



Introduction to NodeJS & MongoDB

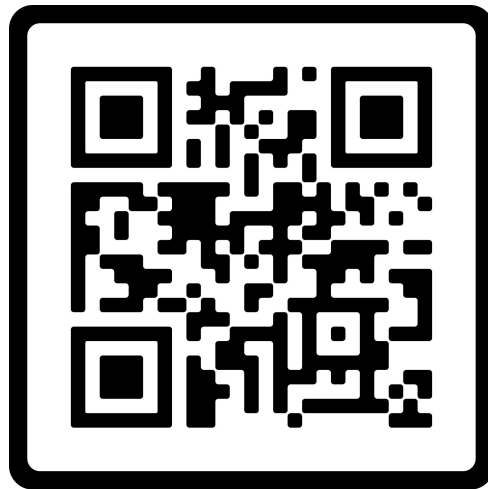
A Student-Run Short Course (SRC) conducted by the Student Academic Council

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Logistics

- ❑ 3rd to 12th Apr, 10 PM to 11 PM. AB 7/209.
- ❑ All important updates will be communicated through Google Classroom.
- ❑ Earlier Parts :
 - ❑ <https://github.com/Reuben27/ReactJS-SRC>
 - ❑ <https://github.com/Reuben27/Web-Development-SRC>
- ❑ P/F course. Attendance compulsory.



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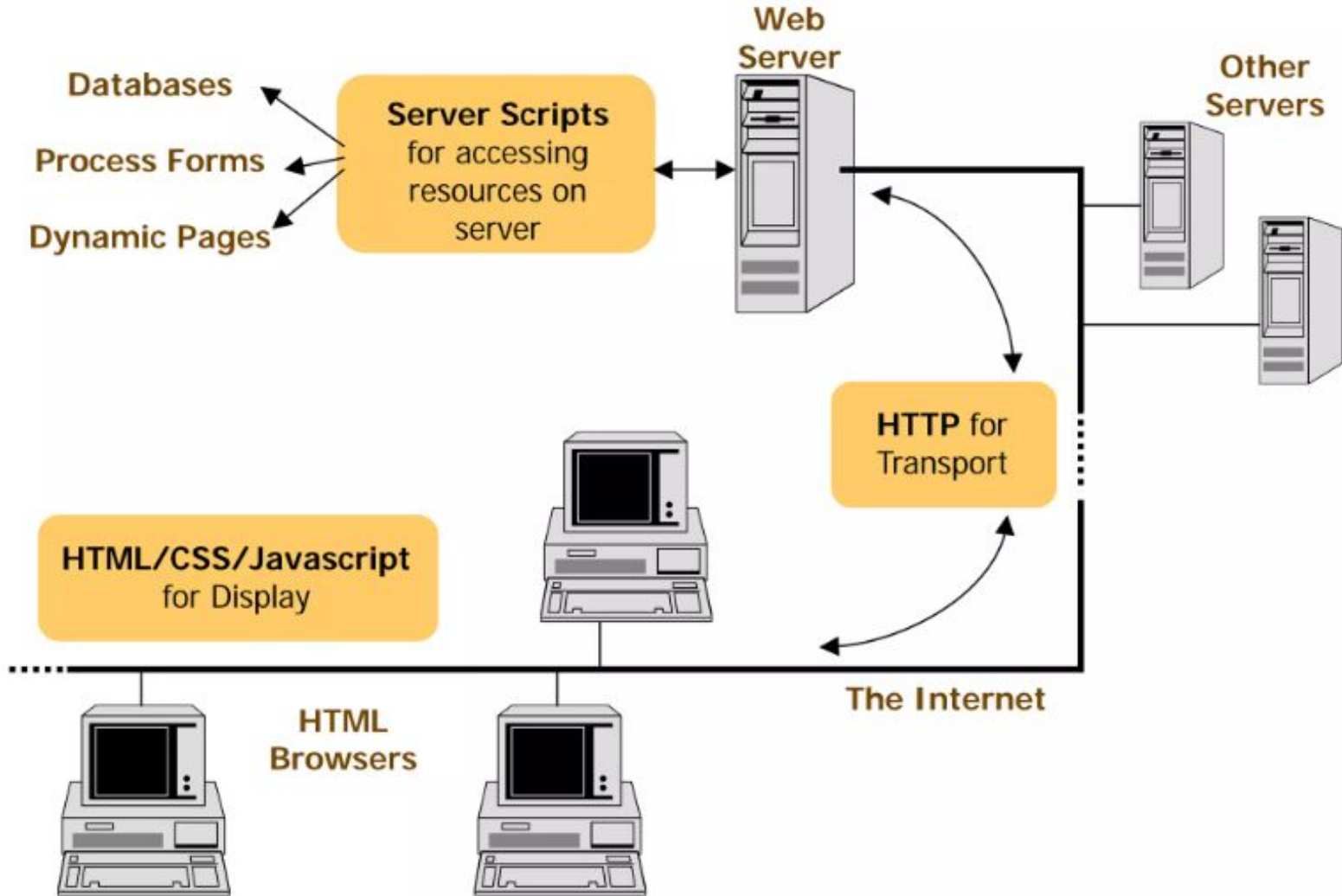
What is Web Development? Why learn it?

