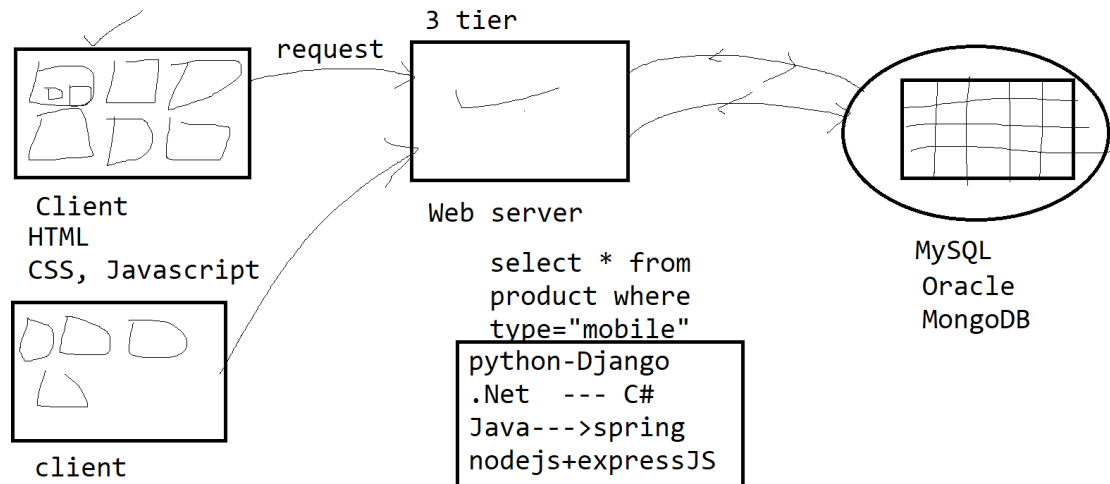


## Types of applications

1. Single user
2. Web application
3. Mobile Application
4. Web Services

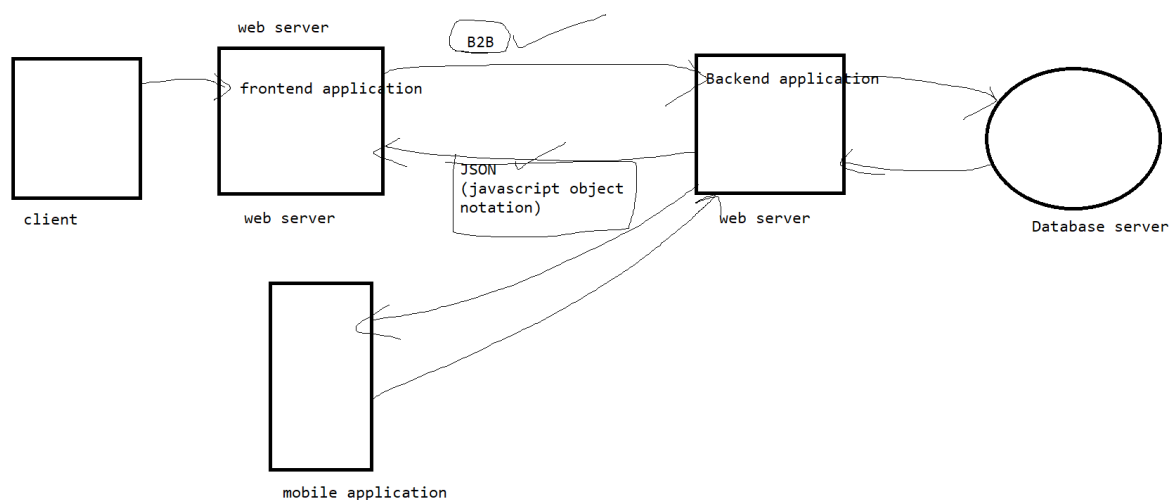
### Web Application:

Any application which accepts data from database /web service and converts the data into customer understandable format, by adding presentation logic. (means converts it in to HTML page)



### Web service:

The application which gets the data from database and transfers the data to frontend application in either JSON format, XML format, text format.



