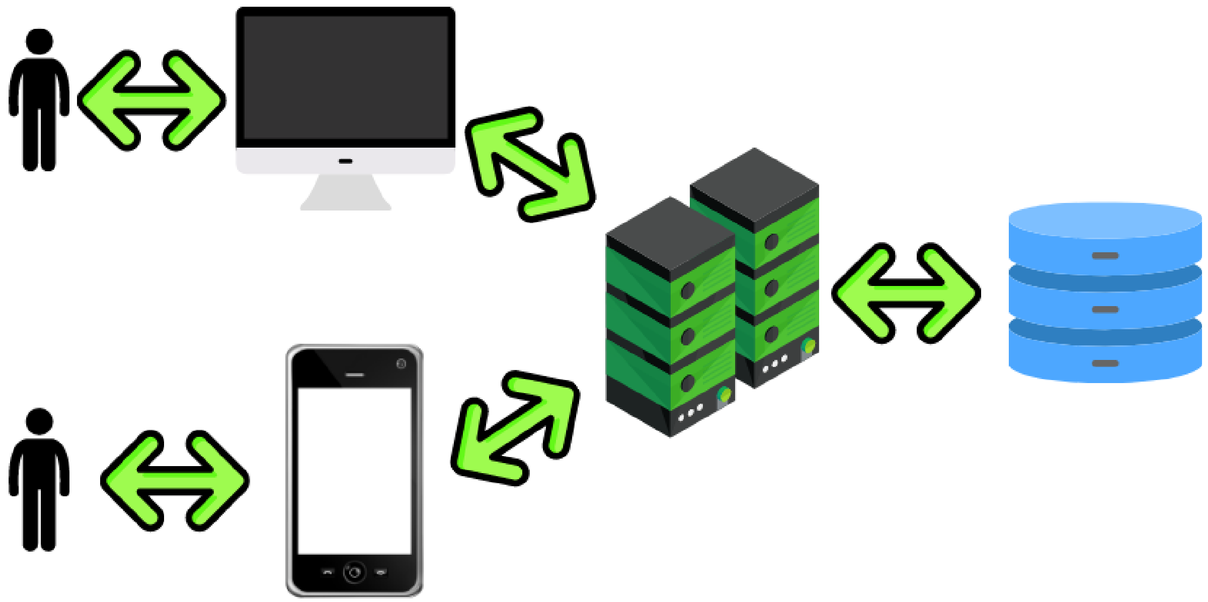
Web development is for you if

- You are someone who appreciates visually stunning websites and applications and wondered how all that happened
- You are passionate about creating real-life web solutions for businesses
- You are currently considering career change but do not know where to start
- You are an entrepreneur and want to launch your business online yourself
- You are employed in a field that you either do not enjoy anymore and looking something that provides tremendous freelancing opportunities
- You recently graduated from college but want to add something practical to your portfolio

Frontend and Backend Development

Frontend developer: creates websites and web applications that interact with the end user.