- ❑ Creating, building and maintaining websites. It can range from working on a single page static site to managing complex web applications such as ecommerce sites, social networking sites, CMS, etc.
- ❑ Around 15.1 billion web enabled devices. Expected to almost double by 2030.
- ❑ Demand is still high for web developers in 2023. AI tools ain't perfect but can acts as tools to being productive.
- ❑ For any framework you use in the future, basics of how the web works, HTML, CSS is going to be required.



How the web works?

- ❑ The World Wide Web is all about communication between **clients and servers**.
 - ❑ Clients - browsers such as Chrome, Firefox.
 - ❑ Servers - computers hosted on the cloud.
- ❑ HyperText Transfer Protocol (**HTTP**) connects you and your website request to the remote server that houses all website data. It's an internet protocol for transmitting hypermedia documents such as HTML. Foundation of data communication for the web.
- ❑ Domain Name System (**DNS**) is a hostname for IP address translation service. Protocol for message exchange between clients and servers.



What's the Difference?



HTML

Hypertext Markup Language

Create the structure

- Controls the layout of the content
- Provides structure for the web page design
- The fundamental building block of any web page



CSS

Cascading Style Sheet

Stylize the website

- Applies style to the web page elements
- Targets various screen sizes to make web pages responsive
- Primarily handles the "look and feel" of a web page



Javascript

Increase interactivity

- Adds interactivity to a web page
- Handles complex functions and features
- Programmatic code which enhances functionality

HTML



HTML the Skeleton

CSS



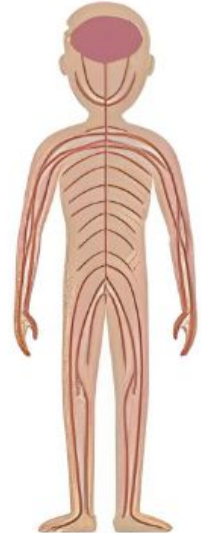
CSS the Skin

JS



Javascript the Brain

In Summary:





HTML (HyperText Markup Language)

- ❑ HTML is not a programming language but is a markup language. Markup languages prepare a structure for the data or prepare the look or design of a page. These are presentational languages and it doesn't include any kind of logic or algorithm
- ❑ A markup language is a set of markup tags.
- ❑ The tags in the HTML language are not displayed in browser, but the browser uses these tags to interpret the content of the page.
- ❑ HTML is not case sensitive.



Structure

- ❑ The `<!DOCTYPE html>` declaration defines that this document is an HTML5 document
- ❑ The `<html>` element is the root element of an HTML page
- ❑ The `<head>` element contains meta information about the HTML page
- ❑ The `<title>` element specifies a title for the HTML page (which is shown in the browser's title bar or in the page's tab)
- ❑ The `<body>` element defines the document's body, and is a container for all the visible contents, such as headings, paragraphs, images, hyperlinks, tables, lists, etc.

```
<html>
```

```
<head>
```

```
<title>Page title</title>
```

```
</head>
```

```
<body>
```

```
<h1>This is a heading</h1>
```

```
<p>This is a paragraph.</p>
```

```
<p>This is another paragraph.</p>
```

```
</body>
```

```
</html>
```



VS Shortcut for adding Structure (! or Shift+1)

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4  |   <meta charset="UTF-8">
5  |   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6  |   <title>Document</title>
7  </head>
8  <body>
9  |
10 </body>
11 </html>
```

HTML Attributes

- ❏ Attributes provide additional information about HTML elements. Always specified in the start tags.
- ❏ ``



plural noun: **attributes**

/ˈatrɪbjʊ:t/

1. a quality or feature regarded as a characteristic or inherent part of someone or something.
"flexibility and mobility are the key attributes of Britain's army"

Similar:

quality

feature

characteristic

trait

element

aspect

property



2. **COMPUTING**

a piece of information which determines the properties of a field or tag in a database or a string of characters in a display.

CSS : Casacading Style Sheet

1.You can add CSS to your webpage by:-

- Making a separate CSS file and linking it to the HTML file, or
- Adding CSS content using the style attribute/tag.

