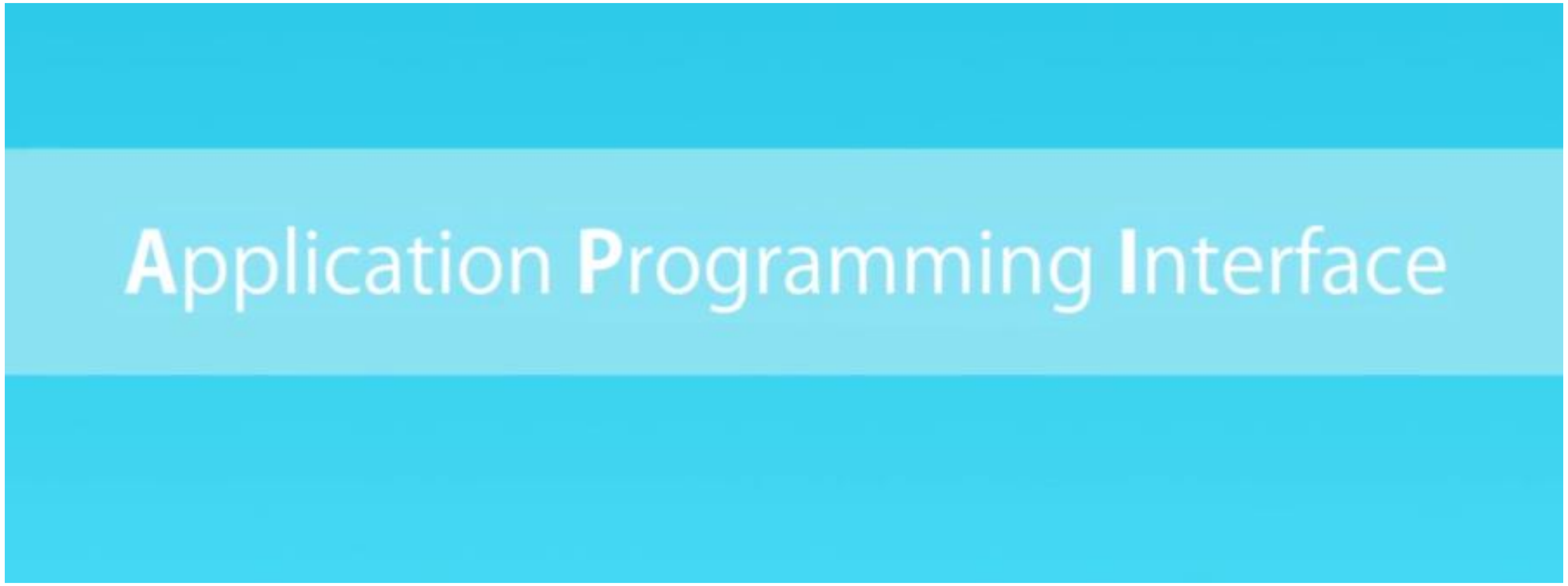
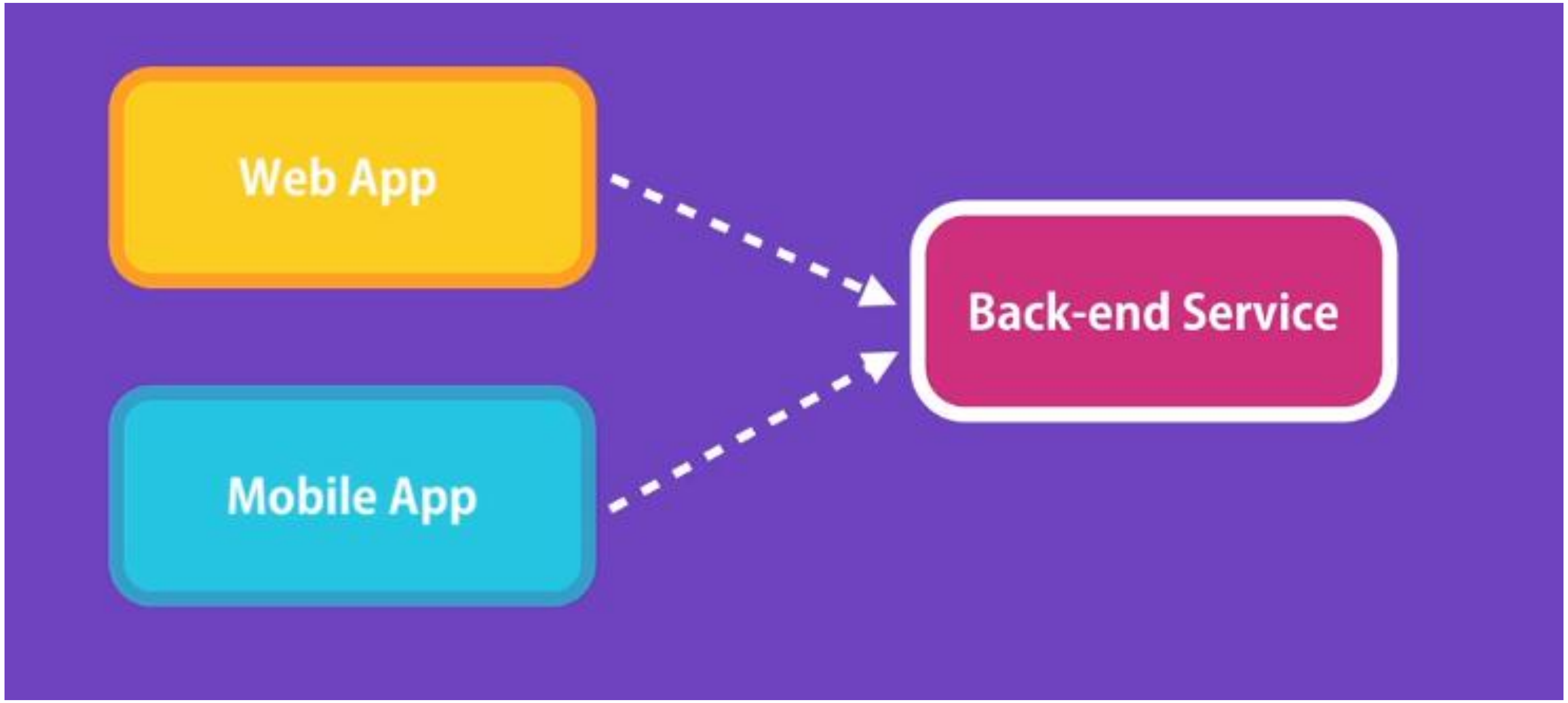
Node

