

Node JS

* 7 ES6 Features

1. Let and const

* Variable declare

Var, let and const keywords

2. Arrow Functions

Syntax - Parenthesis and curly braces
and return keyword.

'this' keyword

3. Template Literals

Multi line strings.

Embed expressions

Back ticks.

4. Default parameter.

Default values to parameter when you define a function

5. Object Literals

Property name and value name is same? Omit the value name.

Ex

```
let name = 'Vishwas'
```

```
let person = { name }
```

6. Rest and spread Operators

Rest operator is used to represent an unknown number of values as an

array specifying parameters to a function whose values may vary at runtime.

The spread operator is used to spread or expand an iterable like an array.

7 destructuring assignment

Special type of assignment
Array and Objects

Ex:

```
let person = {  
    name: 'Vishwajeet'  
}  
const {name} = person  
// name contains the value 'Vishwajeet'
```

About

API reference documentation

① Assert module :-

1. assert - Lets you test your code and response from API etc.
2. The Assert module provides a simple set of assertion tests that can be used to test invariants.
3. Assert is the most rudimentary way of writing tests. It provides no feedback when running your tests unless one fails.
4. Assert module has 11 methods

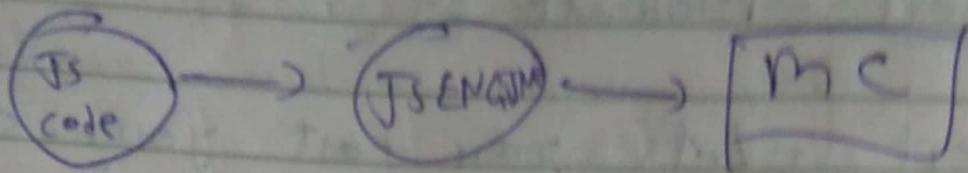
Methods

1. assert.fail(21, 42, 'not Failed', '# # #')
2. - assert.equal(actual, expected, [message])
 - assert.equal(true, value, message)
3. - assert.ifError(value)
 - ↳ throws value if value is truthy
 - assert.ok(value {message})
 - ↳ if value is not truthy, an Assertion Error

```
ex var assert = require('assert');  
function add(a, b){  
    return a+b; }  
var expected = add(1, 2);
```

```
assert(expected === 3, 'one plus two');
```

Runtimement



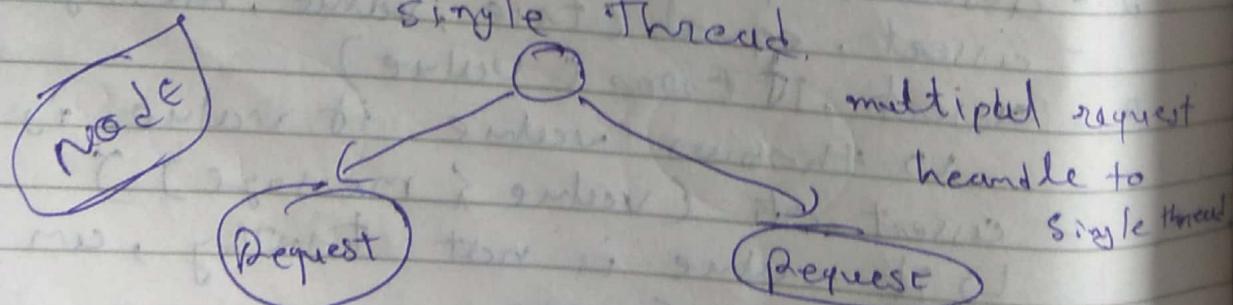
~~ex~~ microsoft Firefox Google
↳ chalk.js → SpiderMonkey → V8

- Node is not programming language
- It's is a runtime environment for executing JavaScript code

