

## Agenda

- NodeJs
- ~~express~~

## NodeJs

- A software platform that is used to build scalable network applications.
- It is developed by Rayn Dahl in 2009
- It is a javascript runtime built on Google's V8 JavaScript Engine
- Node.js runs the V8 JavaScript engine, the core of Google Chrome, outside of the browser. This allows Node.js to be very performant.
- A Node.js app runs in a single process, without creating a new thread for every request.
- It provides a set of asynchronous I/O primitives in its standard library that prevent JavaScript code from blocking and generally libraries in Node.js are written using non-blocking paradigms, making blocking behavior the exception rather than the norm.
- When an I/O operation like reading from the network, accessing a database or the filesystem, then instead of blocking the thread and wasting CPU cycles waiting, Node.js will resume the operations when the response comes back.
- This allows Node.js to handle thousands of concurrent connections with a single server without introducing the burden of managing thread concurrency, which could be a significant source of bugs.
- It has a unique advantage because millions of frontend developers that write JavaScript for the browser are now able to write the server-side code in addition to the client-side code without the need to learn a completely different language.
- In Node.js the new ECMAScript standards can be used without problems.

## Components of NodeJs

1. JavaScript runtime: V8
2. EventLoop : Libuv (A multi-platform support library which focuses on asynchronous I/O, primarily developed for use by Node.js.)
3. Standard Components
  - Filesystem Access
  - Crypto
  - TCP/UDP
  - HTTP
  - Buffer
  - etc

## Use Cases of NodeJs

- Where to use
  - I/O bound applications
  - Data Streaming applications
  - IoT applications
  - JSON API based applications
  - Single Page applications

- Where not to use
  - CPU intensive applications
  - Heavy server sided processing

## Installation

1. click on the below link to download the node

```
https://nodejs.org/en/download
```

```
# to check for the installed node version
node --version

# to run the node application
node hello.js
```

## JSON (JavaScript Object Notation)

- Created by Douglas Crockford is defined as a part of javascript language in the early 2000s.
- It wasn't until 2013 that the format was officially specified
- Javascript Objects are simple associative containers where a string key is mapped with a value.
- JSON shows up in many different cases.

1. API
2. Configuration Files
3. Log Messages
4. Database storage

## Module

- It is a collection of functions
- We can share a javascript library with multiple applications with the help of this module
- There are two types of modules

1. Built-in Modules
  - OS
  - FileSystem
  - HTTP
2. User defined Modules

## REST (Representational State Transfer) Services

- It is a design pattern
- A request is sent and response is received
- response is always in the form of JSON
- request consists of 2 parts atleast

### 1. HTTP method (get,post,put,delete) operation

- get used to select
- post used to submit
- put used for update/edit
- delete used to remove

### 2. path

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