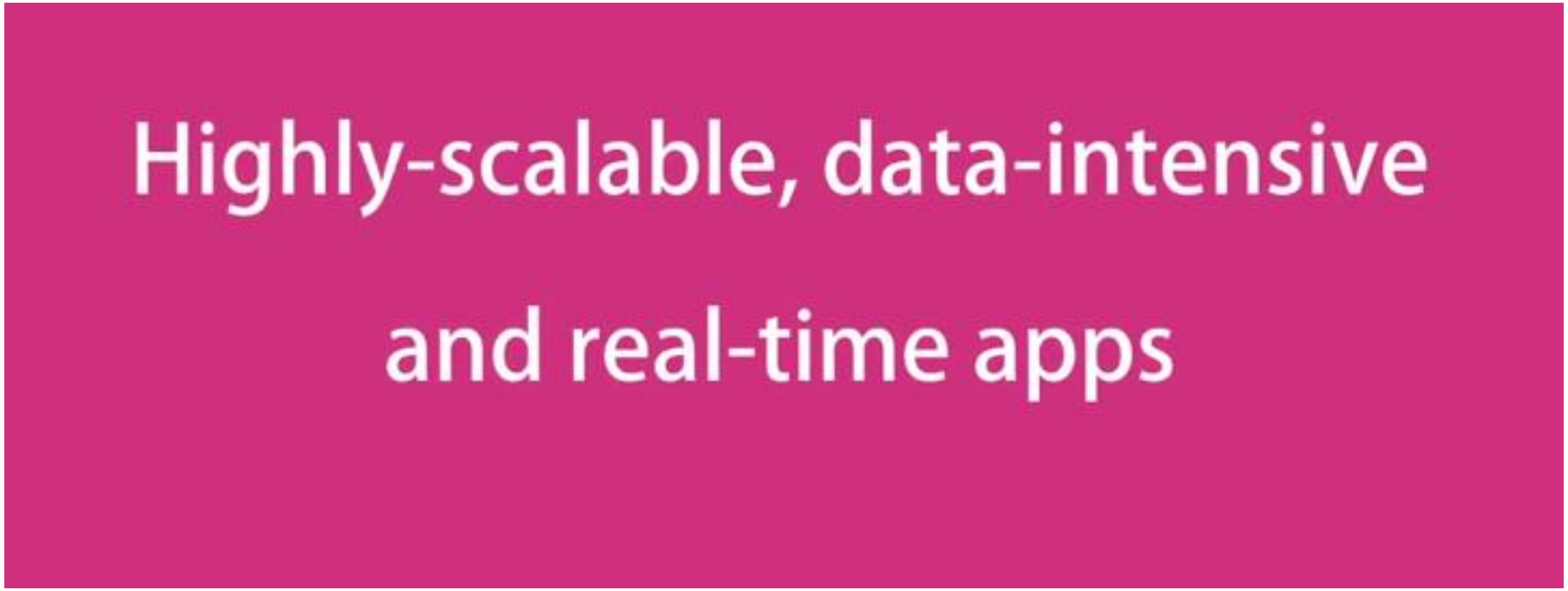
INTRODUCTION

Node Getting Started

A run Time Environment for Executing Java Script Code.
Mostly we build ….