How Node works

→ Highly scalable.
data intensive
real time apps

→ Non-blocking
Asynchronous



→ Blocking Synchronous

Ans. Request of file wait until file is ready

* Node Module System :-

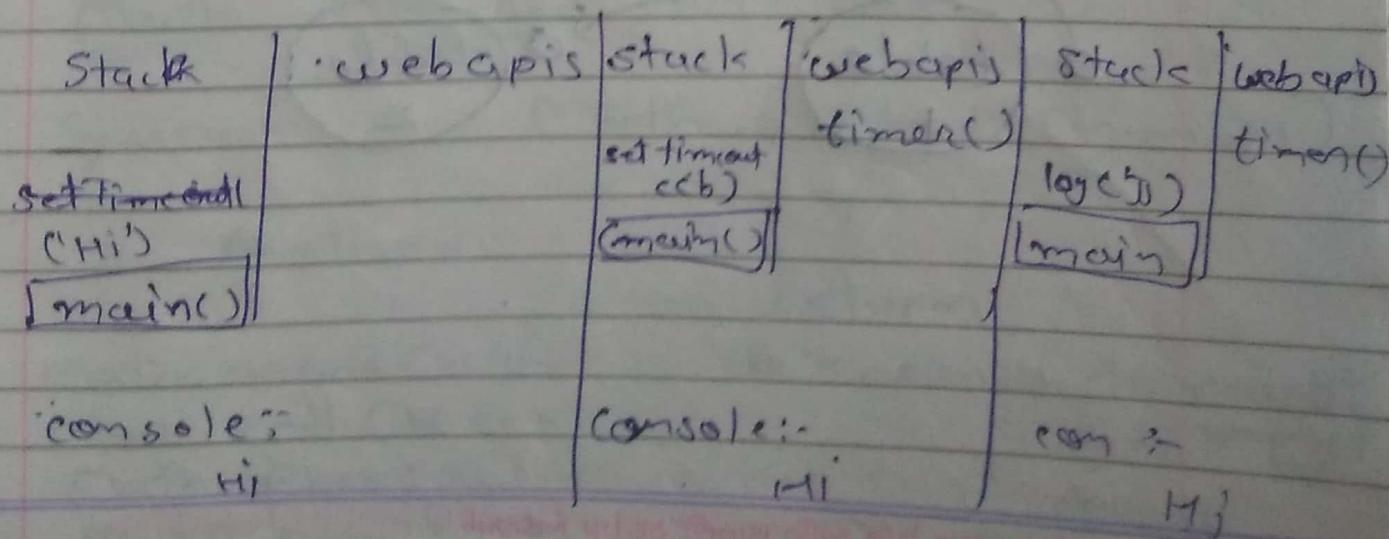
Operating system
File system
Event
HTTP

(*) Event Loop

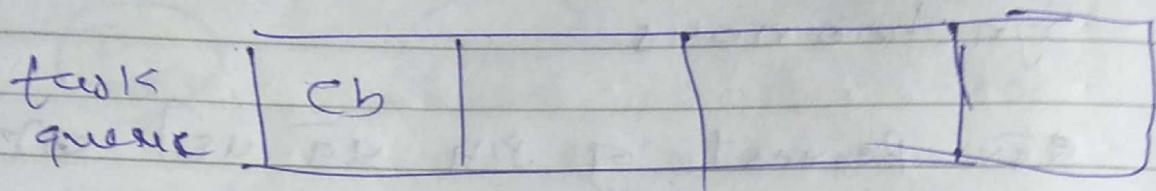
exec console.log('Hi')

```
setTimeout(function cb() {  
    console.log('there')  
}, 5000);
```

console.log('JS com FEV')



event loop ②



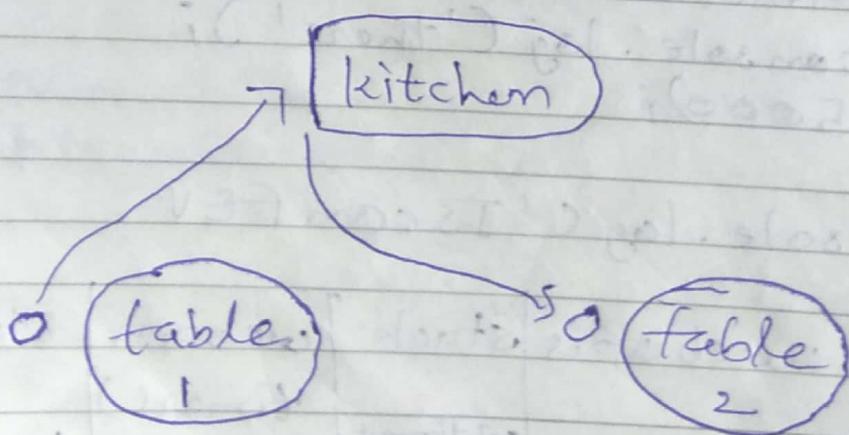
stack

tag ('There')
[cb]

webapis

Hi:
TJ CONF EU
there

- ④ Non-blocking
↳ Asynchronous



* Math library

- JS Math ob allows you to perform mathematical tasks on number.
- All methods and properties can be used without creating a Math object first.

* Math properties :-

8 mathematical constants

Math.E

return

Euler's number

PI

Math.PI

Math.SQRT2

square root of 2

Math.SQRT2F₂

square root of 1/2

Math.LN2

logarithm at 2

Math.LN10

logarithm at 10

Math.LOG2E

base 2 log e

Math.LOG10E

base 10 log e

* Math methods

Syntax :- Math.method.(number)

↳ Method

Return

Math.round(x)

x rounds to nearest

Math.ceil(x)

up to nearest int

Math.floor(x)

down to

Math.trunc(x)

int part of x

math.sign(x)

return

if x is negative
null or positive

Math.pow(x,y)

the value of x to
the power of y
square root x

Math.sqrt(x)

Math.abs(x)

the absolute (positive)
value of x.