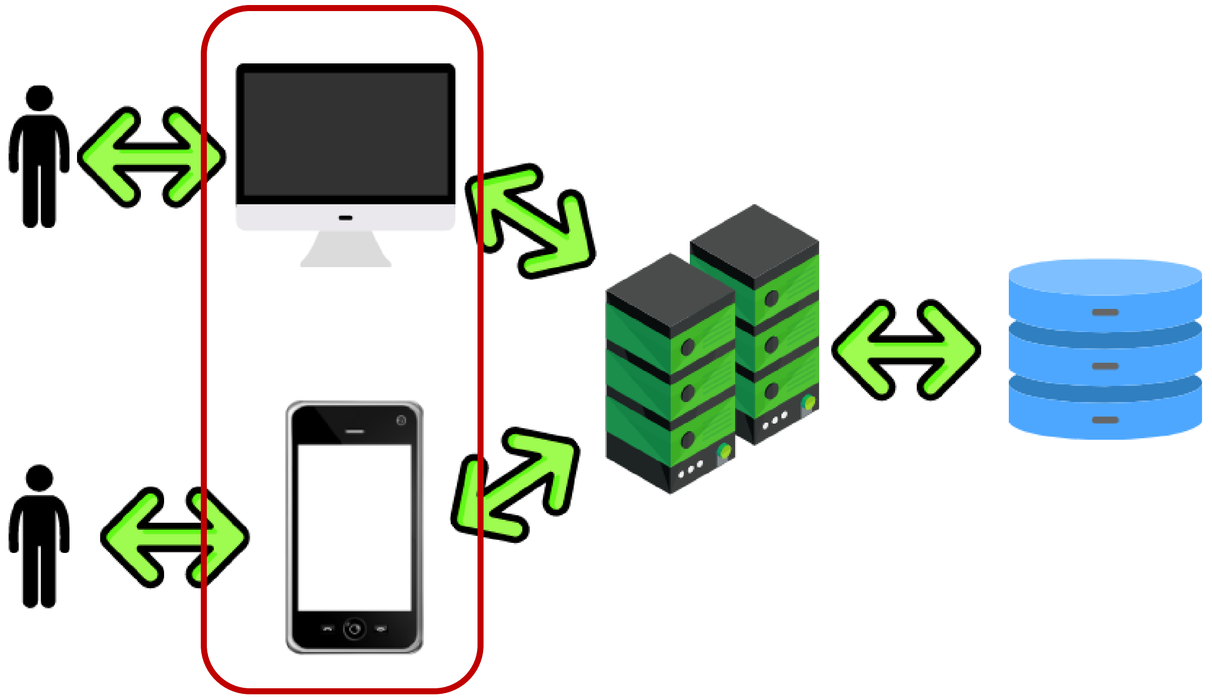
Backend developer: reads/writes databases, files, and other assets in persistent storage; organizes and prepares data for other backend and frontend services. Authenticates and authorizes users.