Application Programming Interface

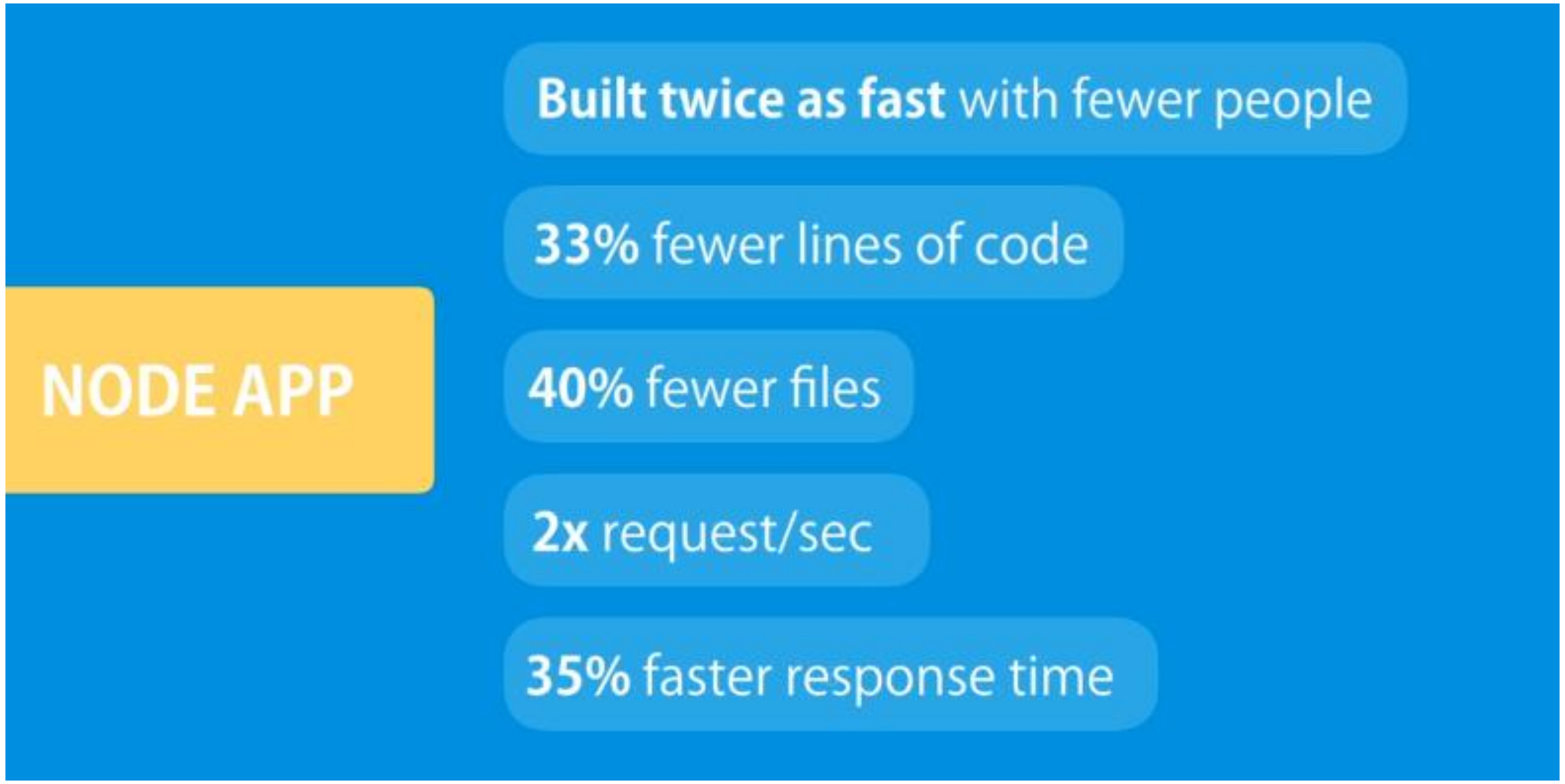

Web App
Mobile App
Back-end Service

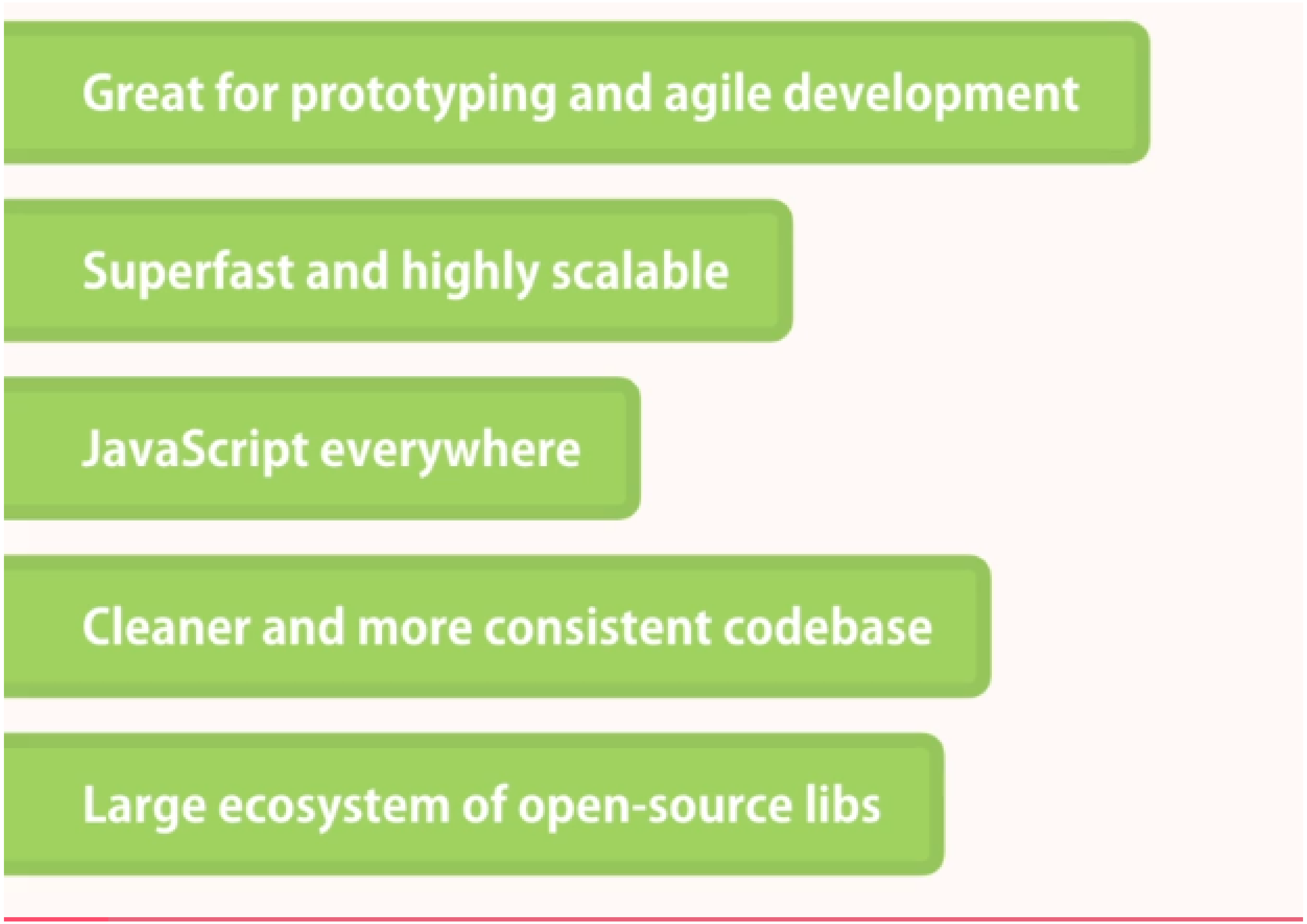

Highly-scalable, data-intensive

and real-time apps

Why Node

Paypal, Uber, NetFlix, Wall Mart

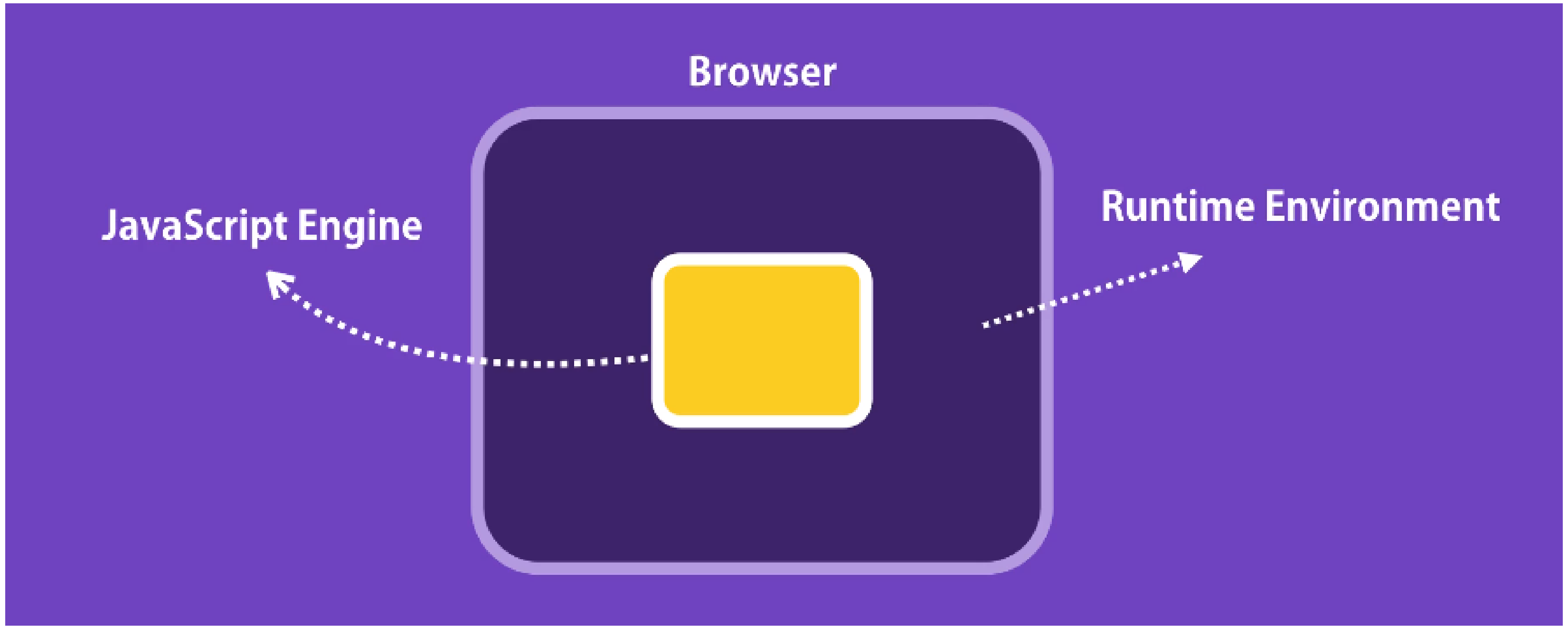

NODE APP
Built twice as fast with fewer people
33% fewer lines of code
40% fewer files
2x request/sec
35% faster response time


