[S2:L13]

* DNS takes the domain name and convert it into IP address
* The request is made using the HTTP finding the server, hopping from one server to another.
* The server figures out what should it sent back, the server interacts with the database and pulls out the required data and respond with the combination of html, css, js.
* Browser then converts the response from server from a non-readable form to a human readable form.

[S2:L14]

* Front end is the stuff that you see and interact with: HTML, CSS, JS.
* Backend is everything other than front end.
* Frontend is what is platered and sent on the table if you go a restaurant and what happens in the kitchen is the backend.
* Dynamic page changes every sec because something changed at the backend when you refresh the page e.g. google news. Static page always stays the same.
* HTML is the skeleton of the page. CSS is the skin(flesh) to the HTML skeleton. JS is the functionality/interactivity of the page.

[S3:L24]

* <div> is a block level element whereas <span> is a in-line level element.

[S3:L25]

* The attributes take on a key-value pair.
* <img> is a self-closing tag
* <a> is a closing tag, if u wont mention “http” then it would consider the link as file protocol (relative path).

[S4:L32]

* We make a **get** request when we are asking for some information (doesn’t change the database) and we make a **post** request when we want to send that data to somewhere (adding something to the database).
* **<form>** takes an **action** (where it sends the input data) and the **method** (post/get), by default its GET request.

[S4:L37]

* **Checkbox** is used where we can pick multiple choices whereas in the **radio** button we only can pick one
* **Select** tag gives us the drop-down menu. We use it with the **option** tag.
* **Name** is like a key and **value** is the answer to that key.

[S5:L45]

* Hexadecimal color scheme: #FF0000 is red, ##00FF00 is green, #0000FF is blue.
* rgba color scheme we have 4 channels to fill out, where the 4th channel is for transparency (red 0🡪255, green 0🡪255, blue 0🡪255, alpha 0.0🡪1.0).

[S5:L46]

* background-repeat : no-repeat, doesn’t repeat the image even if the image is small to fit the page.
* background-size : cover, covers the entire page.
* A border has (width, style, color). None of them would work without the other, so would have to set all 3. We can set property individually or all in one line.

[S5:L48]

* An **ID** is a way to single out an element. We use ID to refer to special element.
* In CSS to select ID we use #, and for class we use ‘.’
* Text-decoration: line-through. Gives a line through a text.
* IDs are used for one element only, it can occur only once in the page.
* Class is just like an ID, but a same class name can be associated with different element, and can occur more than once on a page.

[S5:L49]

* Google inspector is a great tool to inspect elements of different site and play with it.

[S5:L50]

* **Types of selectors**:

1. Element, e.g. li {};
2. Class, e.g. .birth{};
3. ID e.g. #age{};
4. Star e.g. \*{};, changes applies to everything in the html.
5. Descendant, it takes at least 2 element selectors that are nested i.e. ancestor and descendant of each other e.g. ul li {};
6. Adjacent selector takes 2 siblings that are not nested within each other e.g. h4 + ul {};
7. Attribute selector: selects all the elements with a particular attribute e.g. a[href = “http://google.com”]{}; or input[type = “checkbox”]{};
8. Nth of type, selects every nth values of a type e.g. ul:nth-of-type(3){}; it selects the third one from every group of ul. Ul:nth-of-type(even){} selects every other even number in the group of ul.

[S5:L52]

* Inheritance in CSS, all the children inherit the properties of the parent. E.g. changing the color of body changes color of everything to that color.
* The selectors are assigned a numeric value to calculate the specificity.
* Selectors in terms of specificity: in-line > ID’s > Class > type (e.g. element , descendant, adjacent).

[S6:L57]

* Cssfontstack.com tells what % of OS supports different fonts.
* Font-family, gives the types of font.
* Font-size, controls the size of the font.
* If u r not sure what font size to use, then you can inspect it in the browser.
* Ems are used to specify the size relative to its parent size without specifying the size for itself, e.g. div {font-size : 200px;} p{font-size : 2.0 em;}, so with this the font-size of the paragraph would be twice the font-size of div its contained in.

[S6:L58]

* Font-weight controls the intensity of the font.
* Line-height controls the spacing between the lines.
* Text-align: aligns the text to either left, right or center.
* Text-decoration: gives underline, line-through to a text.

[S6:L61]

* Every element has a box around it.
* When we create a border, it extends to all the way to the end of the screen. It can be controlled by using the width property. Its better to use width in % because its relative to the parent width.
* A box has 4 parts. (contents, padding, border, margin).
* Between the text and border there is padding.
* outside of the border is the margin, it adds spacing between the elements.
* You can set border, margin, padding for left, right, top and bottom.