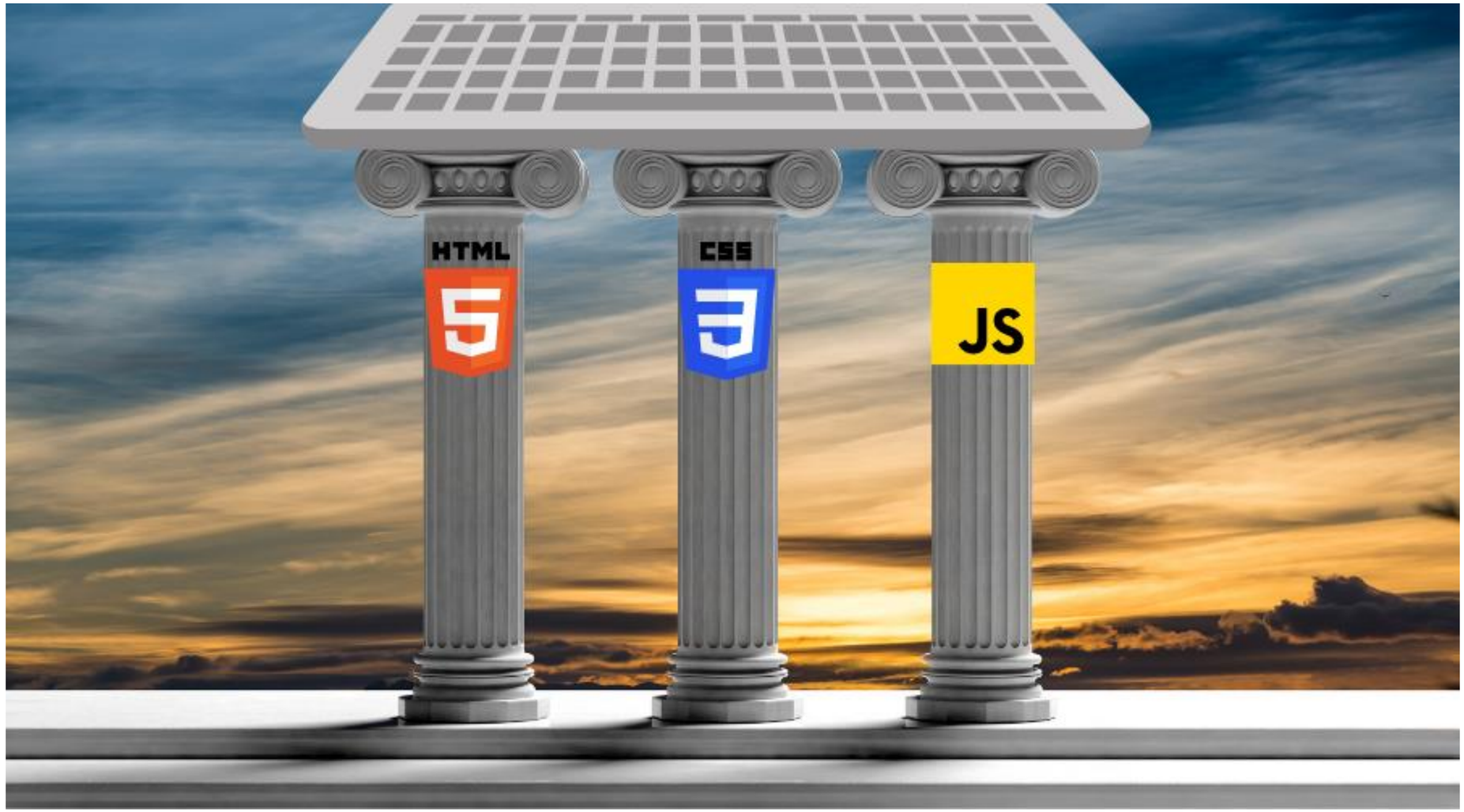
Technologies in Frontend Development

Frontend development:

- Core technologies: HTML, CSS, JavaScript.
- Frameworks, libraries (examples): Sass, Bootstrap, React, Redux, jQuery, TypeScript



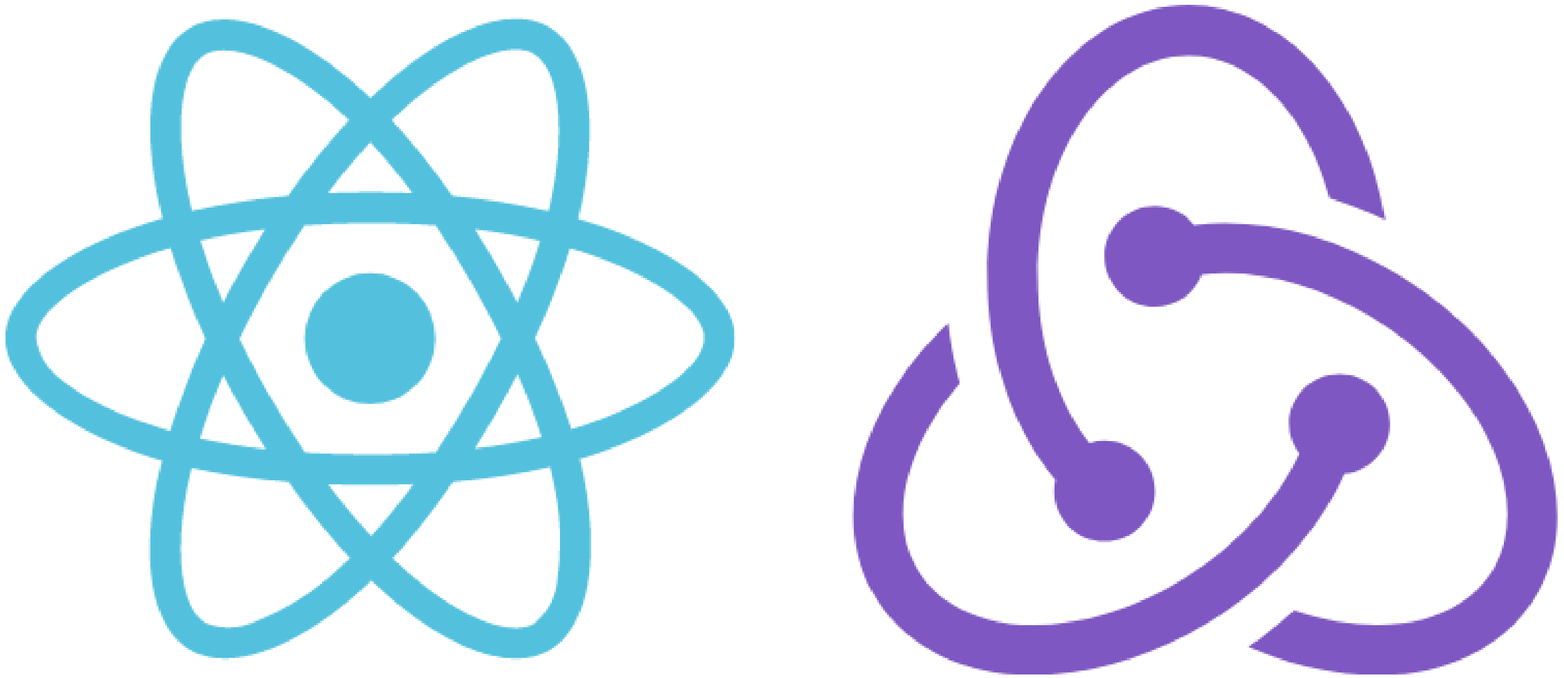
The Three Pillars of Frontend Development