- Great for prototyping and agile development
- Superfast and highly scalable
- JavaScript everywhere
- Cleaner and more consistent codebase
- Large ecosystem of open-source libs

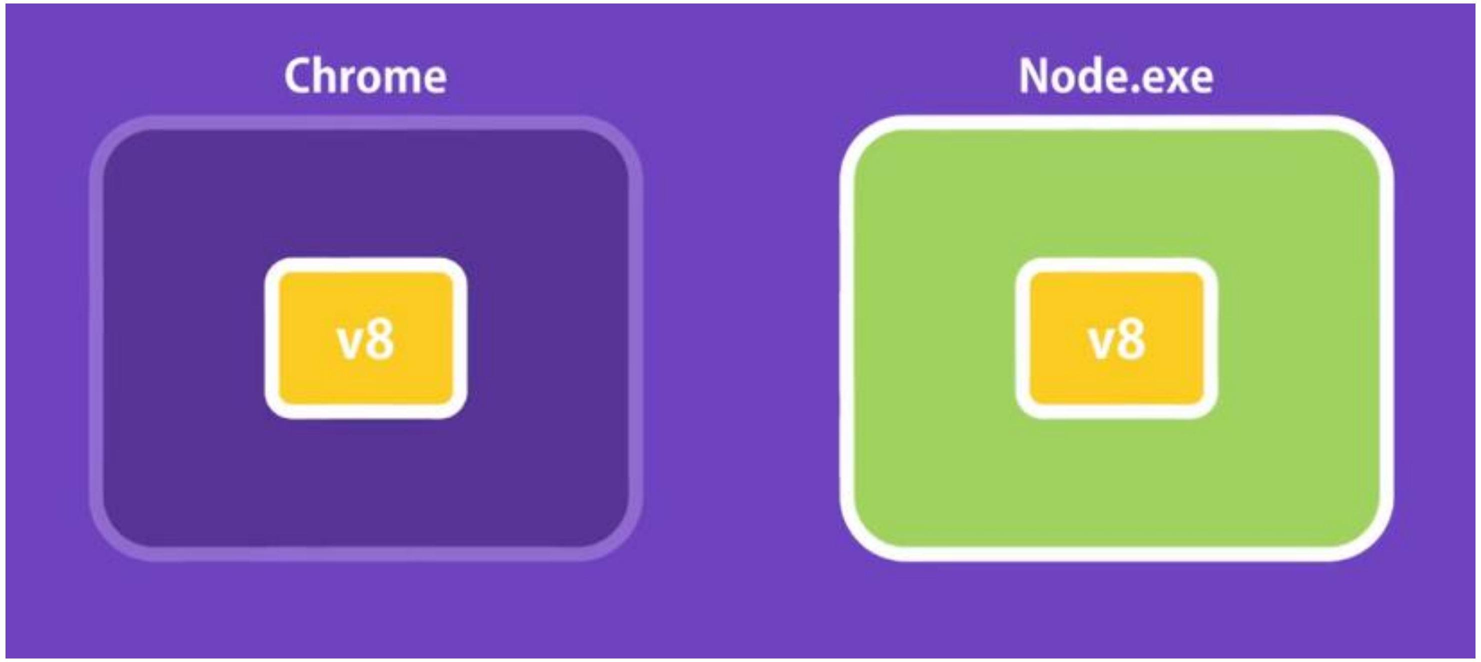
Node Architecture

Chakra
SpiderMonkey
v8