[S6:L65]

* To form a grid i.e. making one item appear after another, use float : left; it also takes out the space between different elements.

[S7:L74]

* Bootstrap is just an HTML, CSS and JS file that you can include in your code without knowing how its done.
* Without bootstrap we would need dozen of lines of html and css to achieve the same thing.
* Don’t be an expert in memorization, be an expert in accessing that information.

[S7:L76]

* Class “Jumbotron” takes the entire width of whatever container we place it in.
* Important classes

1. Form-group, it adds some nice spacing between different elements of the form.
2. Form-control, makes the input boot strapified.
3. Form-inline, all the form goes in nice little one line.

[S7:L77]

* <nav> adds the navigation bar.
* For nav bar hamburger button to show the drop down menu u need to import bootstrap script and jquery script.

[S7:L79]

* Main reason to use bootstrap is because of its grid system.
* For grid system, u need to use div class= “row” to specify the row and class = “col-lg-1” to specify a column. U can have 12 columns per row. We can nest
* Grid system divides the screen into pieces and we can specify how much should each piece take.
* Grid has 12 units that we can designate to different component in the container by class = “col-lg-1”.
* We have 4 sizes (lg, md, sm, xs)Col-lg-1 means that when the screen is at the large size then the component should take 1 of the 12 units. Similarly col-md-6 means when the screen at medium size then the component should take 6 of the 12 units.
* With class=”container” everything goes in the middle.

[S7:L82]

* To scale the image down to the size of the component in the grid use class = “thumbnail”
* Span is in-line and div in in-block.
* To make the navbar stick to the top even when scrolling use class = “navbar-fixed-top”
* To add icons, use glyphicon.
* The width of the navbar is 50px.
* FontAwesome has a huge collection of icons even more than bootstrap glyphicons.
* With tag html{height: 100%} the image covers the whole screen when the size of the window reduces.
* To give a shadow effect use rgba(0,0,0,0.3).
* For background images
* background-position: center;
* background-size: cover;
* background-repeat: no-repeat;
* html{height: 100%}.
* Or alternatively, use bootstrap class “img-fluid”

[S8:L88]

* Software release stages: alpha 🡪beta 🡪 stable
* Changes from V3 to V4
* V4 has the flexbox, v3 doesn’t.
* unit change from px to rem.
* We need to include popper, js, jquery cdn.
* Font-size increased from 14px to 16px.
* The nav, grid, cards now come with flex box.
* Thumbnails, panels are now gone, and we have cards.

[S8:L94]

* “Blockquotes” are used for citation.
* There are a lot more border classes and shapes and colouring for the border.
* Margin and paddings are based on rem rather than px.
* For margin: (m)(where: t, b, l, r, x, y )-(what size: 0🡪5), m-0 means that 0 margin on all sides and mb-5 gives margin on bottom of 5 units relative to a spacer element in bootstrap, mx-5 gives left and right a margin 5 and my-0 removes margin from top and bottom.
* For padding: (p)(where)-(what size), p-0 means that 0 padding on all sides and pb-5 gives padding on bottom of 5 units relative to a spacer element in bootstrap, px-5 gives left and right a padding 5 and py-0 removes padding from top and bottom.

[S8:L96]

* There are five display sizes: xs, s, m, l, xl.
* We have 5 display sizes in V4.
* To align the text in the center use class text-center.
* Breakpoints:
* Format for xs:- (m/p)( t, b, l, r, x, y)-(0🡪5)
* Format other than xs: (m/p)( t, b, l, r, x, y)-(s, m, l, xl)-(0🡪5)
* Breakpoints allows specifying padding/margin on different screen sizes for different sides, e.g. p-s-5 means that apply a padding of 5 on all sides when screen size small or above. NOTE: for extra small we don’t specify ‘xs’ we just say p-0 which means that apply padding 0 on all sides for screen size xs and up.

[S8:L97]

* Unlike V3, In V4 we have the control of when to expand the navbar at different breakpoints e.g. as sm, md, lg, xl and we can also give it a background e.g. bg-dark would give a dark background.
* Class = “navbar navbar-expand-xl navbar-dark bg-info” would give a navbar with light text and a blue background and would expand only when the display size is xl or above.