Bootstrap 5 CSS Framework

TypeScript

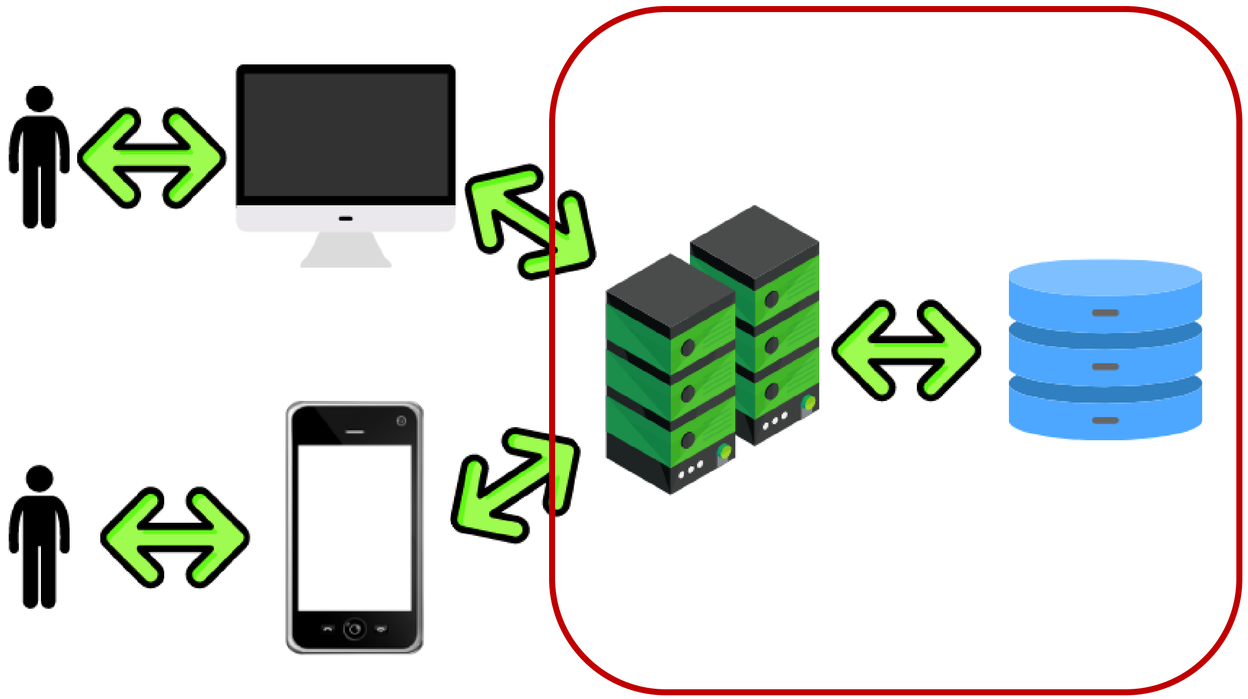
React.js, Redux



Technologies in Backend Development

Backend development:

