

## Js Event Loop & it's function



Fig: Event Loop

- Engine js code k machine code porinoto kore. Engine er bitor 2 ta jinish ase Heap, Call Stack
- Heap memory menegment er jonno use hoi. aita ekta unstructure memory block, aitar modda amder code er memory alocation gulo hoi.
- JS code a amra jokhon function k call kori tokhon she gulo stack akare callstack a joma hoi, aita LIFO
- Javascript jokhon .js file pai tokhon main() function / global contex toiri kore
- Ek don surete ekta main function/global context call hoi

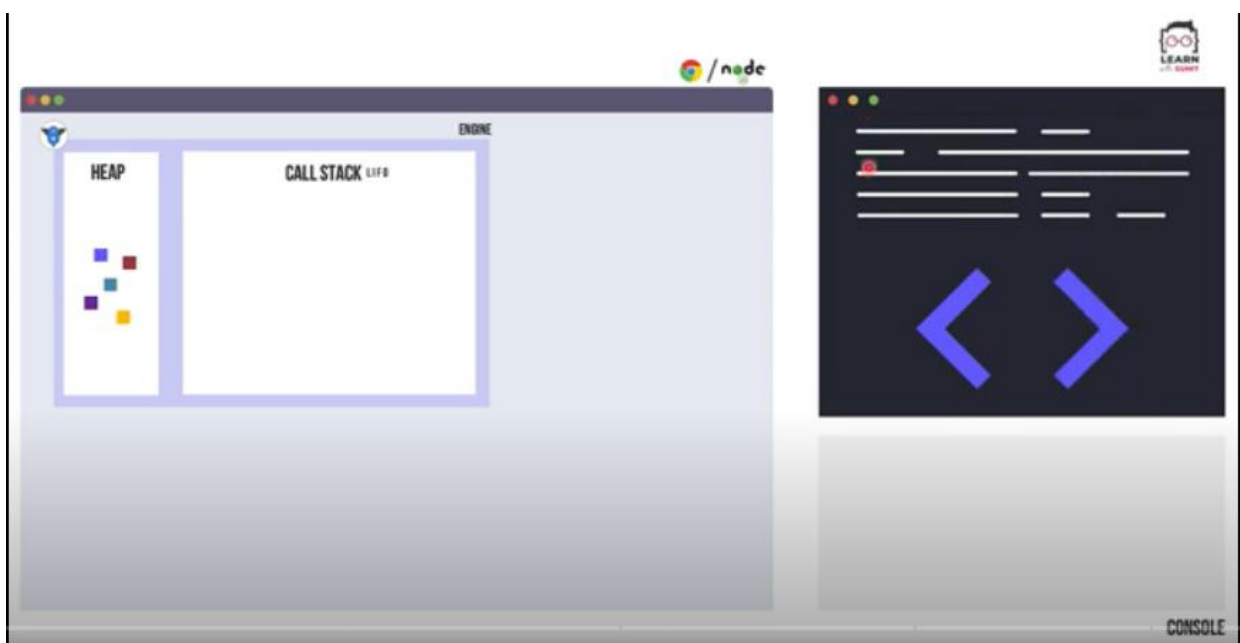


Fig: Engine (Heap & CallStack)