[S8:L98]

* Display utilities: -
* Format for xs: d-(value e.g. none, inline, block, table etc.).
* Format other than xs: d-(breakpoint i.e. sm, md, lg, xl)-(value e.g. none, inline, block, table, flex etc.).
* it allows us to hide something at some breakpoint e.g. <h1 class= “d-xl-none”>HELLO</h1>, would hide HELLO when the breakpoint reaches extra large.
* <h1 class= “d-none d-lg-block d-xl-none”>HELLO</h1>, would hide HELLO on every break point except at large.

[S9:L99]

* Flexbox allows us to position different elements in the container it’s contained in pretty easily, it also changes it height accordingly.
* Everything must be in the class “d-flex”
* For the x-axis (right 🡪left):
* Class Format: justify-content-(breakpoint i.e. sm, md, lg, xl)-(value i.e. start(by-default), end, center, between, around)
* Justify-content-start is by default which goes from left🡪right, justify-content-end makes the contents appear from right🡪left.
* Justify-content-between puts the element in the extreme ends or with the most spacing between them.
* Justify-content-around puts space between and around the contents.
* For the cross-axis (top 🡪 bottom):
* Class Format: align-items-(breakpoint i.e. sm, md, lg, xl)-(value i.e. start, end, center, baseline, stretch(by-default) )
* You can also align each item individually by replacing the ‘item’ in format with ‘self’. There is no justify-self

[S9:L100]

* To allow the contents take up the full size in the container its contained in weither horizontally or vertically:
* Format for xs: flex-(column/row).
* Format other than xs: flex-(breakpoint i.e. sm, md, lg, xl)-(column/row).
* Flex-column would give us the items in the flex in rows stretching horizontally, it automatically increases the height. Flex-column-reverse would give us item in rows but now the order is reverse from bottom🡪top. Similarly, we can add breakpoints for different view on different screen sizes.
* Flex-row would give us the items in the flex in columns stretching vertically. Flex-row-reverse would reverse the order. Similarly, we can add breakpoints for different view on different screen sizes.

[S9:L101]

* Because the navbar comes with flexbox, we can apply all flex properties like justify, align, flex-(column/row) to the navbar items.
* We can add breakpoints to make the navbar look different at different screen-size.

[S9:L102]

* In V3, the xs was less than equal to 768px but now in V4 xs is less than equal to 576px. so sizes have shrink down a bit.
* In V3 we specifies ‘xs’ size but now like padding, margin and other stuff we don’t specify ‘xs’.
* In both V3 and V4 we have 12 columns.
* The grid, like nav, is also built with flexbox.

[S9:L104]

* We can use flex utilities with cards.
* A card can have an images, header, footer, buttons, text, blockquotes etc.

[S9:L108]

* “aria-label” property helps defining a label for the buttons so it could give a meaningful explanation when using screen reader.
* To make the nav-bar stick to the top even on scroll use class = “fixed-top”

[S9:L109]

* “img-fluid” class automatically scales the image on different display sizes.
* Media query allows us to change the appearance of our website(e.g. the text size, background etc) when it reaches some screen size.
* Bootstrap class ‘order’ deals with which content should be shown first and which later e.g. order-1 means that the content should always be shown first whereas order-md-2 means that for screen size medium and above show it on the second place.
* without fixed-top the items would appear after nav border but within the items appear on the nav itself

[S10:L113]

* we can write the JavaScript in the chrome console.

[S10:L114]

* JavaScript has 5 primitive data types
* Numbers, weither positive, negative, float double etc.
* strings, anything inside either double or single quotes.
* boolean, either true or false.
* Null
* Undefined.
* JS escape character ‘\’.
* You can use single quotes inside double quotes without any escape character.

[S10:L116]

* Variables in JS doesn’t have a data type itself.
* U can reassign a variable of number type to e.g. string or any other, therefore JS is dynamically typed.
* Variables are either camelCase, snake\_case, kebab-case. JS variables must be camelCase.

[S10:L117]

* Uninitialized variables have a type “undefined”.
* Undefined means something that doesn’t have a value yet whereas null means explicitly nothing.
* Commenting in JS using //
* == doesn’t check the type e.g. 5 == “5” is true, null == undefined is true.
* === checks the type e.g. 5 == “5” is false, null === undefined is false.
* NaN means not a number.

[S11:L127]

* JS associates truthy and falsy value with every thing when evaluated in a boolean context.
* Falsy values: false, 0, “”, null, undefined, NaN.
* Truthy values: everything other than falsy above.
* Keep your code DRY (don’t repeat yourself).

[S12:L143]

* naming functions follow the same convention as variables i.e. camelCase.
* Every function returns something and if we dont have a return statement it returns undefined.
* In console of google chrome the return value would appear besides a little left-arrow.

