

Front-end



Development

Lesson 1: The Basics



University of Tehran



ACM
Summer of Code 2024

Lecturer:
Misagh Mohaghegh

Certificate

In order to get the course certificate:

- ▶ You can at most not attend 4 of the course classes (out of 12).
- ▶ You need to get at least 70% of the homework scores.



Prerequisites

- ▶ Have some basic programming knowledge.
- ▶ Get familiar with VSCode.
- ▶ Get familiar with Git & GitHub.

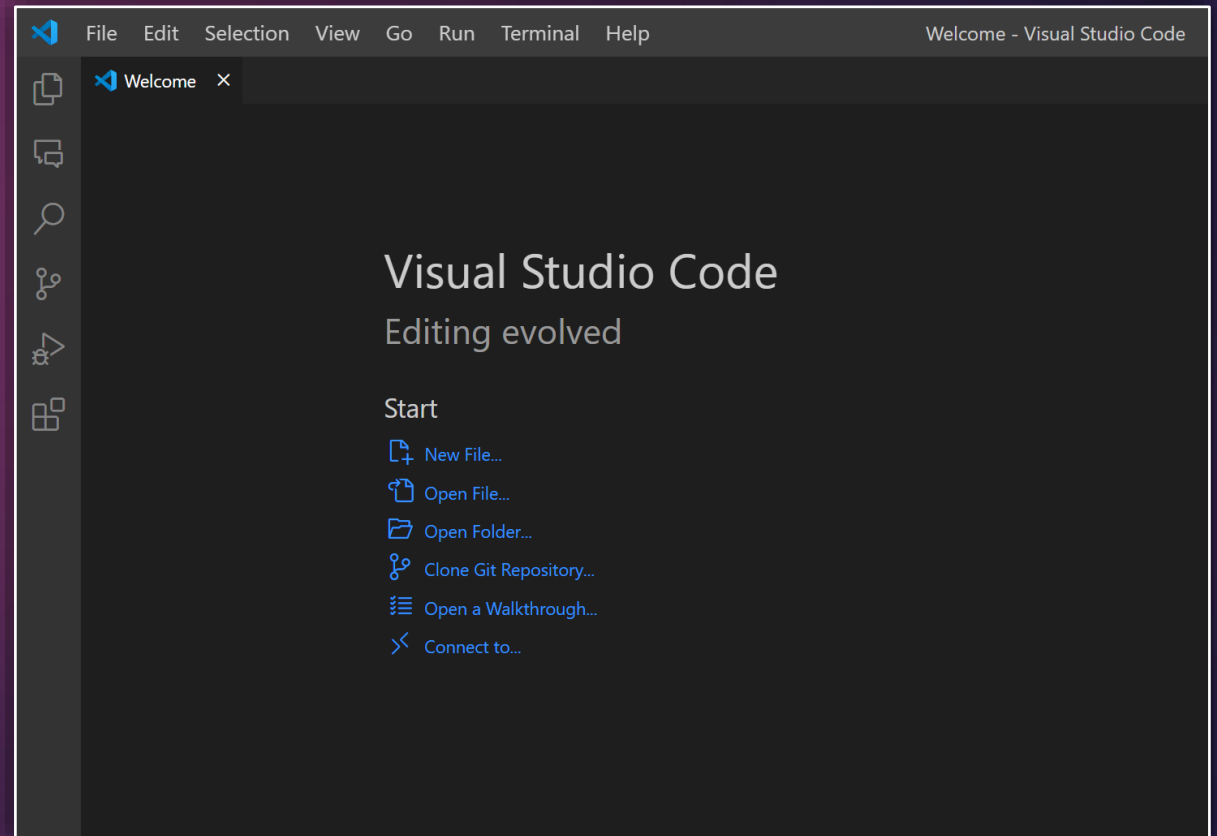
Prerequisites

- ▶ **Have some basic programming knowledge.**
- ▶ Get familiar with VSCode.
- ▶ Get familiar with Git & GitHub.