Math.sin(x)

you have to convert
degrees to radians

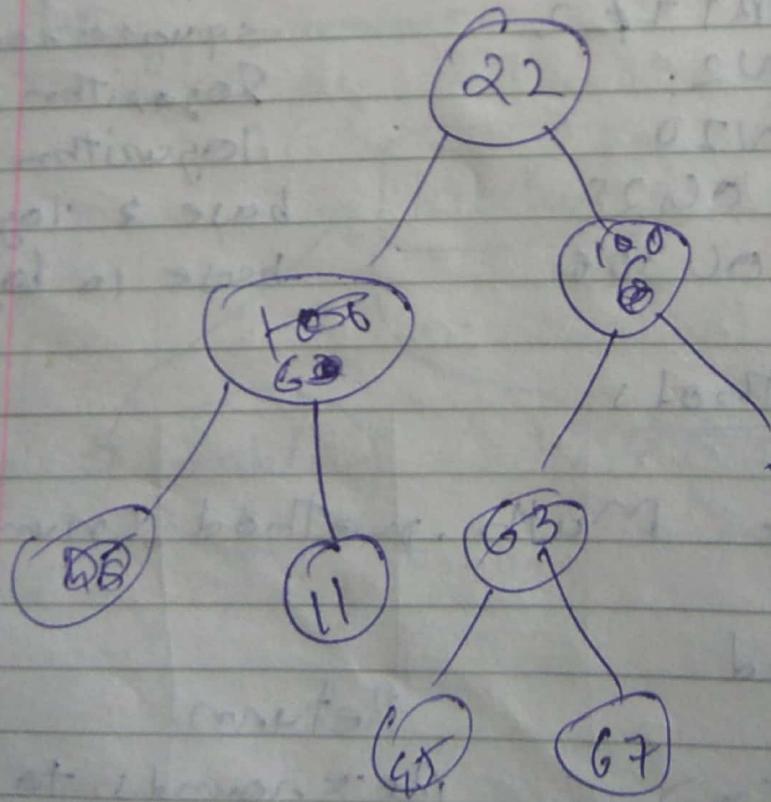
Math.cos()

math.min() and Math.max()

can find lowest and highest

Math.random

random number



REST VS SOAP

* What is SOAP?

→ SOAP is a messaging protocol specification for exchanging structured information in the implementation of web services in computer networks.

Simple object access protocol

* What is REST?

REST was designed specifically for working with components such as media component, files or even objects on a particular hardware.

→ Principles of REST

- → can be called as a RESTful web service

→ RESTful web service would use the normal http verbs of
get
post
put
delete

→ A REST API is an application programming interface that conforms to constraints of REST architectural

Style and allows for interaction with RESTful web services.

SOAP

REST

- Simple Object Access Protocol
- Representation state transfer

Design - Standardized Protocol - Architectural style with pre-defined rules to follow

- with loose guidelines and recommendations

Approach - Function-driven

Data-Driven

STATELESS - Stateless by default - but it's possible to make a SOAP API stateful

Stateless

CACHING - API calls cannot be cached

- API calls can be cached

Security - WS-security with SSL support

Supports HTTPS and SSL

message format - Only XML

Plain text, HTML, XML, JSON, YAML and others.

Transfer protocol - HTTP, SMTP, UDP and others

Only HTTP

* When to use REST :-

1) Limited resources and bandwidth

2) Statelessness

3) Caching

4) Ease of coding

* When to use SOAP :-

1) Asynchronous processing and subsequent invocation

2) A formal means of communication

3) Stateful operations

HTTP, FTP, SMTP

* What are the differences between HTTP, FTP and SMTP?

- HTTP → Hyper Text Transfer Protocol
- FTP → File Transfer Protocol
- SMTP → Simple Mail Transfer Protocol
- All the three are used to transfer information over a computer network, and are an integral part of today's ~~internet~~ internet.

* Why do we need three protocols for transferring files?

- We need three protocols as they all serve different purpose
- 1) HTTP - is the backbone of world wide web (www).
 - it defines the format of message through which web Browser and web servers communicate, whilst also defining how a web browser should respond a particular web browser request.

i) FTP :- is the underlying protocol that is used to, as the name suggests , transfer files over a communication network.

- It establishes two TCP connections.
- Control connection to authenticate the user , and Data connection to transfer the files.

- 3) SMTP :- is what is used by Email servers all over the globe to communicate with each other, so that the assignment you submitted at 11:59 pm reaches your professor's inbox within the deadline.
- * HTTP is stateless (does not maintain which request)
 - * FTP is control connection
 - * As SMTP is much older than HTTP

* HTTP Method for RESTful services :-

Main method :-

- 1) GET :- Use to fetch a resource from an HTTP server.
- 2) POST / PUT :- Use to send data to the HTTP server. Can also be used to update / create new web resource on the HTTP server.
- 3) DELETE :- Use to delete an existing resource on the HTTP server.
- 4) HEAD :- Use to fetch only the header part of the HTTP response (without the body) as a traditional GET request.

HTTP URL

- Schema - it's a protocol to use to access the resource
- Host - it's server location
- Path - path to the resource inside the server

<https://www.youtube.com/watch?v=...>

Data Transfer standardization in HTTP