## HTML (Hypertext markup language)

Pages are of two types

1. Static web page --- the page looks same on multiple client machines  
Example --- blogs, tutorial site, news paper  
Technology --→ html, CSS
2. Dynamic web page--- if the page look and feel, or contents are different for different users based on user's i/p  
Examples: flipcart.com, bookmyshow.com  
Technology-→ html,css,javascript

## HTML

1. Every begin tag should have end tag.
2. Tags are predefined tags, and not case sensitive.
3. The file extension has to either html or htm

## Editor

### Visual studio code

1. To download visual studio code  
<https://code.visualstudio.com/download>  
download user installer
2. Using exe/msi file install it
3. Got to windows start button--→ open visual studio code
4. File→open folder--→select the folder
5. View>extension> search for live server> install the extension
6. To run the html file -→ use go live option which is at the bottom of the screen  
Or right click in editor window > open with liver server

Header tags	6 header tags are there, these tags are called as semantic tags	h1, h2, h3, h4, h5, h6
Lists	There are 3 types of lists, in every list there are many list items <li>	Ol --- > type , start Ul -→ type dl
Anchor tag	It is used to display links on the page. Using this we can open a new file, or a url or section of the same page, or section of the other page, or blank email with email address written in To	A--→Href, name, target
Body	The contents in this tag will appear in browser window	Body-→ bgcolor, background, alink, vlink, link, text
table	To display data in tabular format, then use table tag	Table--→border, width, cellpadding, cellspacing, bgcolor Thead tbody Tr--→bgcolor, align Th→ colspan, rowspan, bgcolor, align, valign  Td -→colspan, rowspan, bgcolor, align, valign
Br	To add a new line character, use br tag, It is empty tag	

Hr	To draw a horizontal line	Hr-align, width, size, color
Img	To display image on the screen	Img--→ border, vspace, hspace, width, height, alt

Product id	Product name	quantity	price
1	lays	40	40
2	nachos	50	150
<th colspan="4"> Product details </th>			
Product id	Product name	quantity	price
<td rowspan=2> 1</td>	lays	40	40
nachos		50	

### Types of tags

Empty tag	The tag which never contains any data between begin and end tag Examples:   , <hr/> <input/>
Semantic tags	The tags which gives extra information about the contents, are called as semantic tag Examples: H1, h2,...h6, header, footer, nav, section, article, main.
tag	Example P, div, table
Auto closable tags	The begin is closed automatically when the next occurrence of the same tag is written. Examples -> tr, li

### Form tag attribute

method	Get-> sends the data to server via query string, the data will be transferred via header of request object. It is not secure data transfer because the data will be visible in the browser url bar (Querystring-> it is a string which is concatenated to the url, separated by ?, it contains key ,value pairs separated by &)  Post-> to send data via body part of request object, it is a secure way of data transfer because data will not be visible on the screen When the data you want to transfer to the server is sensitive or if size of data is very big then use post method  By default value of method attribute is get
Action	It is a url of a program on the server, to which you want to send the data

To practice regular expression

<https://regex101.com/>

CSS3(Cascading styles sheet)

Rules for formatting

Selector{

Property:value;

Property:value;

}

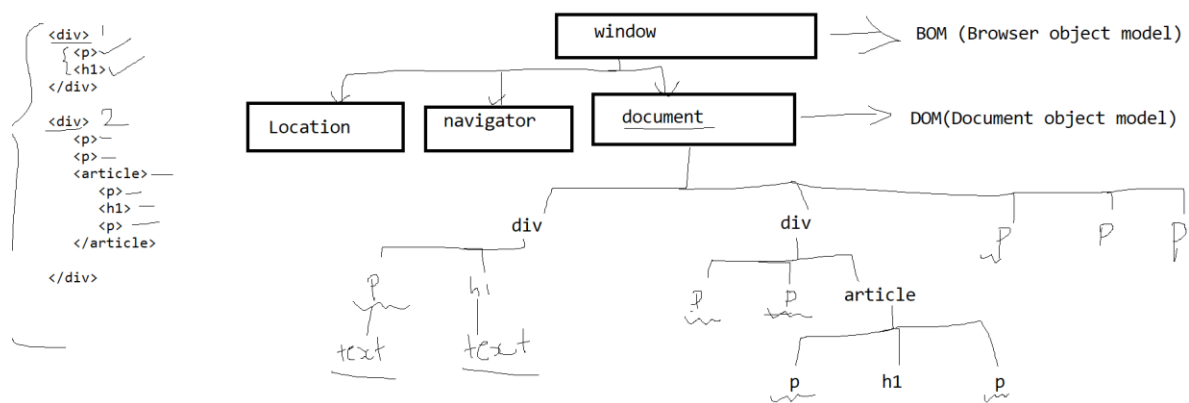
Adding style attribute in the tag

Css are of 3 types

1. Inline- if the rules of css are added in the begin tag, then it is called as inline css, It is useful if you want to apply the style only to one tag
2. Embedded- if the rules of css are added in the style tag, inside head tag, then it is called as embedded css, It is useful if you want to apply the style to multiple tags within same page
3. External css---if the formatting is written in a external file, and then the file is linked with the HTML page. Then it is called as external css.
  - a. The extension of the file must be .css
  - b. When you want to give same look and feel to multiple pages in the web application, then use external css
  - c. To link external css in HTML page use <link rel="stylesheet" href="<cssfilename>">