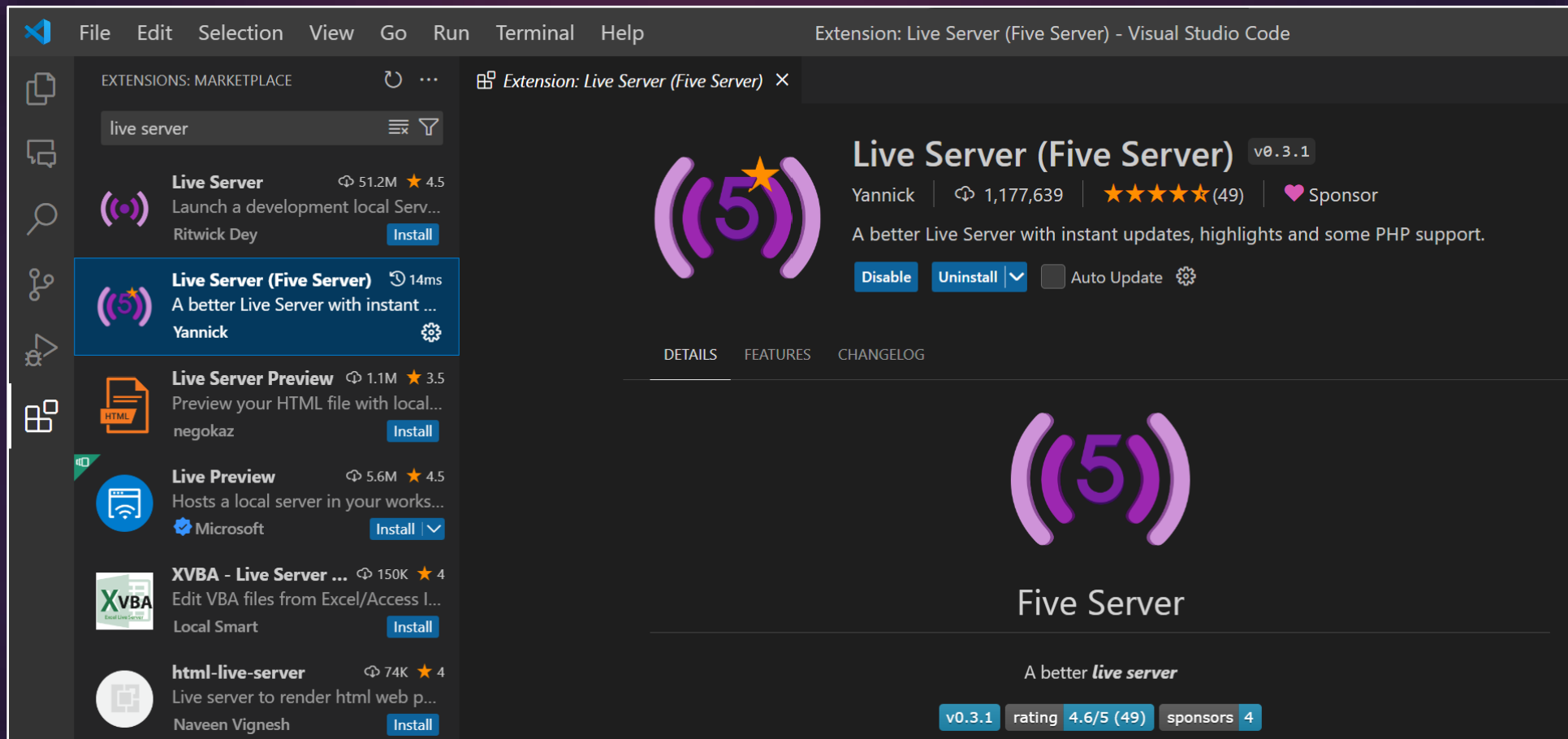
Prerequisites

- ▶ Have some basic programming knowledge.
- ▶ **Get familiar with VSCode.**
- ▶ Get familiar with Git & GitHub.