- Core technologies: Python, node.js, SQL, Mongo.db
- Frameworks, libraries (examples): Django, Express



SQL or MongoDB

Node.js + express

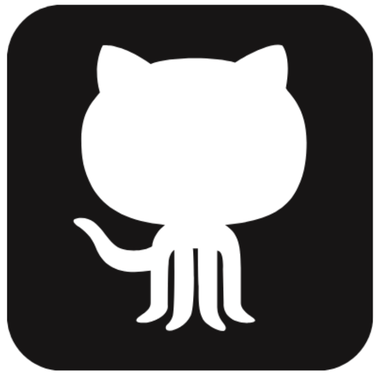
How to get hired as a Web Developer?

1. Time management, learn how to learn
2. Increase your competence and problem-solving skills
3. Build cool portfolio projects on GitHub
4. Career changer application package
5. Gain interviewing experience and continue building cool things

Portfolio and GitHub Profile

Your most important assets

- Snapshots on what it is like to work with you
- Quality over quantity
- Anyone can write anything in their resume. Writing code and talking about it during an interview reveals a lot more about you



How to get hired as a Web Developer?

Common myths

1. BSc, MSc, PhD
2. To gain experience, you need verifiable work experience
3. Certifications
4. Something is wrong with me
5. My performance has to be perfect
6. I need to meet all requirements in the job ad

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Part 2: Installing software for web development

Browsers

Install Google Chrome to get started

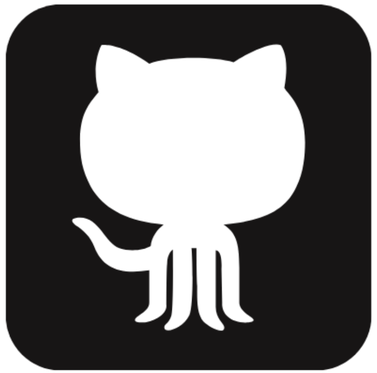
- https://www.google.com/intl/en_us/chrome/
- Later, install browsers with significant market share
- Browser trends: https://financesonline.com/browser-trends/

Node.js and Node Package Manager (npm)

Install the LTS (Long-Term Support) version of Node+npm from here: https://nodejs.org/en/

Git and GitHub

- Register an account on github.com
- Download git on git-scm.com
- Optional for Windows users: https://gitforwindows.org/



Integrated Development Environment

- Visual Studio Code (https://code.visualstudio.com/)
- Most popular option (https://stateofjs.com/)
- Extra packages (demo)
- Integrated terminal
- Example: html, css, JavaScript, node

Visual Studio Code

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Part 3: Folders, Files, Terminal, Computer Networks

Operating Systems

- Manages files and folders
- Running applications
- Scheduling tasks
- Network communication
- Performs computation
- Handles Input-Output devices
- Manages credentials

