

**How JS
executes
code behind
the scenes?**

Javascript Runtime

- JS runtime provides all the necessary components that's used to run the javascript program in the browser
- Let's look at the different components that JS runtime provides us

JS Runtime Components

1. Javascript Engine
2. Event Loop
3. Web API
4. Callback Queue
5. Microtask Queue

Javascript Engine

→ It is responsible for executing the javascript code. It has 2 main components

1. Call Stack
2. Memory Heap

Call Stack

- It is the place where the javascript code gets executed. But how ?
- Whenever Js engine encounters function call it push that function into the callstack and the function is executed line by line. Once function execution is completed it gets popped out from the callstack

Web API

- What if I say that the "setTimeout" function that you use everytime is not a part of the Javascript language
- Even the DOM, Promises and everyone's favourite console log is not the part of the language. So, what exactly these functions called and how we can access them ?

Web API (Cont ...)

- You all guessed it correct :)] It's the Web API's
- Web API's are the extra functionalities that the browser provides to perform actions that's not possible in the javascript language itself

Callback Queue

- All the callback functions from "setTimeout / event listeners" that are ready to be executed goes into the callback queue
- Callback Queue works in the FIFO manner i.e, First In First Out

Microtask Queue

- It's similar to the callback queue but it has higher priority in terms of execution
- All the callback functions from the promises ". then" and ". catch" methods goes into the microtask queue

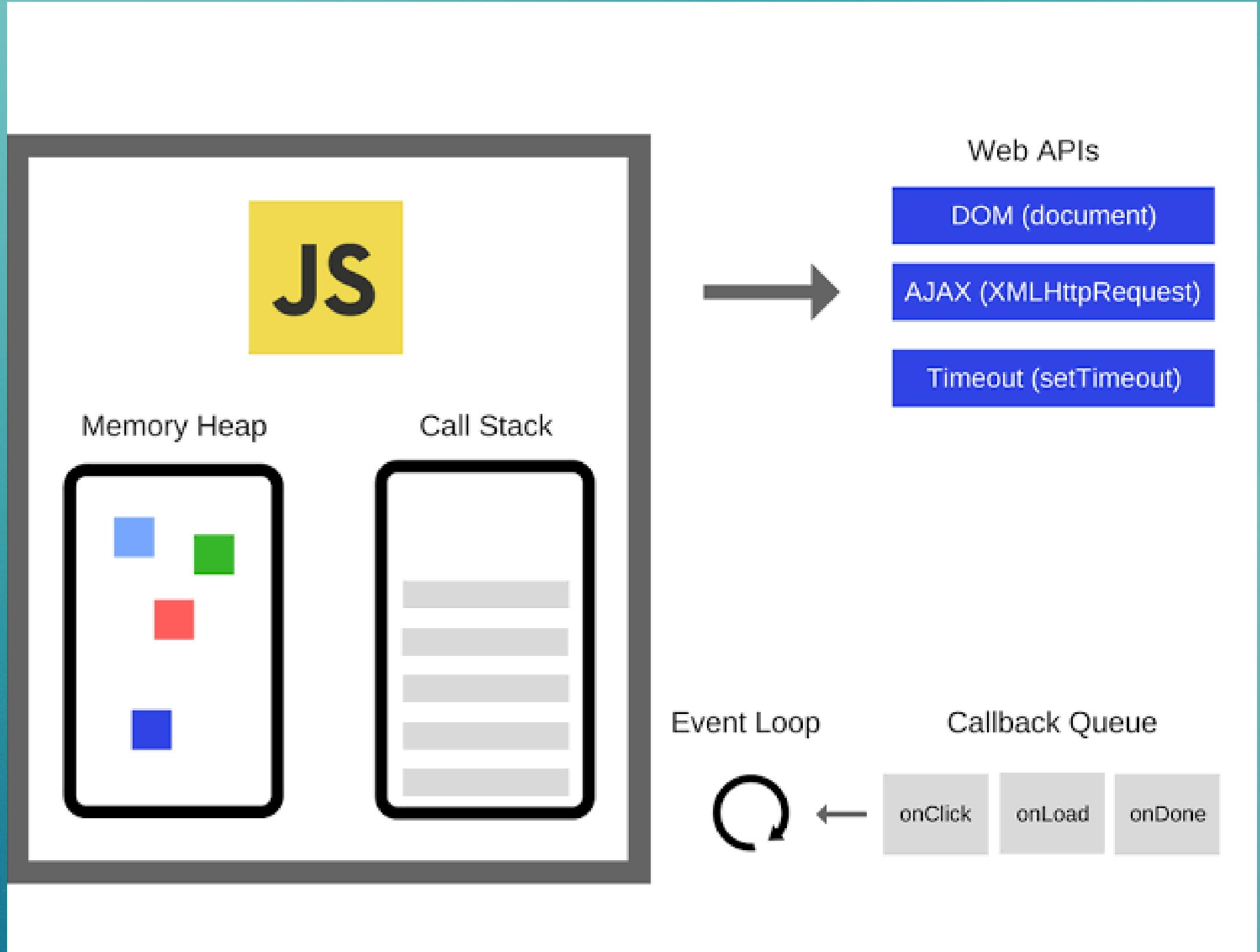
Event Loop

- It continuously monitors callstack, callback & microtask queue
- It would check 2 things
 1. Is the callstack empty ?
 2. Is the entire javascript program ran and there's nothing more to execute ?

Event Loop (Cont....)

- If both the conditions are met then the event loop would take the task from the queue and push it into the callstack for execution
- As discussed earlier, the microtask queue has higher priority so event loop gives preference to the microtask queue

How it all works ↓↓



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