Prerequisites

VSCode Extension:



The screenshot displays the Visual Studio Code interface with the Extensions Marketplace open. The left sidebar shows a list of extensions, with 'Live Server (Five Server)' by Yannick highlighted. The main panel shows the details for this extension, including its version (v0.3.1), author (Yannick), download count (1,177,639), and a 4.6/5 star rating from 49 reviews. The extension is described as 'A better Live Server with instant updates, highlights and some PHP support.' The interface also shows tabs for DETAILS, FEATURES, and CHANGELOG, and a large logo for 'Five Server'.

File Edit Selection View Go Run Terminal Help Extension: Live Server (Five Server) - Visual Studio Code

EXTENSIONS: MARKETPLACE

live server

Live Server 51.2M ★ 4.5
Launch a development local Serv...
Ritwick Dey [Install](#)

Live Server (Five Server) 14ms
A better Live Server with instant ...
Yannick [Install](#)

Live Server Preview 1.1M ★ 3.5
Preview your HTML file with local...
negokaz [Install](#)

Live Preview 5.6M ★ 4.5
Hosts a local server in your works...
Microsoft [Install](#)

XVBA - Live Server ... 150K ★ 4
Edit VBA files from Excel/Access I...
Local Smart [Install](#)

html-live-server 74K ★ 4
Live server to render html web p...
Naveen Vignesh [Install](#)

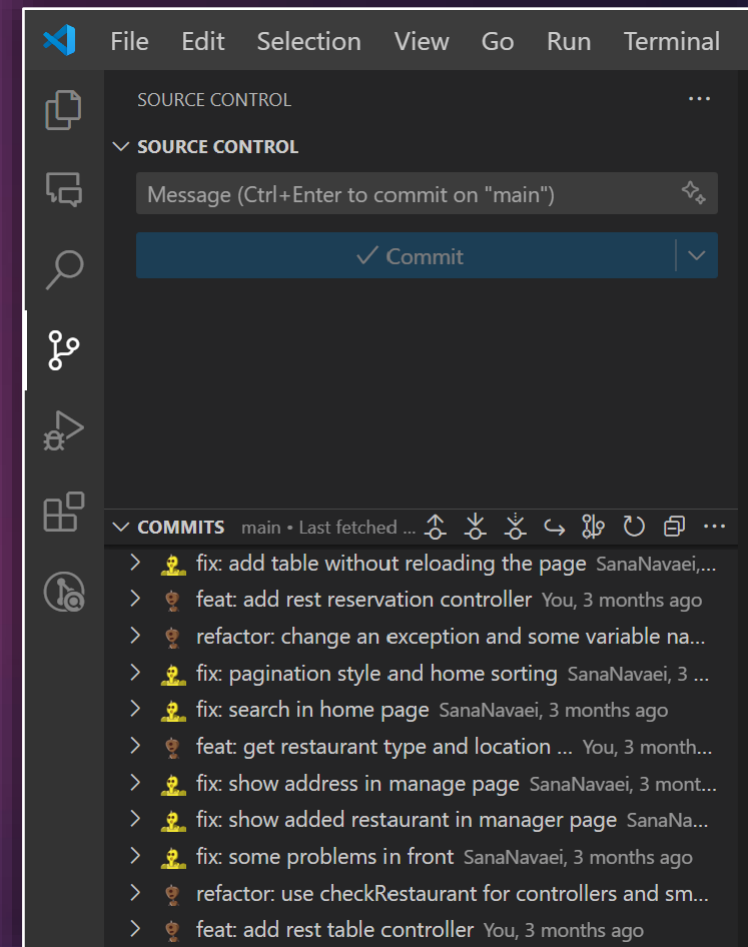
Live Server (Five Server) v0.3.1
Yannick | 1,177,639 | ★★★★★ (49) | Sponsor
A better Live Server with instant updates, highlights and some PHP support.
[Disable](#) [Uninstall](#) ☐ Auto Update [Settings](#)

DETAILS FEATURES CHANGELOG

Five Server
A better *live server*
v0.3.1 rating 4.6/5 (49) sponsors 4

Prerequisites

- ▶ Have some basic programming knowledge.
- ▶ Get familiar with VSCode.
- ▶ **Get familiar with Git & GitHub.**