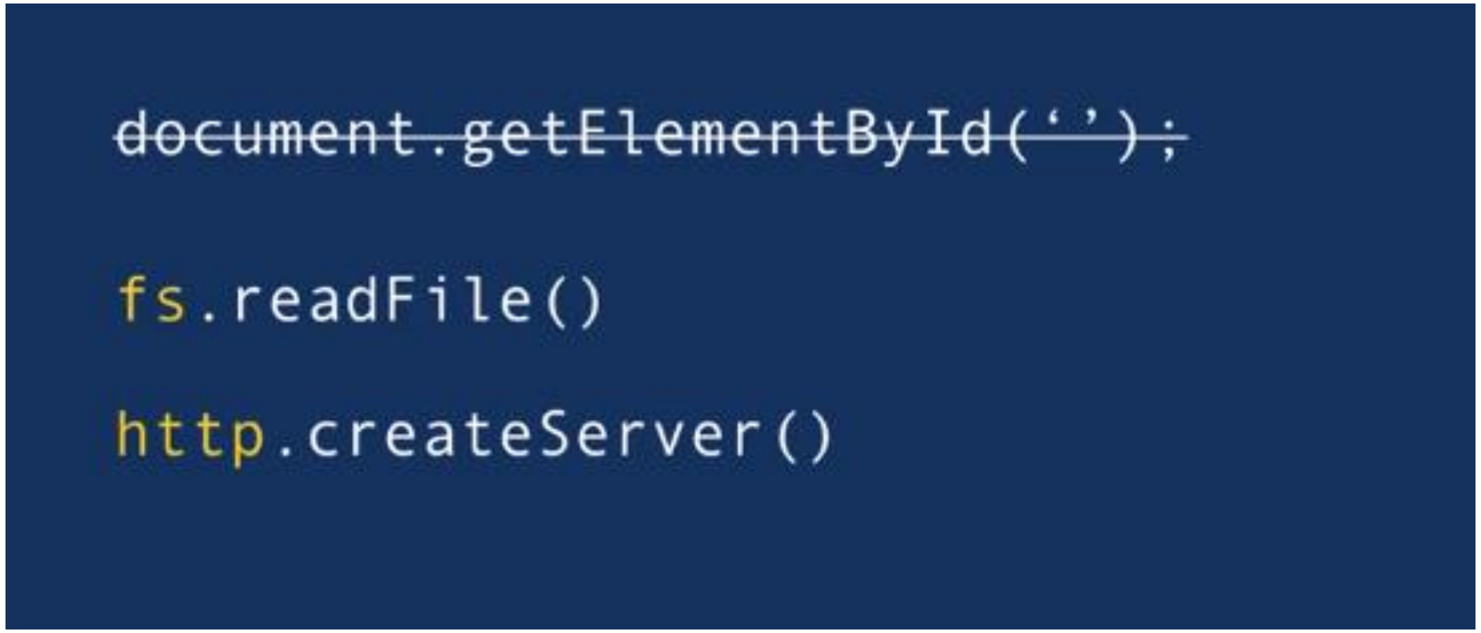
Node Architecture



Node Architecture by Ryan Dahl



Node Architecture by Ryan Dahl

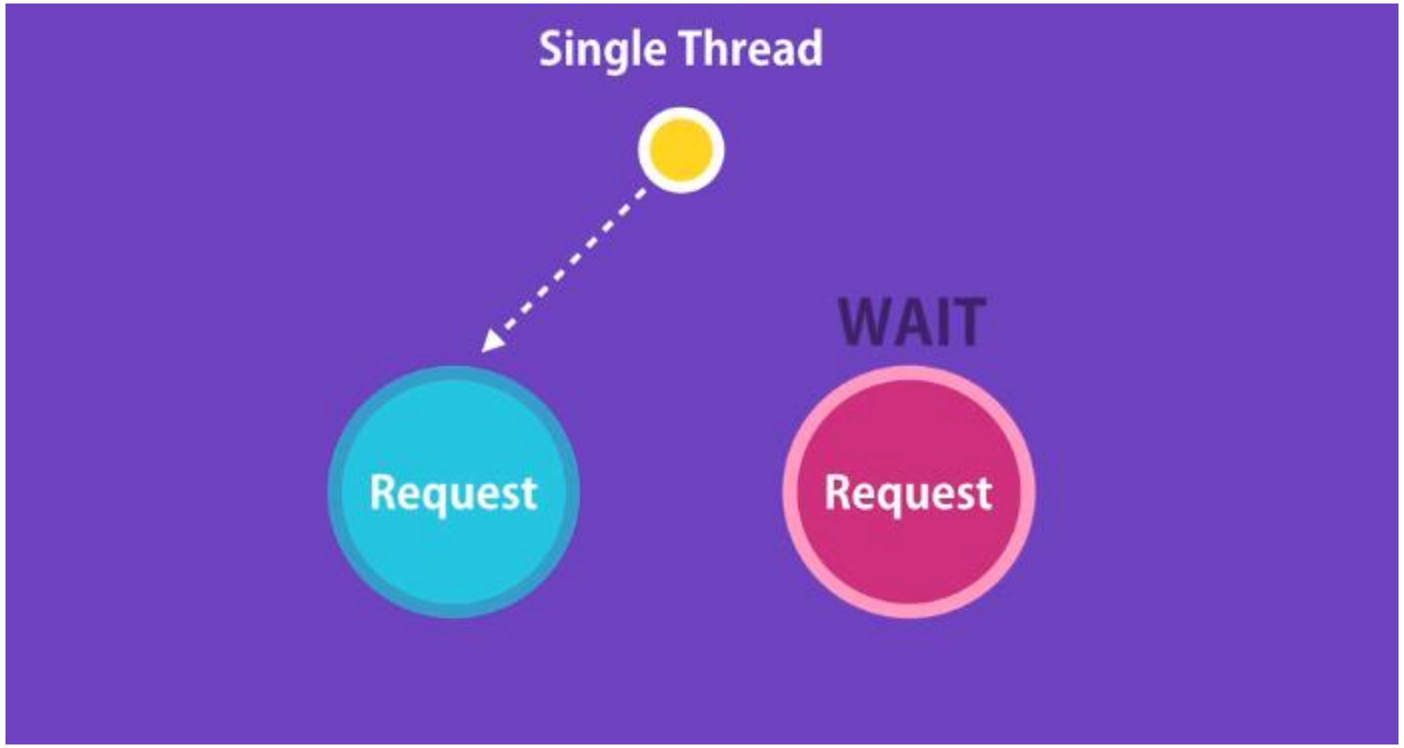


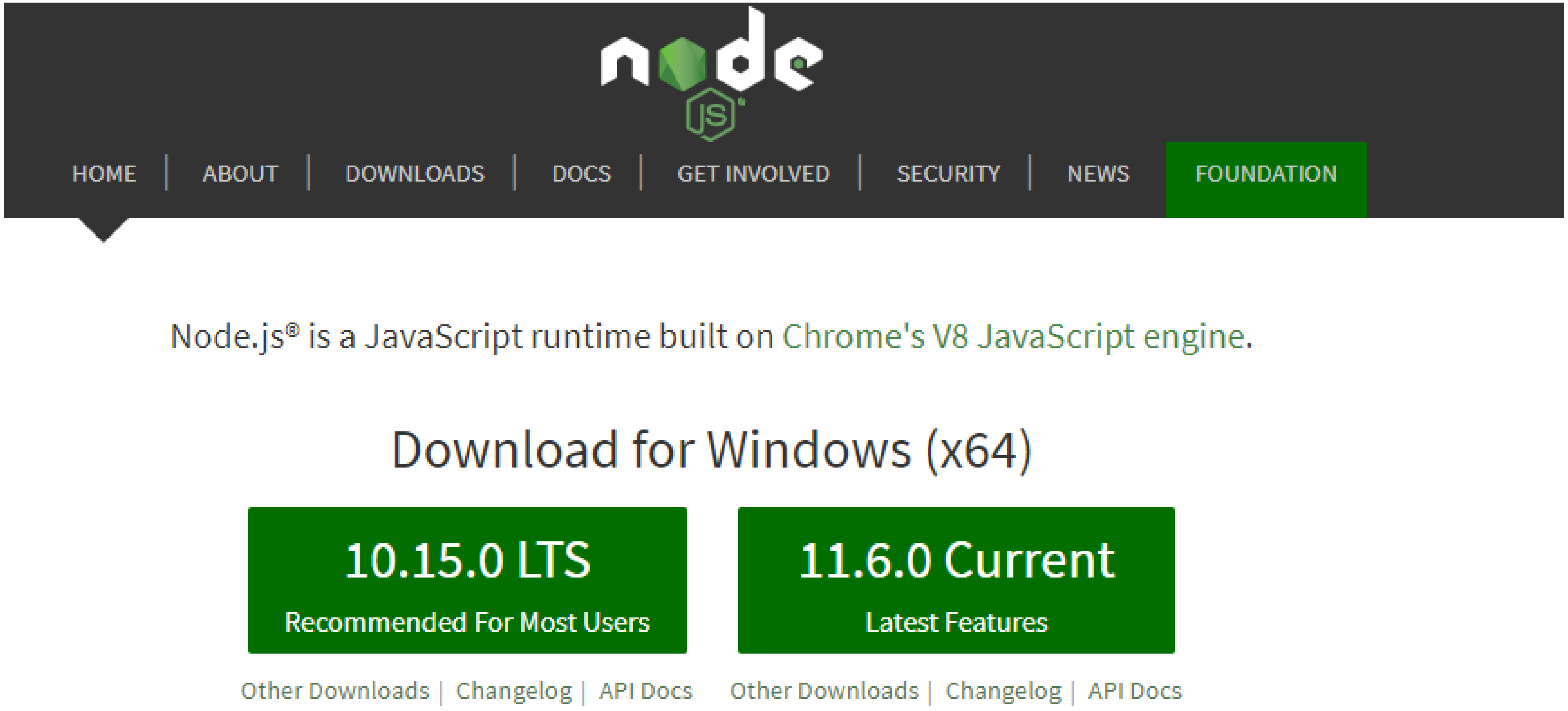
```
~~document.getElementById('');~~

fs.readFile()

http.createServer()
```