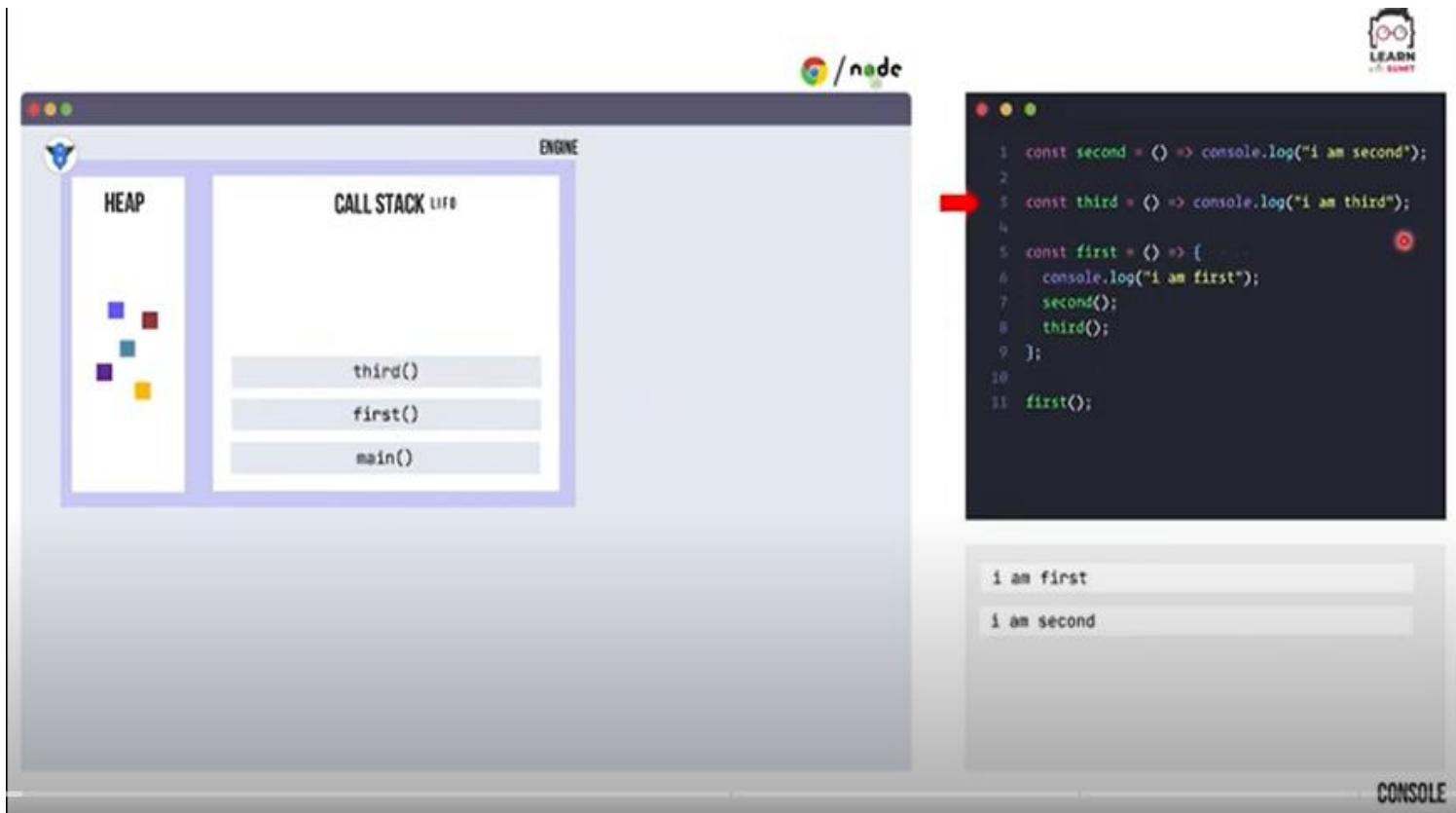


Fig: Callstack Execution for sync

3 ta function e run hobe print korbe & callStack theke popout hoiya jabe ekta ekta kore last a main() function o chole jabe.