Prerequisites

- ▶ Have some basic programming knowledge.
- ▶ Get familiar with VSCode.
- ▶ Get familiar with Git & GitHub.
- ▶ **Search search search!**



UI/UX Designer vs Front-end Developer

UI: User Interface UX: User Experience

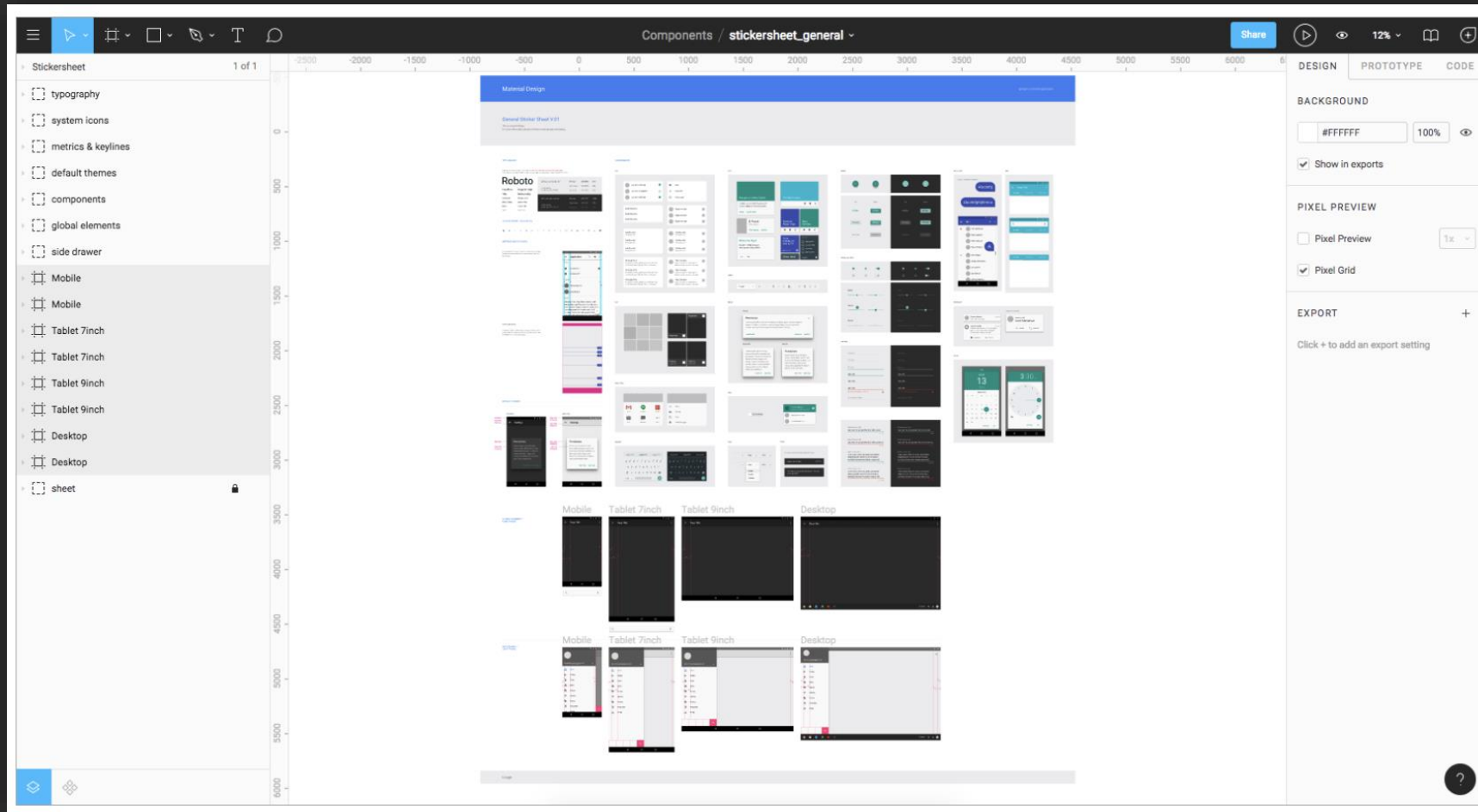


DESIGNER



DEVELOPER

Figma, a tool for designers



Welcome to the course!

