

Nodejs & NPM

The Second JS Platform

Agenda

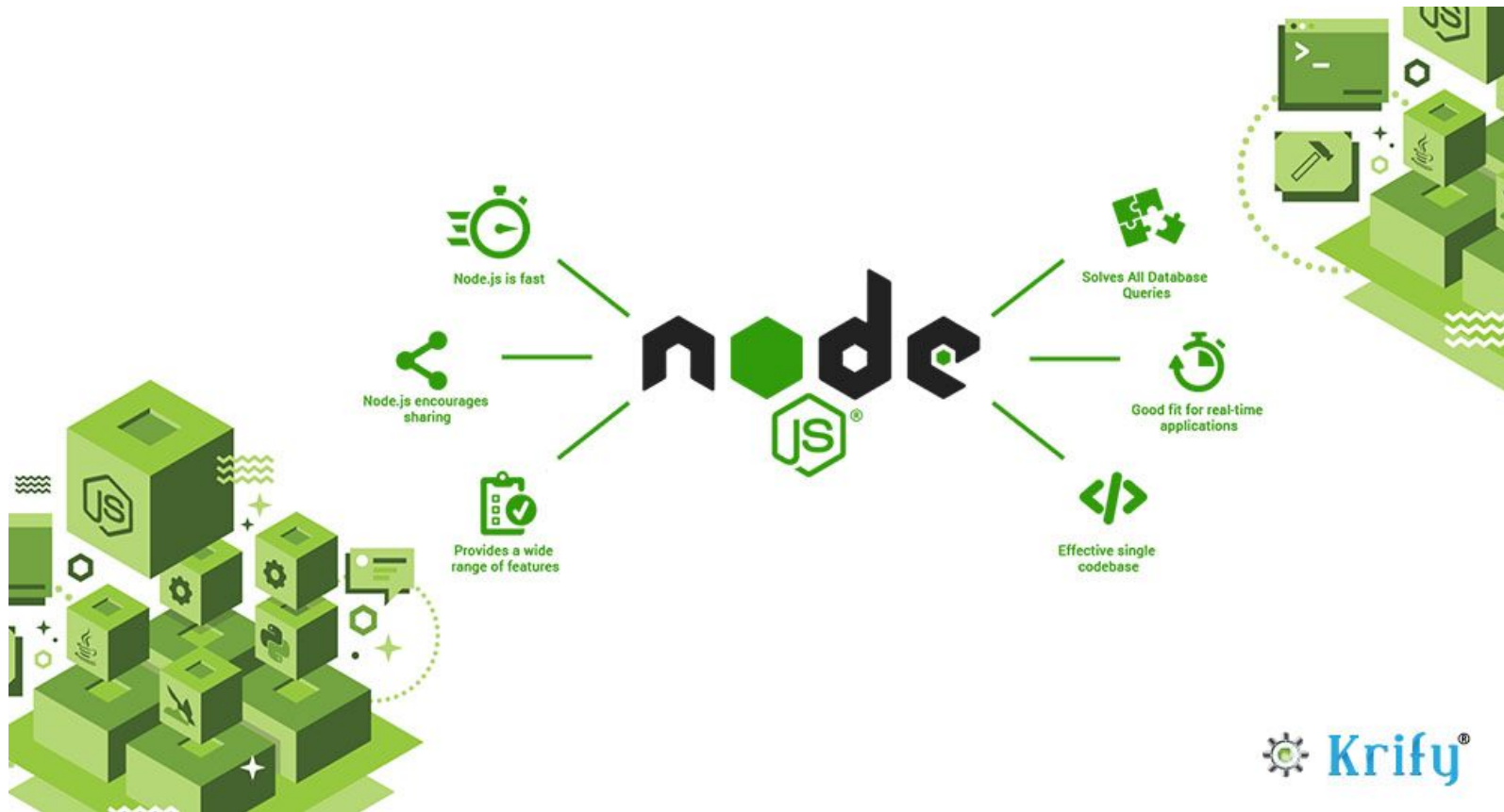
- What is nodejs?
- How it works?
- Why is it so popular?
- What can you achieve by node?
- What is module-based programming?
- What is a module in nodejs?
- What is a package?
- What is a package manager?
- What is NPM and how it works?