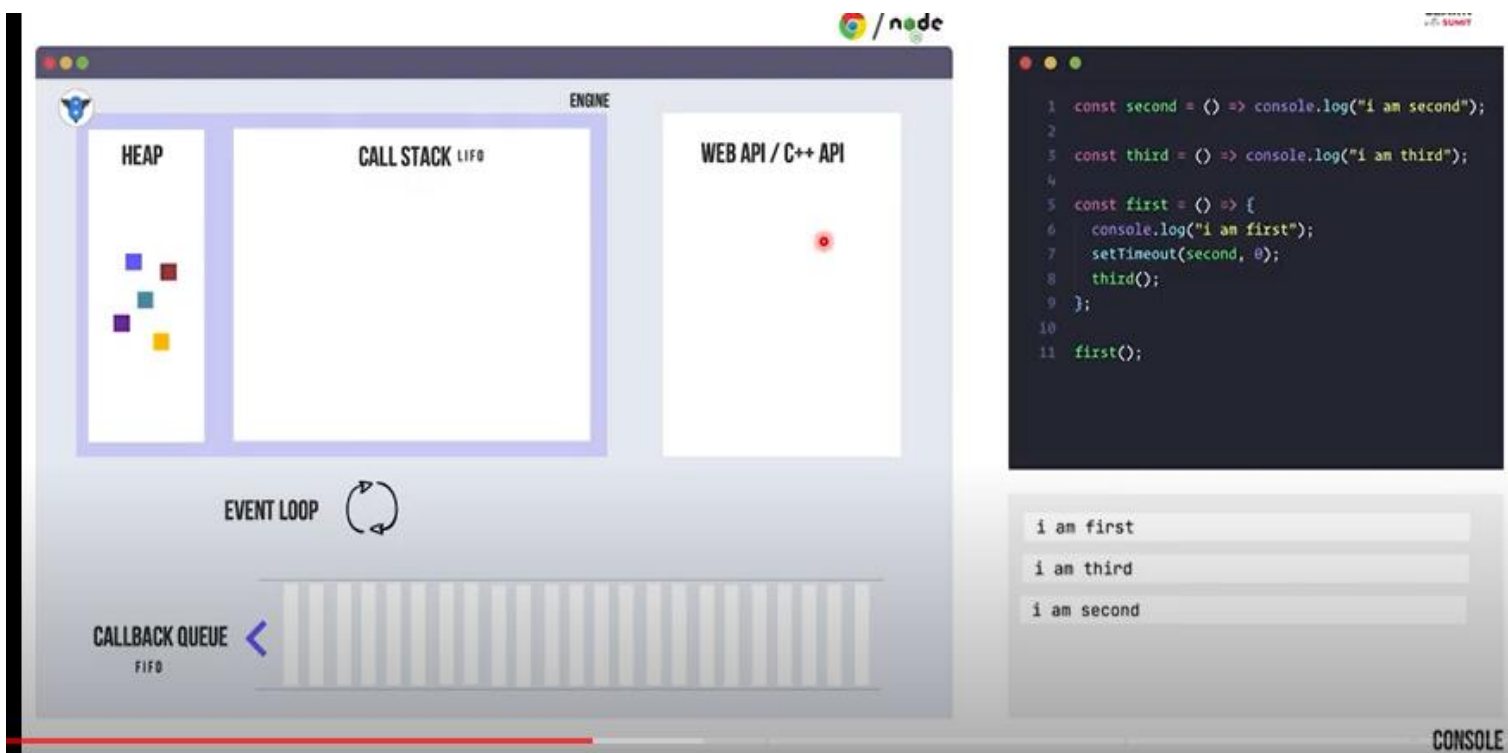


Fig: async JS code run structure

- Web Api runtime environment er modda thake she engine er modda thake na.
- Async kaj ashle main() she take Web API er kase pathai Web API er kaj sesh hole she callback Queue er kase pathi.
- Callback Queue FiFo mane first in First Out.
- Queue and stack er connector Event Loop.
- Event loop queue er function gula k callStack a tule jokhon stack free thake tai ai khane second function last a run holo.
- Je kaj gula korte shomoi lage shagulo callStack kore na mane engine kore na. jamon file system, database theke data read sheta engine korbe na she Web api k diya dibe, node js er khatre C++API k diya dibe.



Fig: render queue sync block code

Process(5)  
Process(4)  
Process(3)  
Process(2)  
Process(1)  
forEach()  
Main()

Process function bar bar call hosse er por process sesh holo forEach sesh holo then render hobe ato khon render hoinai callstack faka chilo na tai. Karon she ek shate ato kaj korte pare na she single thread.

Browser a display te amra ja dekhi ta render hoiya ashe. Render k js kisu khon por por print korte thake browser a. callback queue theke render queue er priority bashi she age execute hobe.

While loop chalachen(browser block) browser a click kora jaina browser irresponsive hoiya jai browser a click kora jai na shob hang hoiya jai kano? Karon callStack faka chilo na so main thread busy chilo tai event loop kawka e callStack a pathite pare nai.