HTTP

Web Basics
HTTP Protocol
(Hypertext Transfer Protocol)



HTML
(Hypertext Markup Language)



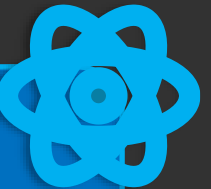
CSS
(Cascading Style Sheets)

B

Bootstrap

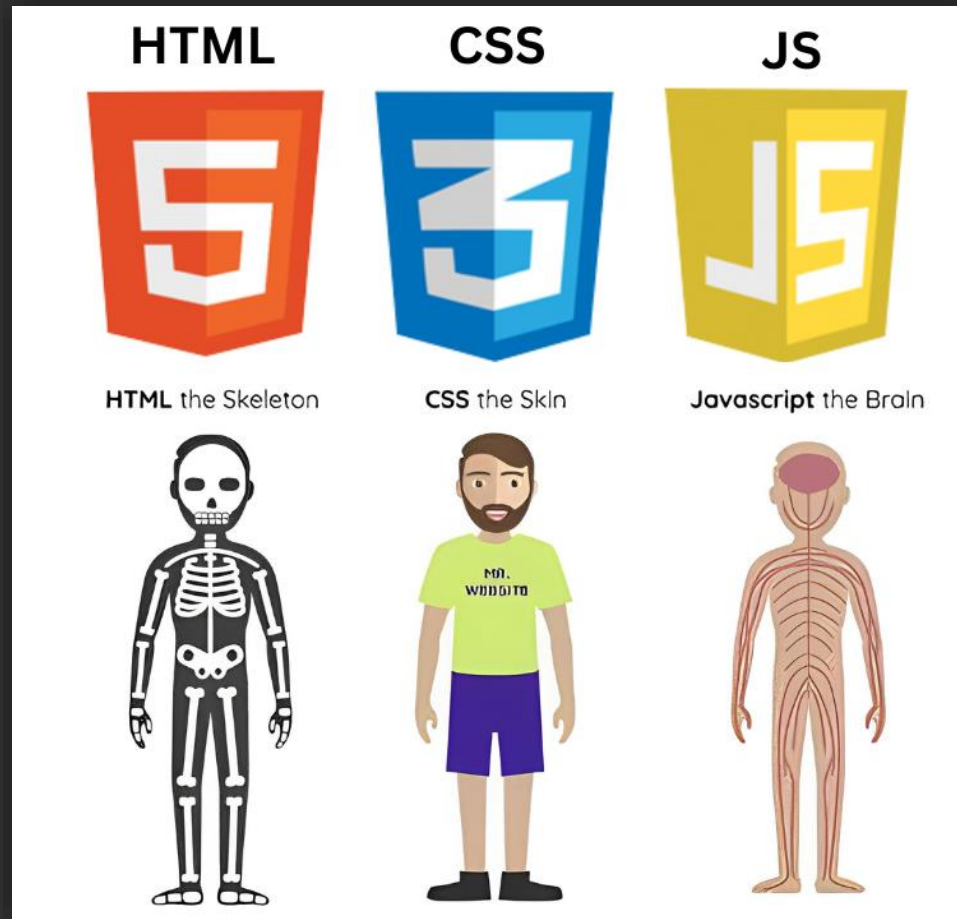


JS
(JavaScript)