[S12:L146]

* Two ways of defining functions:
* Function declaration: function fun{}
* function expression: var fun = function{}

[S12:L150]

* variables are passed by value i.e. a copy of variable is used in the functions.
* If you have 2 variables with the same name, one local and the other global, then inside the function the local variable would be used instead of global.
* Higher order functions are functions which takes functions as their parameters or which returns another function. E.g. setInterval()

[S13:L154]

* Two ways of initializing an empty string;
* Var friends = [];
* Var friends = new Array();
* Arrays don’t need to have the same type of data.
* forEach format: array.forEach(somfunction, index); e.g. to print the contents in ‘array’ you can use forEach as array.forEach(function(I, index){console.log(index “:” i)});
* NOTE: forEach works only for arrays so if something is not an array e.g. is a list then use the for loop.

[S13:L165]

* Just by mentioning the name of the function, the function wont run, you also need to put the brackets.
* Array.prototype contains all the methods for the array.
* Creating your own functions:
* Array.prototype.myForeach = function(func){func(this[i])};

[S14:L166]

* Objects property has a key-value pair.
* To create an object var obj = {key-value}
* To retrieve a property u can either:
* use dot notation e.g. obj.age;
* use bracket notation e.g. obj[“age”]
* if we have the property key with a space in it or starts with a number then dot notation would not be valid and hence bracket notation would be a better choice.
* Two ways to initialize an empty object;
* Var obj = {};
* Var obj = new Object();

[S14:L171]

* We can add methods as a property of an object and its called functions.
* Underscore is a popular javascript library.

[S15:L175]

* DOM (document object model) is an interface between the JS and HTML + CSS. Basically a bunch of JS methods that we can use to interact with out HTML and CSS. We can change things, animate elements. DOM is how we make our JS to make things interactive.
* DOM connects our JS with HTML and CSS.
* Its called document object model because all the objects are modeled inside the one object called the document(it’s the root node).
* Html turns into bunch of JS objects and each object models one of the many html elements.
* Browsers take each html element and turns it into an object.
* Console.dir(document) prints out the entire document object.

[S15:L176]

* Just like in CSS we selects elements we do the same in DOM but a little differently.
* Var varH1 = document.querySelector(“h1”), selects the h1 element from the HTML and save it in the varH1 variable. When just varH1 typed on console, it would return us the html but its actually a JS object to visualize this u can use console.dir(varH1).
* We select some elements from the html and we manipulate them.

[S15:L178]

* 5 main DoM methods:
* document.getElementById() : selects one element because ID’s are different. No need to mention “#”
* document.getElementsByClassName() : selects all elements with the mentioned class name and returns all in a node list. document.getElementsByClassName("special")[0] would give the first element with class “special”. No need to mention “.”
* document.getElementsByTagName() : selects all the element that match the tag name and returns all in a node list.
* document.querySelector() : selects and returns the first matching css-style selector. For classes we use ‘.’ And for ID’s we use ‘#’ e.g. document.querySelector(“#bomb”), selects the first element with ID = “bomb”. You can use all sorts of CSS selectors in the brackets. You cant index because it returns only one element.
* document.querySelectorAll() : selects and returns all matching css-style selector. For classes we use ‘.’ And for ID’s we use ‘#’ e.g. document.querySelectorAll(“#bomb”), selects all elements with ID = “bomb”. You can use all sorts of CSS selectors in the brackets. document.querySelectorAll(".special")[0] would give the first element with class “special”.
* we can replicate the above 3 with querySelector.
* JS should only control the behaviour of the structure.

[S15:L181]

* To manipulate the **CSS properties** use either:
* a class or
* calling the style object properties on it.
* We can define a class in CSS and add in our JS file.
* By adding classes to the JS we ensure sepration of concern by making sure that we are not doing any CSS related work in our JS file.
* classList is a list of classes assigned to a given elements. It is not an array.
* Var.classList.add(“myClass”), assign class “myClass” to variable Var.
* Var.classList.remove(“myClass”), remove class “myClass” from variable Var.
* Var.classList.toggle(“myClass”), assign class “myClass” to variable Var if not already assigned and if already assigned then it removes it.

[S15:L182]

* To manipulate the **HTML TEXT** use either:
* textContent.
* innerHTML.
* textContent returns everything contained in the tag as a string. Then u can update or play around with it.
* innerHTML also returns a string but unlike textContent, it also returns the tag contained inside the specified tag.
* Its dangerous to update using the textContent and innerHTML as this will update whatever is contained inside of it e.g. maybe a list or a image.
* Difference: innerHTML treats what is given to it as an HTML but the textContent treats it as a text e.g. document.querySelector(“h1”).textContent = “<h1>NEW Header</h1>” would change the h1 to “<h1>NEW Header</h1>” but document.querySelector(“h1”).innerHTML = “<h1>NEW Header</h1>” would change the h1 to “NEW Header”.

