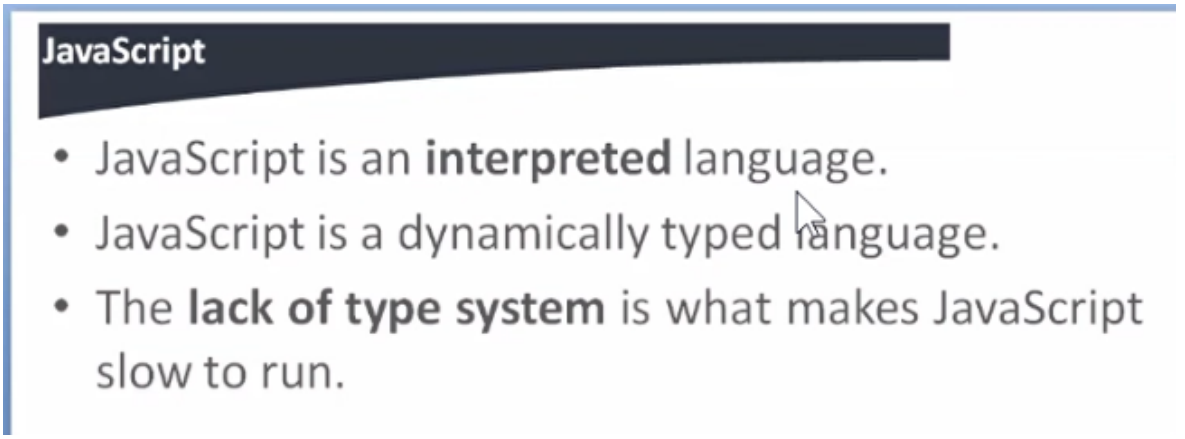
Java Script



java script help us to play or manupulate with the DOM structure
so it is very convienient to change the value in dom ,to fetch the data from the html element sowe cam do all those thigs using java script
what do you means by interprited ?
line by line execution
it is a case sensitive language

ECMA

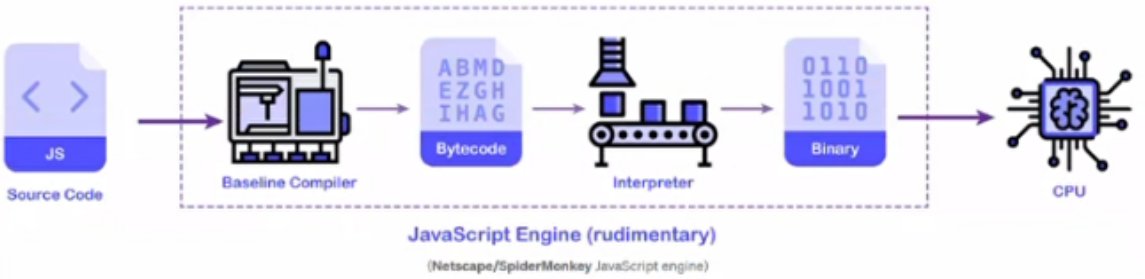
- **Ecma International** is the standards organization that standardizes JavaScript and the Technical Committee 39 (***TC39***) manages this standard. This standard is known as **EcmaScript**.
- EcmaScript specification tells how JavaScript should be implemented by the browser so that a JavaScript program runs exactly the same in all the browsers, but it does not tell how JavaScript should run inside these browsers. It is up to the browser vendor to decide.

History

- In the initial days of Web, web browsers were used to display static pages. Normally these pages were non-interactive. To add some interaction, a new language was introduced in the **Netscape** browser back in **1995** by **Brendan Eich**. This new language was JavaScript (*previously called the **LiveScript***) and it took **10 days** for him to design it.
- JavaScript was not designed by considering the performance in mind. It had to just work inside a browser and provide API to work with DOM. But since many browsers tried to adopt it in their own way, it had to be standardized.