React

The Building Blocks

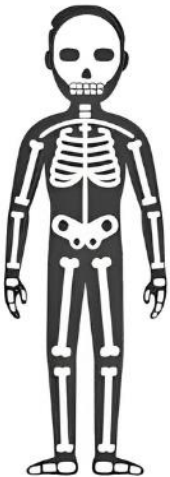


The Building Blocks

HTML



HTML the Skeleton



CSS



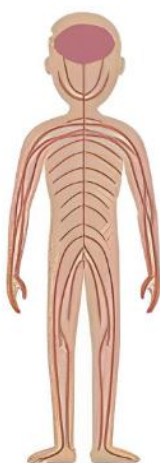
CSS the Skin



JS



Javascript the Brain



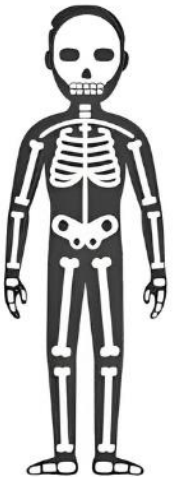
```
1 <!DOCTYPE html>
2 <html lang="en">
3
4 <head>
5     <meta charset="UTF-8">
6     <meta name="viewport" content="width=device-width, initial-scale=1.0">
7     <title>My Title</title>
8 </head>
9
10 <body>
11     <h>My Heading</h>
12     <p>My Paragraph</p>
13     <ul>
14         <li>One</li>
15         <li>Two</li>
16         <li>Three</li>
17     </ul>
18     <a href="https://www.google.com">Google</a>
19     
20 </body>
21
22 </html>
```

The Building Blocks

HTML



HTML the Skeleton



CSS



CSS the Skin



JS



Javascript the Brain



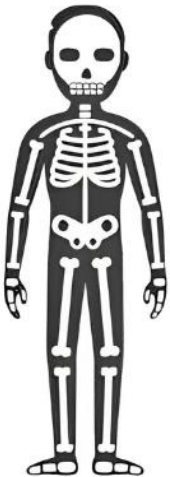
```
1  @font-face {
2      font-family: 'Spline Sans';
3      font-weight: 300 700;
4      src: url('spline-sans.woff2') format('woff2 supports variations');
5  }
6
7  body {
8      font-family: 'Spline Sans', sans-serif;
9      color: black;
10     background-color: rgb(255, 252, 252);
11 }
12
13 #container {
14     width: 100%;
15     background-color: #fff5f5;
16 }
17
18 #container .profile-picture {
19     width: 50px;
20     border-radius: 50%;
21     box-shadow: 0px 0px 3px 0px rgba(0, 0, 0, 0.5);
22 }
23
24 @media (min-width: 1200px) {
25     #container {
26         width: 40%;
27     }
28 }
```

The Building Blocks

HTML



HTML the Skeleton



CSS



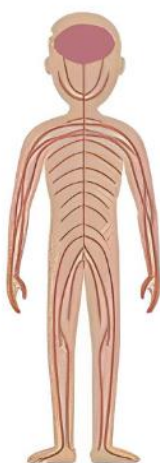
CSS the Skin



JS

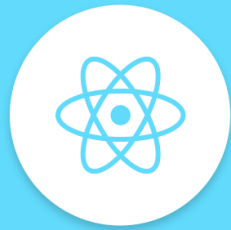


Javascript the Brain



```
1  const inp = document.getElementsByName("color-input")[0];
2  const errText = document.getElementById("invalid-text");
3
4  function isValid(hexColor) {
5      return /^(?:[0-9A-F]{3}){1,2}$/i.test(hexColor);
6  }
7
8  function showcase(hexColor) {
9      const rootcss = document.documentElement.style;
10     if (!isValid(hexColor)) {
11         rootcss.setProperty("--selected-color", "black");
12         errText.style.display = "block";
13         return;
14     }
15     errText.style.display = "none";
16     rootcss.setProperty("--selected-color", hexColor);
17 }
18
19 inp.addEventListener("input", event => showcase(inp.value));
```