Not suitable for computational Hungry Tasks





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Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.

Download for Windows (x64)

10.15.0 LTS
Recommended For Most Users
11.6.0 Current
Latest Features
Other Downloads | Changelog | API Docs
Other Downloads | Changelog | API Docs

node app.js

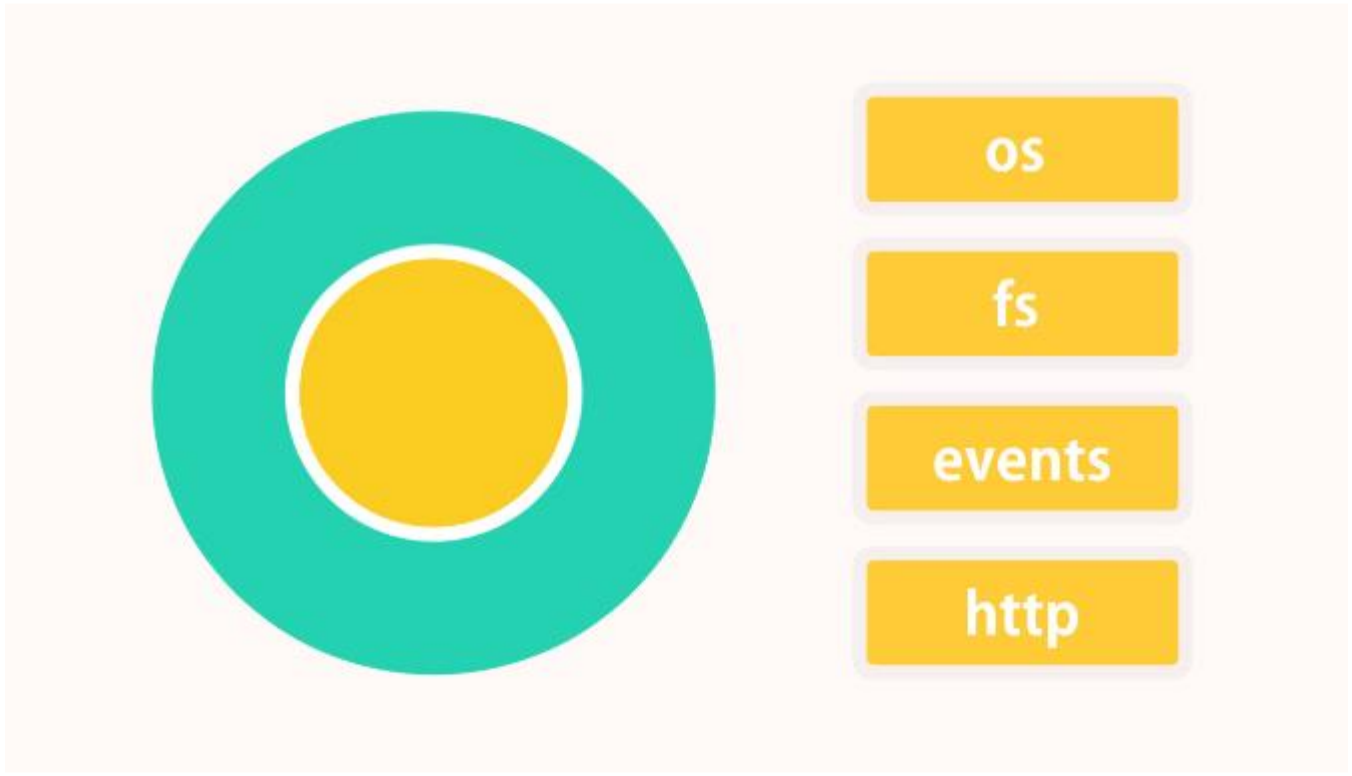
```
function sayHello(name) {
console.log("Welcome " + name);
}
sayHello("Usman");
//window or document objects are not available here
```

Node Recap

- Node is a runtime environment for executing JS code. –
- Essentially, Node is a C++ program that embeds Chrome’s v8 engine, the fastest JS engine in the world. –
- We use Node to build fast and scalable networking applications. It’s a perfect choice for building RESTful services. –
- Node applications are single-threaded. That means a single thread is used to serve all clients. –