Types of selector

Tag selector	P, h1, div
Universal selector	*
Id selector	#myid
Class selector	.myclass
Ancestor descendent	Div p
Parent child	div>p
Attribute selector	Div[name]
Attribute value	Div[name=xxx]
Pseudo classes	:hover, :first-child :nth-child :last-child
a:link	To default color
a:visited	The color after visiting the link
a:active	The color when the link is active
P::first_line	The first line of p tag
P::first_letter	The first letter in p tag



10 p tags -- 5 p tags

5 h1 tags --- 2 h1 tags

Position property

Values are ----static, relative, absolute, sticky, fixed

Left, right, top, bottom ---- these properties are applicable only when the position is not static

1. Static value ---left right top and bottom will not work
2. Relative ----left , right, top , bottom will work, it will follow natural ordering
3. Fixed--> tis will keep the element always at the fixed position
4. Absolute--> top, left, right, bottom will be calculated which respect to nearest positioned parent
5. Sticky--> it toggles between relative and fixed, it is relative till the given top and bottom are false, otherwise it will change to fixed

To make the web responsive use media queries

@media (only) <device> and (min-width:<pixel>) and (max-width:<pixel>){

Body{

}

H1{

}

}

## JavaScript

It is a scripting language.

To give dynamic effects to the page

AJAX requests can be used.

Validation of a data can be done

### Types of javascript

1. External javascript
2. Internal javascript

<script> tag can be added in <head> section as well as <body> section

<script> tag can occur any number of times in the file;

If the code is written inside the function, then it is preferable to add in the head section

Otherwise put <script> tag in the body tag

Javascript uses DOM(Document Object Model)

DOM is in memory representation of HTML page, when HTML page gets loaded in browser, internally it gets converted into a tree structure, whose root is document object, it is called as DOM

### Variables in javascripts

1. Variables are case sensitive
2. Variable should start with alphabet, and can be a combination of alphabet and numbers
3. Punctuation characters are not allowed, space is not allowed

To declare variables, we can use var, let and const

| var  | let                                     | const                                    |
|--|---|--|
| Duplicate declaration is allowed               | Duplicate declaration is not allowed    | Duplicate declaration is not allowed     |
| Var v; initialization is not compulsory        | let a; initialization is not compulsory | Const c=23; initialization is compulsory |
| These variables are global, or function scoped | These variables are always block scope  | These variables are always block scope   |
| Hoisting of variable is allowed                | Hoisting of variable is not allowed     | Hoisting of variable is not allowed      |

### Data types in JavaScript

Number--> int or float type numbers

String ---> strings are enclosed in " " or "

Boolean---> true, false

Object

The variable is dynamically typed, the type of variable will be decided at runtime based on value assigned to it

Var v=23;

V="sdjfklds"

### Operators

#### Arithmetic operators

+, -, \*, /, %, ++, --

#### Logical operators

&&, ||, !

#### Relational operators

>, <, >=, <=, ==, !=, ===, !==

=== and !== are strict checking, it checks value and data type both

A html element can be disabled or it can be readonly

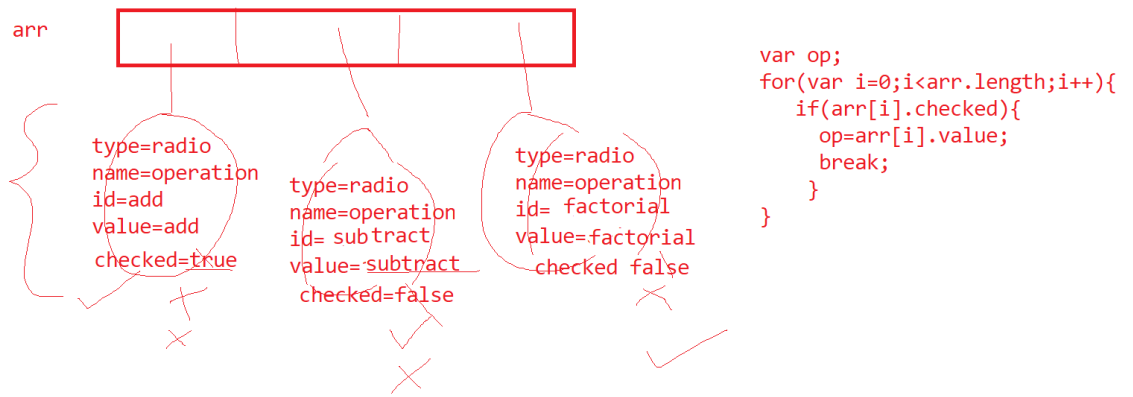
In both cases user will not be able to use the element in html page