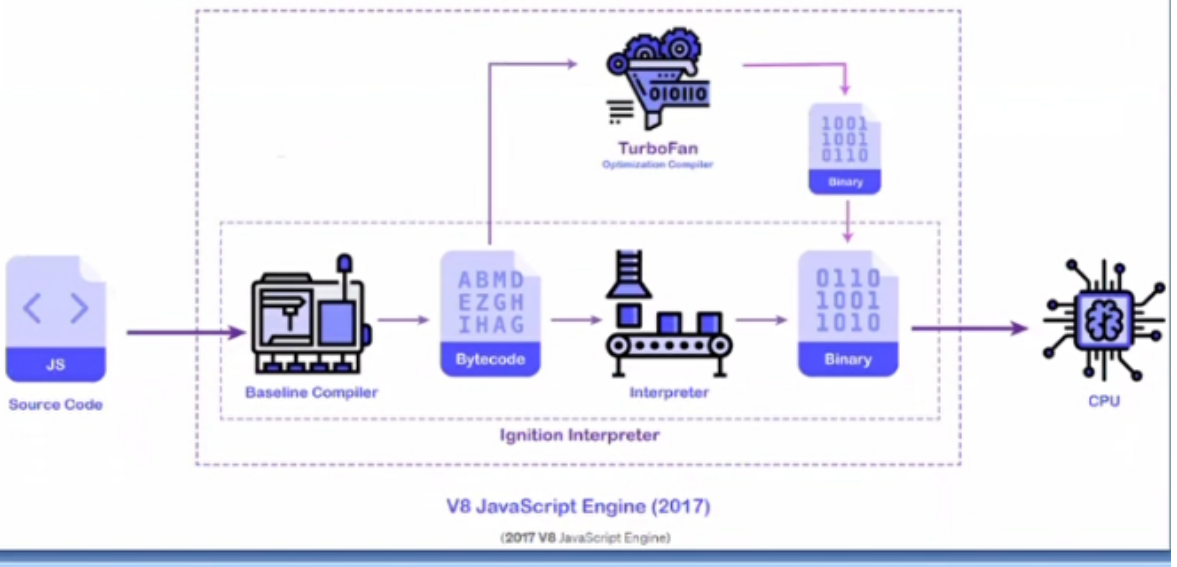
The Anatomy of the JavaScript engine

- Every browser provides a **JavaScript engine** that runs the JavaScript code. The Netscape browser used the **SpiderMonkey** JavaScript engine. This engine was a rudimentary interpreter with no optimizations. Running the JavaScript code with this engine was slow but it worked.



V8

- Google Chrome from the early days uses the **V8** JavaScript engine. In the beginning, to improve the JavaScript performance, they added two pieces in their JavaScript engine pipeline



V8 JavaScript Engine (2017)

(2017 V8 JavaScript Engine)

JavaScript at runtime

- JavaScript is **single-threaded** language at runtime.
- Since code execution is done sequentially, any code that takes a long time to execute will block anything that needs to be executed after that.
- When you open a website in the browser, it uses a single JavaScript execution thread. That thread is responsible to handle everything, like scrolling the web page, printing something on the web page, listen to DOM events (*like when the user clicks a button*), and doing other things.
- Not all open browser tabs rely on single JavaScript thread. Instead, they use separate JavaScript thread **per tab** or **per domain**.

so because of this when we open a new tab in browser it will run as a seprate application

what is Synchronization ?

in web application whenever the sender send the request to the server so until and unless server sends the complete response my browser will not do any other task
so if we write java script in the head section just like your style so if my java script has some tasks to perform so that blocks the UI it stops the rendering of my screen

That's a reason we'll not write java script inside the head rather we write it inside the body
Java Script works mostly on the Events
Here there are two very important things

1. The person who generate the event
2. one who executes the particular event

what we do in drag and drop ?
we cut the data from one place and paste it to the particular place as a ui developer we have to think about this particular part

hover is a event and onhover is a handler for it

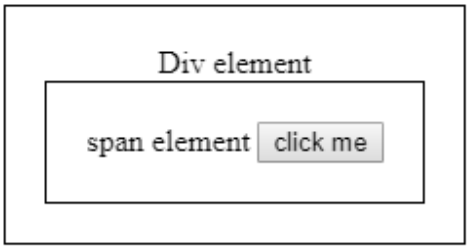
click is a event and onclick is a handler for it

load is a event onload is handler for it

in windows there will a explorer its responsibility is to handle all sorts of event that one particular thing controls everything including the gui software you have
so whenever the event is fired it can be in the application or it can be in the windows

what my windows does is ?
1st it will check weather the particular event is been triggered by the windows os

if(not)
the part of windows then it will check which particular application which is calling this particular event
and you'll gone to check
if **(**it having any sorts of event handler registered to it**)**
if **(**it is having any event handler registered to it**)**
it will gone to forward that particular event to the event handler and the event handler of that particular application gets executed
 now when ever we firing a particular event so event will be always executed by the **event bubbling**



suppose this is my application ,my application will going to have a div