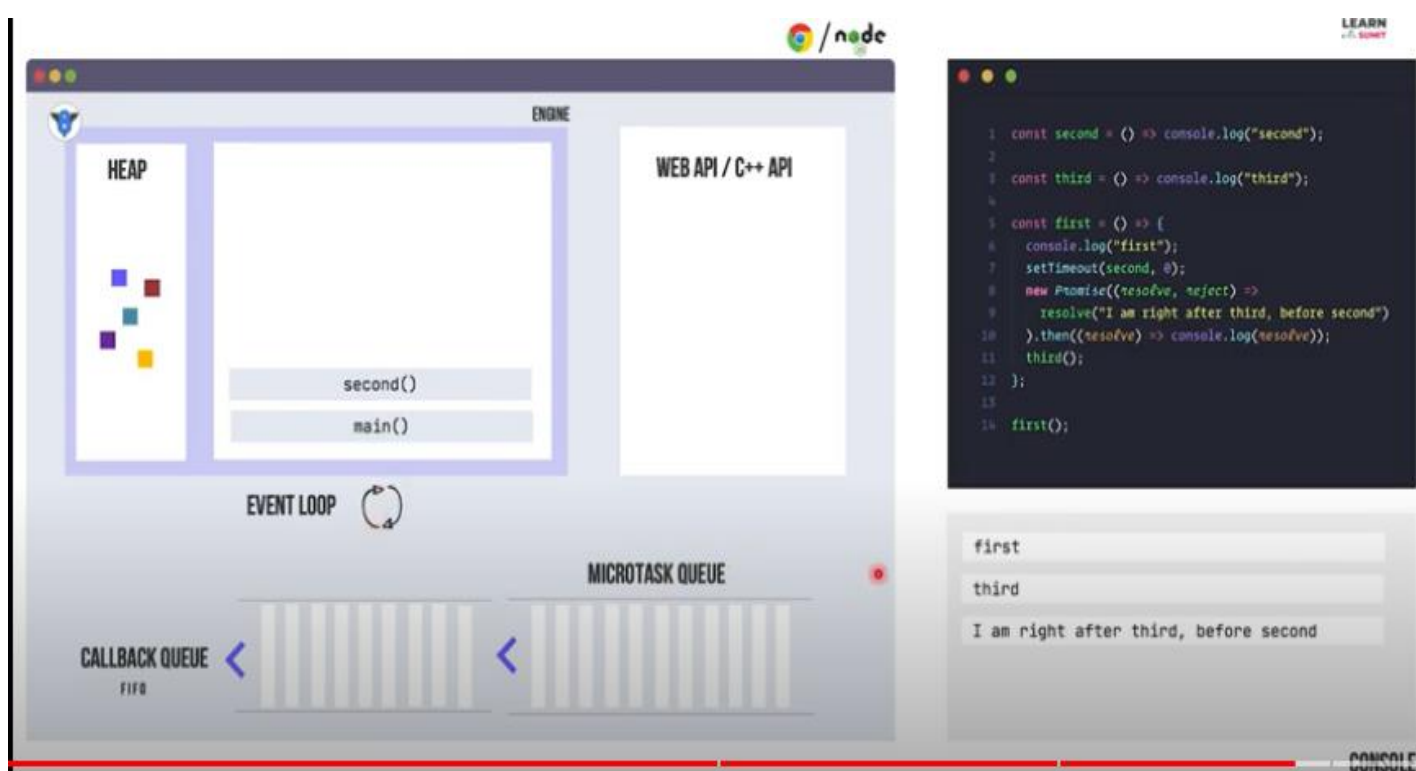


Fig: Callback queue er age microTask queue age run hobe

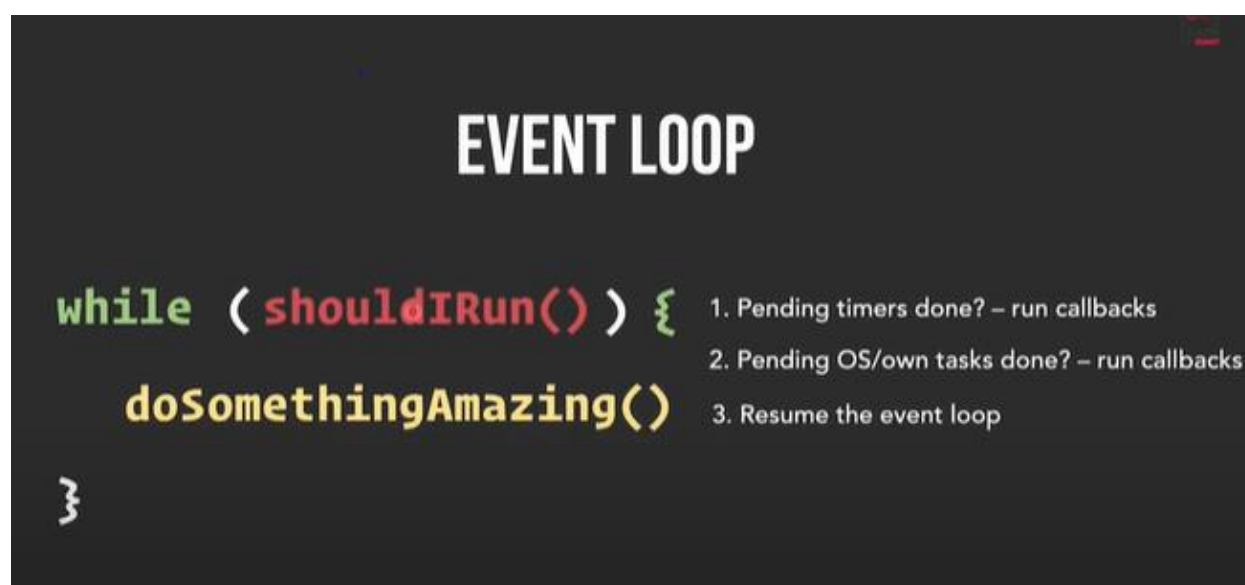
Promise/async-await gulo handle hoi MicroTask queue te. Aita ES15 te ashese.  
Promise er update async-await  
Event loop renter queue & microtask queue k bashi priority dai callback queue theke.

Event loop k kano Event loop bola hoi?  
Aita k amra ekta while loop er moto kore chinta korte pari.



Fig: Event Loop (1,2,3 no for node js)

Event loop cholta thakbe ShouldIRun true hole e run korbe. 1,2,3 no ai gula check korbe



doSomething 1,2,3 ai kaj gula korbe.

So Amra kolpona korte pari Event Lopp ai vabe kaj kore amder event loop implement korte hole amra ai vabe kortam. But amder korte hosse event loop er kaj korse.