18/02/2023

Day 10

Datastructure :-

javascript is limited in type of data structure available compared to other programming language Some of the most common are 1) Objects
2) Arrays
3) maps
4) Sets.

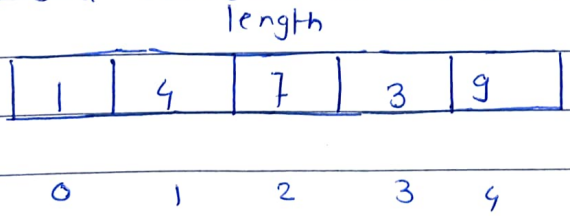
1) Objects - It is unaltered noniterable collection of key value pairs and we use objects when we need to store and later access a value under a key

e.g

```
Const car = {
    owner : 'ABC',
    color : 'red',

    engineOn : function () {
        console.log ('engine is on');
    }
}
```

2) Array - It is an ordered iterable collection of values. We use arrays when we need to store and later access a value under an index.



```
const grades = [75, 95, 90, 85, 80, 85];
let gradeSum = 0;

for (int i=0; i< grades.length; i++){
        gradeSum += grades[i];
}
console.log (gradeSum/grades.length)

//outputs 85
```

3] Map - It consists of key value pairs.
With maps any value can be used as a key while in object keys can only be string or symbol.

Key-value pair ⟶ Hash function ⟶ Hash table

4) Set - This is collection where each item in a collection must be unique.
If we try to add a non-unique item to set this operation will simply not be run.

```
const house1= 'red'
const house2 = 'blue'
const house 3 = 'red'
const houses = new set()
house.add(house1).add(house2).add(house3)

Console.log (houses)
```

=> Set(2) {'red', 'blue'}

Other data structures :

1) Queues
2) Linked list
3) Trees
4) Graphs

* Spread Operator - It is the shortest and simplest method to copy the properties of an object onto a newly created object

- Spread operator is characterized by three dots.
- The spread operator allows us to pass of array elements into a function without having to type them all individually.
- The syntax is clear, concise and easy to type

* Rest Operator :- It is used to unpack a box.

- The rest operator on the other hand is used to build a smaller box and pack items into it.
- The rest operator allows us to take items from an array and use them to create a separate sub-array.
- Rest parameter must be the last parameter in the function definition.

* Javascript module - Javascript modules are standalone units of code that you can reuse again and again

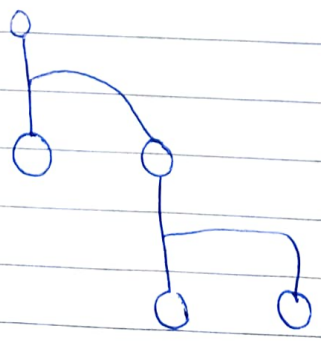
Common Js is designed to specify how modules should work outside of the browser enviroment.

It is mostly used on server side javascript namely node.js, a downside of commonJs is that browsers don't understand its syntax. That is certain keywords that CommonJs relies on, such as require and module.exports don't work as expected in browsers.

* Dom (document object model) - The framework a browser uses to read and store a webpage.
* Javascript Dom Manipulation :-

The Dom allows to change properties of objects on a webpage.

It gives developers power in how they can manipulate and update webpage. The Dom is in the form of javascript object with nested objects for different parts of the page. These objects have nested objects of their own until the entire HTML file is mapped out in what looks like a tree structure.



Dom Tree Structure.

The DOM is the model of the HTML file saved as a javascript object in our browser's memory. The browser automatically builds the DOM for every webpage that it downloads.

* Javascript selectors.-

Javascript selectors work with the document object which we can access by typing the keyword document. This returns the webpage stored in browser's memory known as the document object model or DOM.

- There is similarly named javascript selectors that allows us to get all the matches from a web page. It is the query selector all method, to demostrate this we need to type document.query selector.

- getElementByID which can used to find objects in the that match a specified html ID attributes.
- getElementByClassName returns an elements based on a specified class name rather than ID.

* Event handling :-

- In javascript, the button click and the any icon tap are examples of user triggered events. Events are happening all the time.

In javascript the function that handles captured events is known as event handler.

Ways to set up an event listener for HTML elements:

1) - Add event listener method.
   - document.queryselector and then a name of element inside of the parenthesis

2) - HTML event attributes
   - attribute by onClick and followed by function name

* Javascript object Notation - JSON
  - Object keys and its values are double quoted strings in the JSON syntax.
  - It is important to remember that while plain javascript objects can hold functions, JSON strings connot.
  - Valid JSON doesn't allow the use of javascript comments.
  - Also when we stringify a javascript object containing a method that method will be excluded from the stringify operation