Node Recap

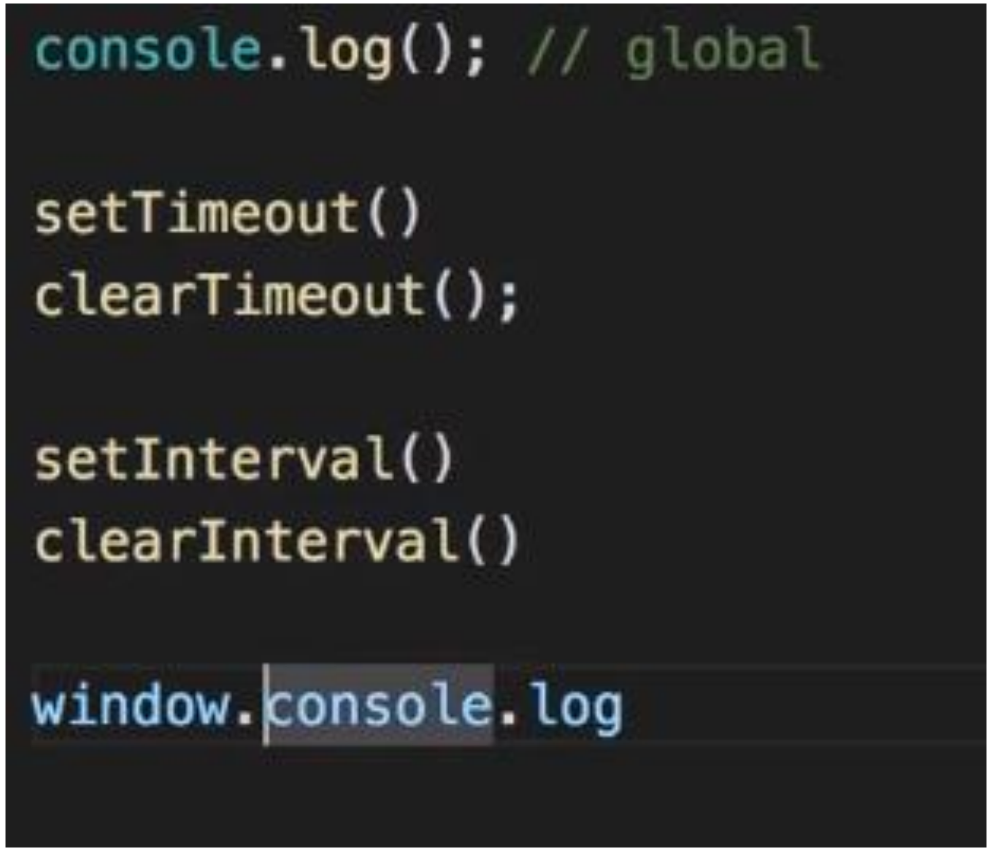
- Node applications are asynchronous or non-blocking by default. That means when the application involves I/O operations (eg accessing the file system or the network), the thread doesn't wait (or block) for the result of the operation. It is released to serve other clients. –
- This architecture makes Node ideal for building I/O-intensive applications. –
- You should avoid using Node for CPU-intensive applications, such as a video encoding service. Because while executing these operations, other clients have to wait for the single thread to finish its job and be ready to serve them .–
- In Node, we don't have browser environment objects such as window or the document object. Instead, we have other objects that are not available in browsers, such as objects for working with the file system , network, operating system , etc.



Node

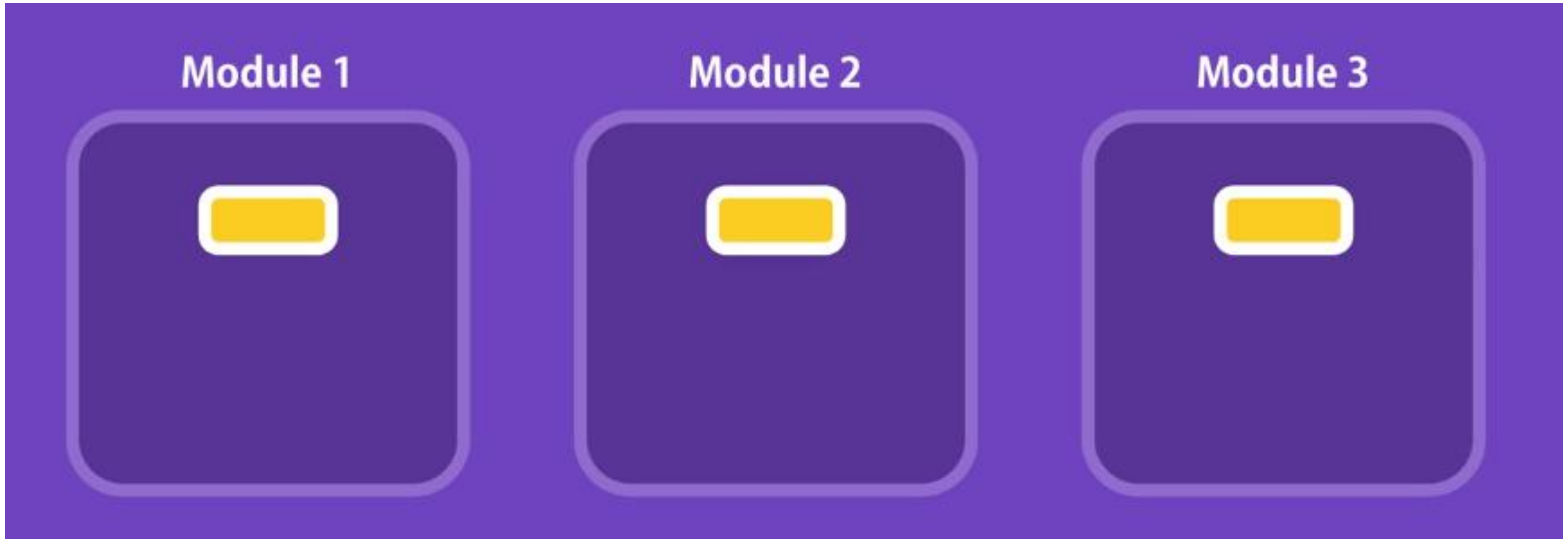
MODULE SYSTEM

Window object is not available here

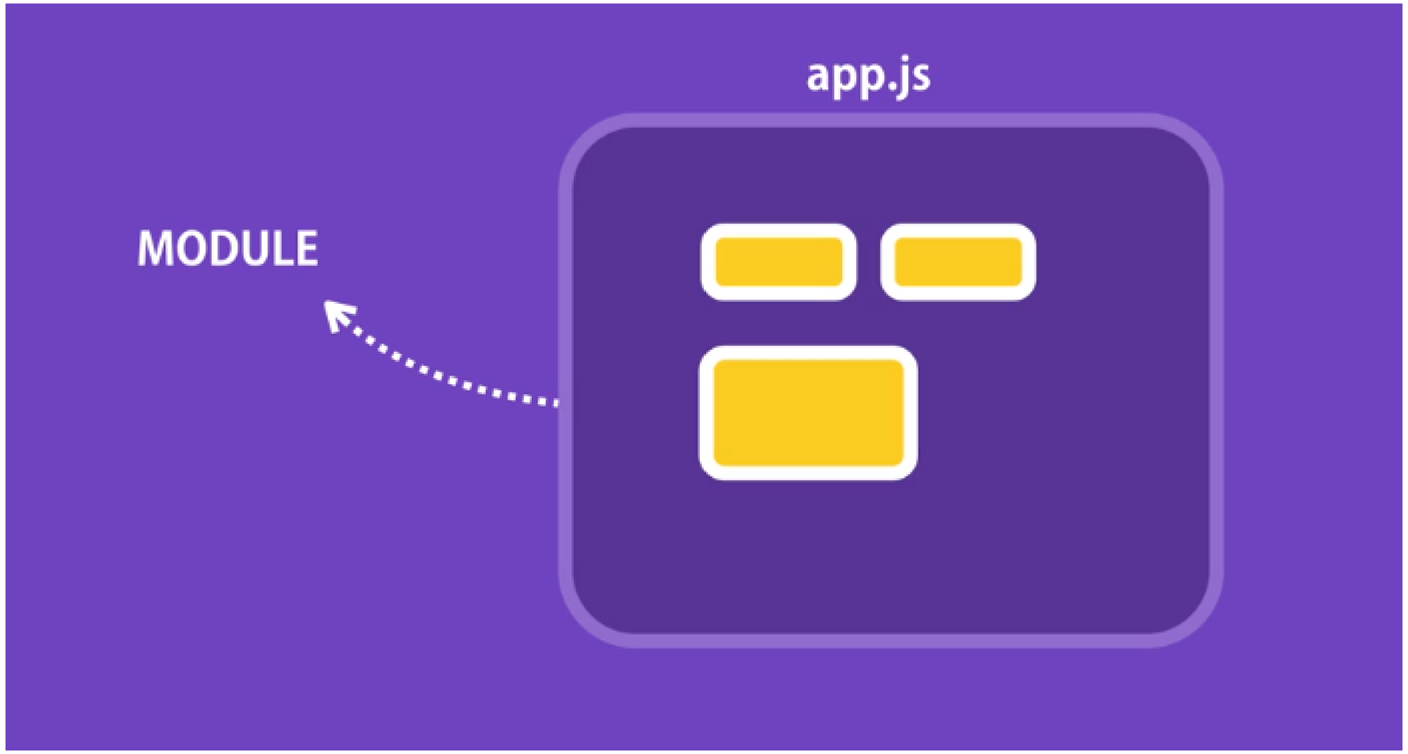


```
console.log(); // global

setTimeout()
clearTimeout();

setInterval()
clearInterval()

window.console.log
```