JavaScript Frameworks



React



Angular



Vue

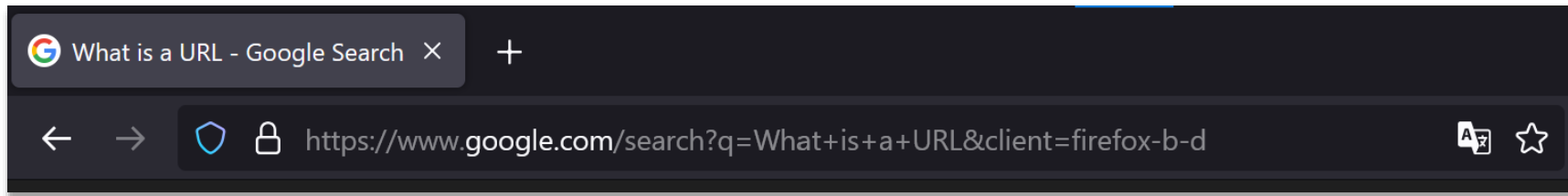
Schedule

فرانت اند	هفته اول	هفته دوم	هفته سوم	هفته چهارم	هفته پنجم	هفته ششم	هفته هفتم
جلسه شنبه	---	HTML	CSS Part 2	RWD & Bootstrap	JS Part 2	React Part 1	API
جلسه دوشنبه	Introduction & HTTP	CSS Part 1	CSS Part 3	JS Part 1	JS Part 3	React Part 2	---
تمرین	---	HTML	CSS	Bootstrap	JS	React	Project

HTTP Protocol



URL (Uniform Resource Locator)



Protocol
Scheme

Domain

Query 1: q

https://www.google.com/search?q=What+is+a+URL&client=firefox-b-d

Subdomain

Path

Query 2: client

HTTP (Hypertext Transfer Protocol)

1 Hypertext Transfer Protocol

The foundation of data communication in the World Wide Web.
Defines how messages are formatted and transmitted.

2 Client-Server Model

A client (the web browser) initiates a HTTP **request** to a server.
The server sends a **response** back to the client.

3 Stateless Protocol

Each request is made independent of previous requests.

HTTP Connection



HTTP Request

There are 9 HTTP request methods.
The most used ones are:



GET

Retrieve data from the server.



POST

Send new data to the server.



PUT

Update data on the server.



DELETE

Remove data from the server.

Example back-end API accepted
HTTP request method and paths:

GET

/pet/{petId} Find pet by ID

PUT

/pet Update an existing pet

DELETE

/pet/{petId} Deletes a pet

POST

/pet/{petId}/uploadImage uploads an image

Raw HTTP Request

The diagram illustrates the structure of a raw HTTP request. It features a yellow notepad-like box containing the request text. Red annotations with arrows and brackets identify the components: 'Request line' points to the first line; 'HTTP Method' points to 'GET'; 'Path to the resource on the web server' points to '/myexample/page.html'; 'HTTP protocol version' points to 'HTTP/1.1'; 'Request headers' points to the block of header lines; and 'Empty line' points to the blank line at the bottom.

```
GET /myexample/page.html HTTP/1.1
Host: ece.ut.ac.ir
User-Agent: Mozilla/5.0 ( ...
Accept: text/html,application/xhtml+xml, ...
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
```

HTTP Response

There are 5 types of response status codes:

1xx – Informational

These indicate that the request was received and the server is processing it.

2xx – Successful

These indicate that the request was successfully received, understood, and accepted.

3xx – Redirection

These indicate that further action needs to be taken by the client to complete the request.

4xx – Client Error

These indicate that the client has made an error, such as a bad request or unauthorized access.

5xx – Server Error

These indicate that the server has failed to fulfill a valid request.

HTTP Response

2xx Success

200 Success / OK

3xx Redirection

301 Permanent Redirect

302 Temporary Redirect

304 Not Modified

4xx Client Error

400 Bad Request

401 Unauthorized Error

403 Forbidden

404 Not Found

405 Method Not Allowed

5xx Server Error

500 Internal Server Error

501 Not Implemented

502 Bad Gateway

503 Service Unavailable

504 Gateway Timeout

Raw HTTP Response

HTTP status code

Text version of status code

HTTP/1.1 200 OK

Response
headers

Date: Sat, 14 Feb 2009 19:23:54 GMT
Server: Apache/2.2.9 (Win32) ...
Last-Modified: Mon, 13 Oct 2008 16:46:07 GMT
Content-Length: 2403
Connection: Keep-Alive
Content-Type: text/html

Empty line

Response
body

<html>
...
</html>

Thank you for your attention.