[S15:L183]

* To manipulate the **HTML Attributes** (not the tags) use either:
* getAttribute(“img”).
* setAttribute(“img”,”pic.png”).
* Remember p, span, div, body etc are the tags and not the properties. Get/setAttributes works with properties only e.g. width, height, src, href etc.

[S16:L186]

* To make some element interactive add event listener, e.g. button.addEventListener(“click”, function(){console.log(“u clicked the button!”);})
* U can add more than one listener to an element and they would be executed in order i.e. first listener first, second goes next and so on.
* You can either alter the CSS, HTML, attributes in the function of event listener.
* Types of eventListener:
* click: triggered only when the element is clicked.
* change: triggered when the element is changed either by clicking or through keying in data manually or through any other ways.
* mouseover: triggered when mouse is hovered over an element.
* mouseout: triggered when the mouse is moved away from the element e.g. to cancel the effect of the mouse hover.
* U don’t have to create an anonymous function inside the eventListener, u can also create a named function and just provide the name without the parenthesis in the eventListener.
* Var.value gets the values from the input field and return it as a string.
* Var.style.display = “none”, hides the Var from the view and Var.style.display = “block” displays it.
* CSS property “transition” would make the property fades out after the specified seconds. E.g. button{transition : color 1.0s;} would make the color property of button to fade for 1 sec. you can also give “all” instead of “color” to make transition for every single property of the button. The transition property is not built-in to every single browser so we have to also add “-webkit-transition: color 1.0s” and also “-moz-transition : color 1.0s” for more browser support.
* “border-radius” property of CSS changes the border style.
* CSS property “outline : none;” disable the outline around e.g. a button, when its selected.
* Ternary operator : name===”Fahad”? correct = true : correct false;

JS functions list:

1. function str.replace(/-/,”\_”) replaces all ‘-’ with ‘\_’.
2. Functions toUpperCase() capitalizes e.g. “string”.toUpperCase() returns “STRING” whereas “string”.chatAt(0).toUpperCase() returms “S”.
3. Function slice(), slice the string and return the remaining portion e.g. “string”.slice(4) would remove the first 4 chars and return remaining i.e. “ng”.
4. indexOf() returns the index of the string or the character in the string e.g. if str = “Fahad Qayyum” then str.indexOf(“Q”) returns 6 whereas str.indexOf(“Qayyum”) also retruns 6. If the character or the word is not in the string e.g. ‘z’ then it returns -1.
5. Typeof function tells the type of the variable.
6. To typecast a var into a number we do Number(var).
7. Alert(), whatever is put in the brackets is prompted on the screen weither u put string, number etc.
8. Prompt(), is also like alert but with prompt we can ask user from input. Prompt takes the user input as a string, so using === to compare with a number wont work and we have to typecast.
9. We can use .length property on strings to get its length. It would also count the spaces. E.g. “H I:12”.length would return 6. **NOTE**: “hi\\”.length is not 4, its 3 because one is just an escape character.
10. Function setInterval(functionName, time) takes 2 parameter, one is the name of function and the other the time, this calls the given function after every time unit specified in the parameter. It returns a number which is passed to clearInterval() to stop it. It’s a higher order function.
11. Function setTimeout(functionName, time) takes 2 parameter, one is the name of function and the other the time, this executes the function after waiting the specified number of milliseconds.
12. Math.random() \* 5 generates numbers between 0-4 inclusive.
13. **Array functions**:
    1. Push() adds element to the end of the array and returns the new length of the array.
    2. Pop() removes the last element from the array and returns it.
    3. Unshift() adds something to the beginning of the array and returns the new length of the array.
    4. Shift() removes the first item from the array and return that item.
    5. indexOf() takes an item to find within the array and return its index, if multiple item found then it returns the index of the first one, if no item match the parameters the it returns -1.
    6. Slice(a,b) copies different portion of the array from index ‘a’ **inclusive** to ‘b’ **excluded**. Slice(a,a) would have no element to copy as it means include ‘a’ and exclude ‘a’.
    7. Splice(a,b) where ‘a’ is the index to delete and ‘b’ is the number of items to delete following that index. E.g. let array = [1,2,3,4,5] and array.splice(2,3) would delete 3,4,5.