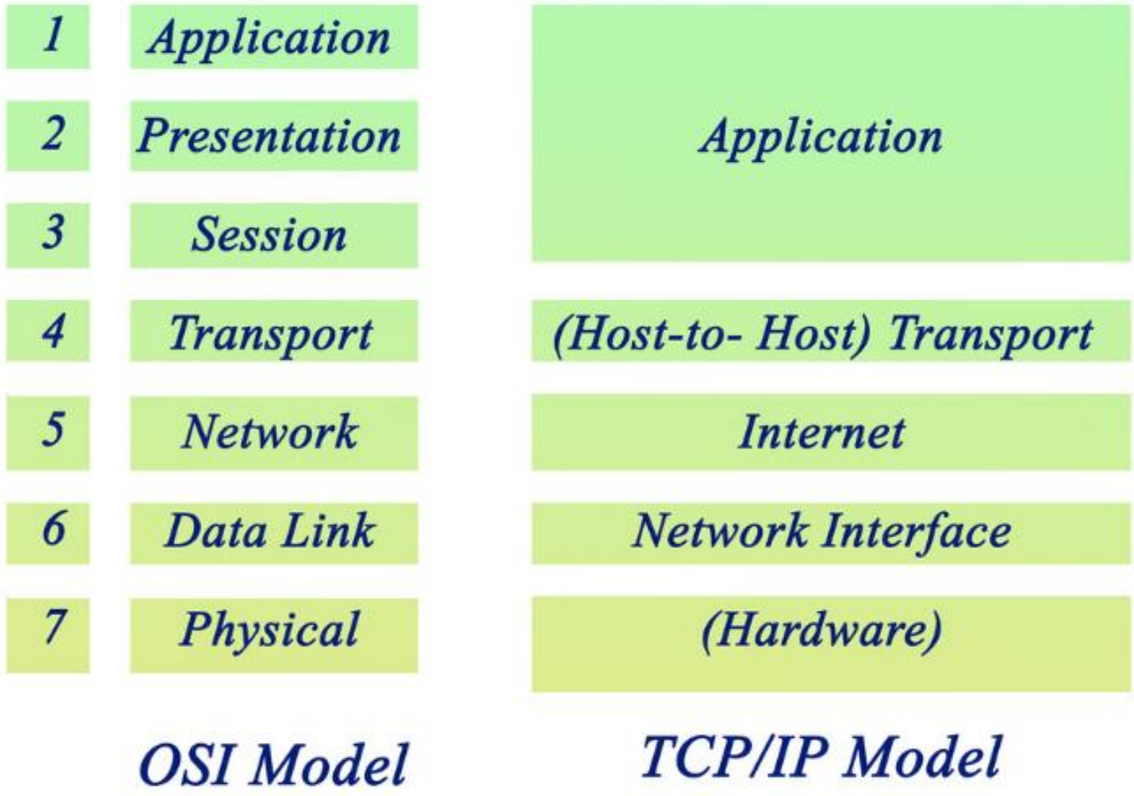


Terminal, Command Prompt

Network communication

- A combination of protocols help you use the services of other servers
- Layers: ISO-OSI model (https://en.wikipedia.org/wiki/OSI_model)
- TCP/IP: Transmission Control Protocol/Internet Protocol (https://en.wikipedia.org/wiki/Internet_protocol_suite)

Network communication



(source: canva.com)

Addressing a resource on the Internet

- URL (Universal Resource Locator): https://www.google.com
- IP address: 42.250.74.206
  - Terminal: ping google.com
- Special IP address: 127.0.0.1 or localhost
  - Exercise: launch the Live Server on Visual Studio Code

Http

- HyperText Transfer Protocol
- Application layer
- Built on top of TCP
- What happens when you enter a URL in the browser of your client computer?
  1. Client requests IP address from DNS (Domain Name Server)
  2. Client receive IP address from DNS
  3. Client sends an HTTP request to the server having the previously requested IP address
  4. The requested resource is transferred from the server to the client via TCP

Https

- HyperText Transfer Protocol Secure
- Encrypted HTTP connection
- Web development: it is not possible refer to http resources on an https page

Ports

- Imagine them as gates, where messages are received from the network
- Port 80: http. Port 443: https.
- Ports below 1024 are reserved for system processes. The rest are open to software developers.

Checkpoint

1. Know how to navigate in the file system of your OS using Finder or Windows Explorer
2. Know how to use the terminal
3. Know what a URL is
4. Understand why sending http://127.0.0.1:5000/index.html to your friend is not too useful
5. Understand that https websites cannot refer to http resources

Summary, next steps

- Tasks and technologies used in Frontend, Backend, Full Stack Web Development
- Necessary software for web development
- Operating systems and Networking basics for web development

Next steps:

- Start with the principles of Frontend Development
  - HTML, CSS, JavaScript
  - WYSIWYG: immediate gratification
- Time management: learning Web Development is a marathon, not a sprint