Disabled → then on submit event, data will not be send to the server

Readonly → then on submit event, data will be send to the server

### Number function

|                 |  |
|-----------------|--|
| isNaN()         | To check whether data contains minimum one alphabet, then this function will return true, but if all are digits then it returns false          |
| isFinite()      | To check whether data contains all digits, then this function will return true, but if it contains minimum one alphabet, then it returns false |
| Math.floor()    | It will remove all the digits after decimal point and keep the number as it is   |
| Math.ceil()     | It will remove all the digits after decimal point and shows the next number  |
| Math.round()    | It will keep the number of digits after decimal point based on precision and shows the next number if the digit > 5 otherwise keep it as it is |
| Math.truncate() | It will keep the number of digits after decimal point based on precision and shows the same number even if the digit > 5 or not                |
| Math.random()   | To generate random number between 0 and 1  |



1. Rest parameter (...) it is added in ECMA 6 version to use variable number of parameters in function.

#### String functions

|             |  |
|-------------|--|
| charAt      | To retrieve the character at the given index position                    |
| toUpperCase | To convert String in uppercase   |
| toLowerCase | To convert String in lowercase   |
| split       | To break the string in parts at some delimiter                           |
| replace     | To find and replace, it finds the pattern and replace it with new string |
| match       | To find the pattern, returns array of all occurrences                    |
| Search      | To find the pattern, and display the position of first occurrence        |
| slice       | To get the portion of the string   |

2. Array functions

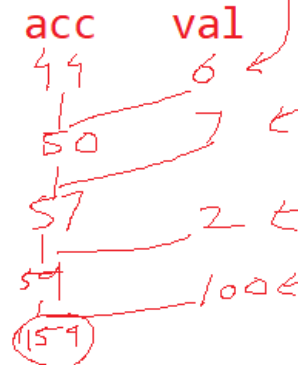
|           |   |
|-----------|---|
| indexOf   | It finds the index position of the first occurrence of the given value  |
| Push      | It adds the element at the end of array   |
| Pop       | It removes the element from the end of array  |
| Shift     | It removes the element at the beginning of array  |
| unshift   | It adds the element at the beginning of array   |
| Splice    | It is used for add element at the particular position, delete the element from the given position, replace the elements at the given position by new values |
| Sort      | Sort the array in ascending/descending order, by default array gets sorted based on ascii values  |
| Reverse   | Reverse the array   |
| findIndex | Find the index position of the first value which satisfies the given condition  |
| find      | Find the first value in the array which satisfies the given condition   |
| Filter    | Find all the values which satisfies the given condition   |
| Map       | It maps every value in the array to new value based on given expression   |
| Reduce    | It reduces all the values in the array to a single value  |

#### Spread operator

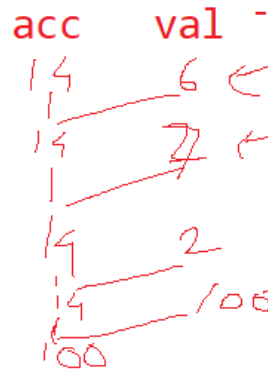
... --> spread operator



```
arr.reduce ((acc, val) => acc+val)
```



```
arr.reduce ((acc, val) => acc + val)
```



## Sorting

Handwritten diagram showing a cycle of numbers: 12, 34, 23, 4, 1. The numbers are arranged in a circle, connected by arrows, and each number is underlined.



```
var arr=[12,13,14,5,6,7,2,100]
```

```
arr.filter((a,index,ar)=>a%7==0)
```

14, 7

```
var arr=[12,13,14,5,6,7,2,100]
```

```
arr.map(a=>a*a)
```

144, 169, 196, 25, 36, 49, 4, 10000

Design the application to perform crud operation on names array

```
names=["Rajan","Revati","Atharv","Tanaya"]
```

name :

Rajan  
Revati  
Atharv  
Tanaya