```
<link rel="stylesheet" type="text/css"  
href="._index.css">
```

```
<h1 style="font-weight: bold; font-size: 42px;"  
  I will be bold and 42 pixels!  
</h1>  
  
<p style="color: blue;">I will be blue!</p>
```

2. If you wish to add some style/effect to a certain element in the HTML file, you need to tag that element before applying changes to it.

There are different ways to tag an element like:

- Using Universal Selector. {Not used commonly}{*}
- Using element selector. For eg:- button, img, h1 etc.
- Using id and class tags.(#id {...}, .class {....})

3. Order of specificity: Inline styles>ID>class>element.

CSS Selector

Priority Order

Inline Style>ID>Class>Element

① Element

```
div{  
  height: ;  
  background-color: ;  
}
```

② Class

```
.element-class{  
  height: ;  
  background-color: ;  
}
```

③ ID

```
#element-id{  
  height: ;  
  background-color: ;  
}
```

④ Inline Style

```
<h1 style="font-weight: bold; font-size: 42px;">  
  I will be bold and 42 pixels!  
</h1>  
  
<p style="color: blue;">I will be blue!</p>
```

SELECTORS

CASCADE

SPECIFICITY

INHERITANCE

IMPORT

ATTRIBUTE SELECTORS

PSEUDO-CLASSES

PSEUDO-ELEMENTS

COLORS

UNITS

URL

CALC

Z-INDEX

CSS GRID

BACKGROUNDS

COMMENTS

CUSTOM PROPERTIES

FONTS

TYPOGRAPHY

BOX MODEL

BORDER

PADDING

MARGIN

BOX SIZING

DISPLAY

POSITIONING

FLOATING AND CLEARING

CENTERING

LISTS

MEDIA QUERIES AND

RESPONSIVE DESIGN

FEATURE QUERIES

FILTERS

TRANSFORMS

TRANSITIONS

ANIMATIONS

NORMALIZING CSS

ERROR HANDLING

VENDOR PREFIXES

CSS FOR PRINT

JAVASCRIPT - BASICS

BASICS | Variables

Basics

Variables

Data Types

Arrays

String Methods

Loops

Conditional

Functions

HTML DOM

1. `console.log()`

Object that writes a message to the browser's console,

2. `alert`

A method of the window object that displays a message box with a specified message and an OK button.

BASICS | Variables

Basics

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HTML DOM

1. var

*Declarations are globally scoped or function scoped.
It can be updated or re-declared.*

2. let

*Declarations are block scoped.
Can be updated but not redeclared*

3. const

It cannot be updated or redeclared

BASICS | Data Types

Basics

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HTML DOM

1. Undefined

A variable that has not been assigned a value.

2. Null

A variable that has been explicitly assigned the value null.

3. String

A sequence of characters enclosed in quotes.

4. Number

A numeric value.

5. Boolean

A logical value that can be either true or false.

BASICS | Arrays and Objects

Basics

Variables

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HTML DOM

Arrays

Syntax `const array_name = [item1, item2, ...];`

1. Add/Remove

***push** - Add element to the end*

***pop** - Remove element at the end*

***shift** - Add element to the start*

***unshift** - Remove element at the start*

2. Sort,Reverse

A numeric value.

Objects

Objects are variables too. But objects can contain many values.

Syntax `const object_name = {label1: value, label2, value, label3: function()};`

BASICS | String Methods

Basics

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HTML DOM

1. Case

toUpperCase - Change the case to upper

toLowerCase - Change the case to lower

2. Substring

slice(start,end) -

split(delimiter) -

3. Find and Replace

find(char) -

replace(searchValue,replaceValue) -

replaceAll(searchValue,replaceValue) -

BASICS | Loops

Basics

Variables

Data Types

Arrays

String Methods

Loops

Conditional

Functions

HTML DOM

1. for

Regular for loop.

```
for (expression 1; expression 2;  
    expression 3) {  
    // code block to be executed  
}
```

***for of:** It loops through the values of an iterable object..*

```
for (variable of iterable) {  
    // code block to be executed  
}
```

2. while

The while loop loops through a block of code as long as a specified condition is true.

```
while (condition) {  
    // code block to be executed  
}
```

BASICS | Conditional Statements

Basics

Variables

Data Types

Arrays

String Methods

Loops

Conditional

Functions

HTML DOM

1. if/else

if...else statement is used to execute a statement if a specified condition is truthy. If the condition is falsy, another statement in the optional else clause will be executed

```
if (condition) {  
    // block of code to be  
    executed if the condition is  
    true  
} else {  
    // block of code to be  
    executed if the condition is  
    false  
}
```

2. switch/case

Perform different actions based on different conditions

```
switch(expression) {  
    case x:  
        // code block  
        break;  
    case y:  
        // code block  
        break;  
    default:  
        // code block  
}
```


BASICS | Functions

Basics

Variables

Data Types

Arrays

String Methods

Loops

Conditional

Functions

The function is a block of code designed to perform a particular task.

Syntax

```
function name(parameter1, parameter2, parameter3) {  
    // code to be executed  
}
```

HTML DOM



Thank you!