Modularity



Every file is a module



Logger.js exporting log function and url

```
//paraneters available here
//exports,require, module, __filename,__dirname
function log(message) {
console.log(message);
}
var url="usmanlive.com";
console.log(__filename);
console.log(__dirname);
module.exports.log = log;
module.exports.url = url;
```

Using logger.js

```
const logger = require ('./logger');
logger.log("Hello Usman");
```

Exercise

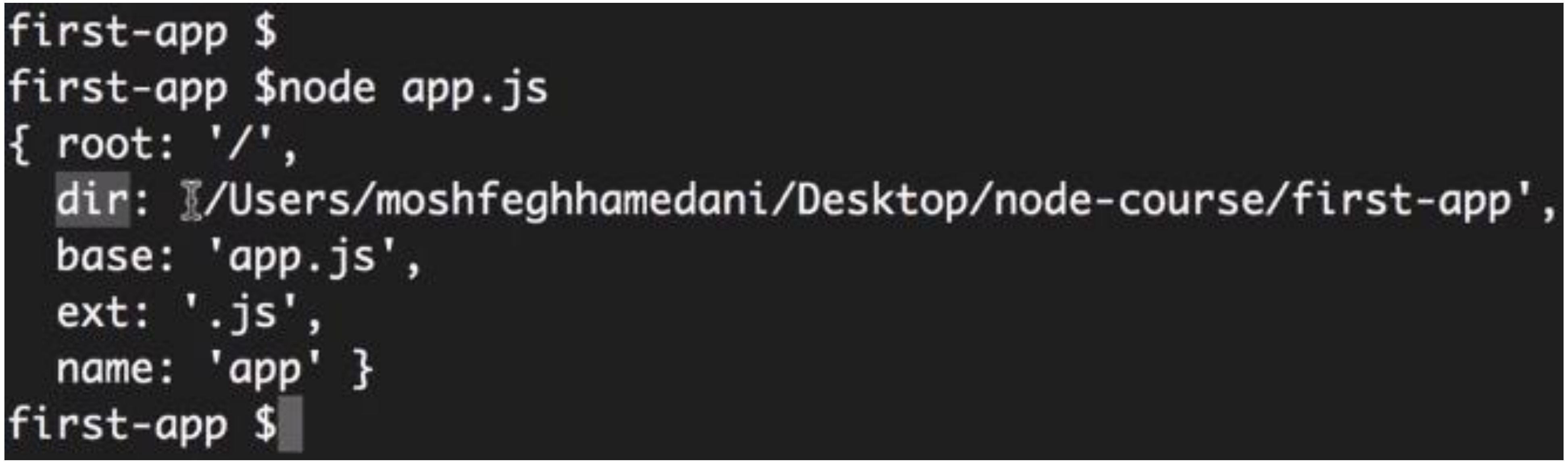
Install jshint

- npm install –g jshint
- jshint app.js

Head to nodejs.org and explore docs

Built in modules (path)

```
const path = require('path');
const pathObj = path.parse(__dirname);
console.log(pathObj);
```



```
first-app $
first-app $node app.js
{ root: '/',
  dir: '/Users/moshfeghhamedani/Desktop/node-course/first-app',
  base: 'app.js',
  ext: '.js',
  name: 'app' }
first-app $
```

Built in modules (fs)

```
const fs = require('fs');
//sync should be avoided at all cost
//console.log(fs.readdirSync("./"));
files = fs.readdir('./',function(err,result)
  {
   if(result) console.log(result);
  }
);
console.log(files);
```

Built in modules (os)

```
const os = require('os');
console.log(os.freemem());
console.log(os.uptime());
//template string available with ES6
console.log(`Home Directory ${os.homedir}`);
```

Here’s a prototype-based class User

```
function User(name) {
  this.name = name;
}
User.prototype.sayHi = function() {
  alert(this.name);
}
let user = new User("John");
user.sayHi();
```

The “class” syntax

```
class User {
  constructor(name) {
    this.name = name;
  }
  sayHi() {
    alert(this.name);
  }
}
let user = new User("John");
user.sayHi();
```

Node http module

WHOALA WE ARE BUILDING API NOW

http

```
const http = require('http');

// Create an HTTP server

const server = http.createServer();

// Listen for the 'connection' event and log a message

server.on('connection', (socket) => {

  console.log('Connection created!');

});

// Set the port number for the server
//to listen on

const port = 3000;

// Start the server and listen on the specified port

server.listen(port, () => {

  console.log(`Server listening on port ${port}`);

});
```

First api call listener – localhost:3000

```
 const http = require('http');
const server = http.createServer((req,res)=>{
  if(req.url==='/'){
  res.write(JSON.stringify([1,4,5,6]));
  res.end();
  }
 });
 server.listen(3000);
 console.log('server started at 3000....');
```

Exercise

Create a web server which should return dummy articles from url

- Localhost:3000/api/articles

Convert JSON to string

```
var arr = [ "John", "Peter", "Sally", "Jane" ];
var myJSON = JSON.stringify(arr);
```

Convert String to JSON

```
 var text = '{ "name":"John", "birth":"1986-
12-14", "city":"New York"}';
var obj = JSON.parse(text);
obj.birth = new Date(obj.birth);
```