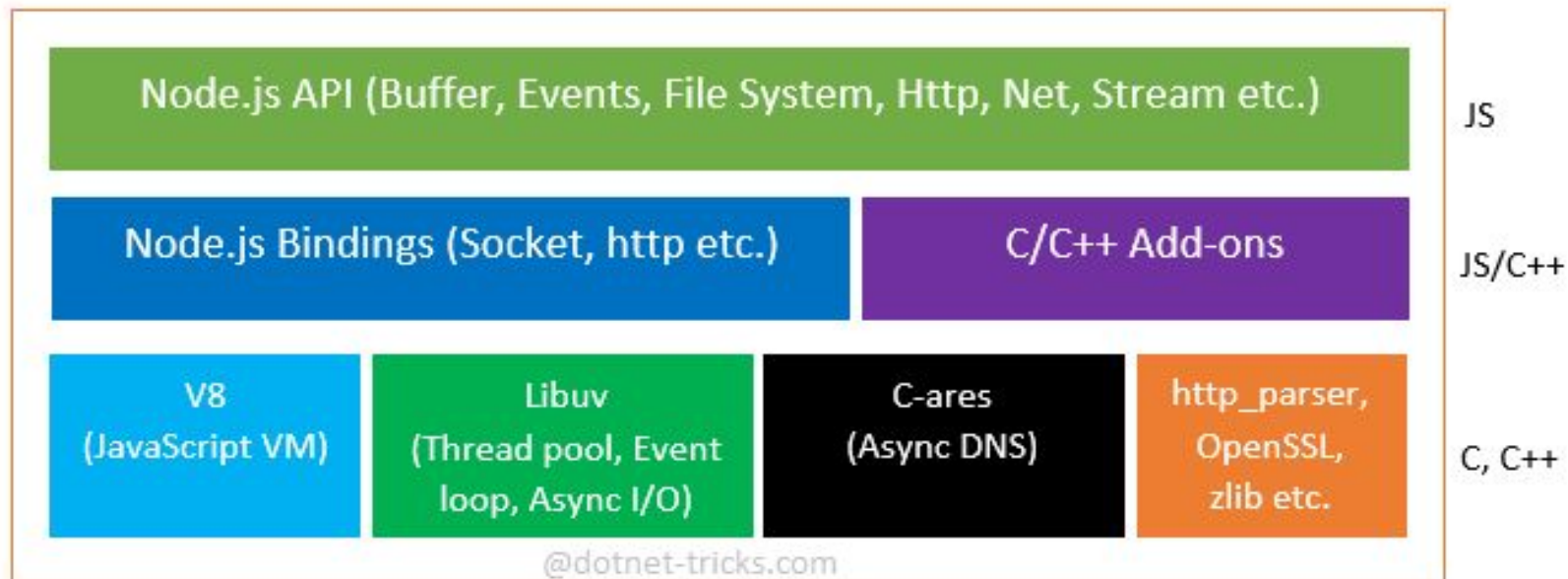
Learn Objectives

- You know that nodejs is a platform
- You know that nodejs is used in many environments
- You know nodejs is javascript
- You know about npm and how it is working
- You can create a nodejs module

What is nodejs?

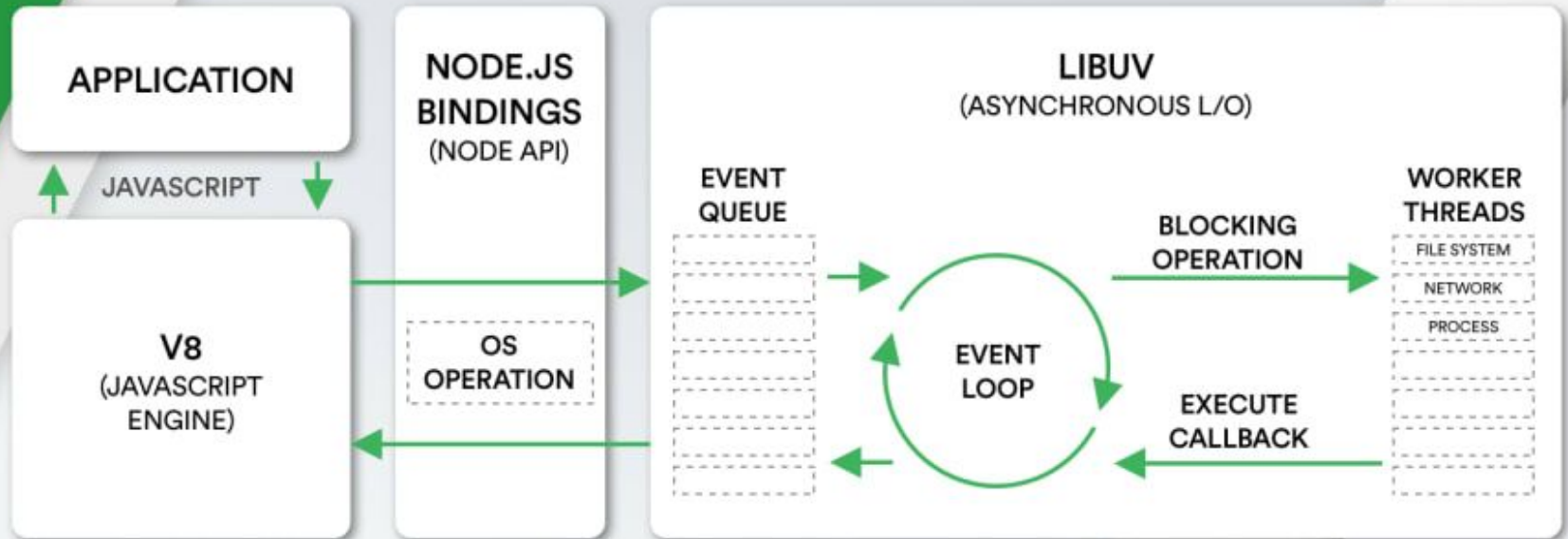
- Nodejs is a different js platform than the browsers
- There is literally no UI component in node (no DOM)
- Node has its own APIs (filesystem, stream, buffer, process, http, etc...)
- Node was developed by Ryan Dahl and was publicly available in 2009
- It is basically an execution environment on any operating system (windows, linux, macos, etc...)
- It is open source and available on GitHub
- Current LTS version 14.x
- Governance by OpenJS Foundation
- <https://nodejs.org/en/>





Node.js 4.2.4 Architecture

The Node.Js System

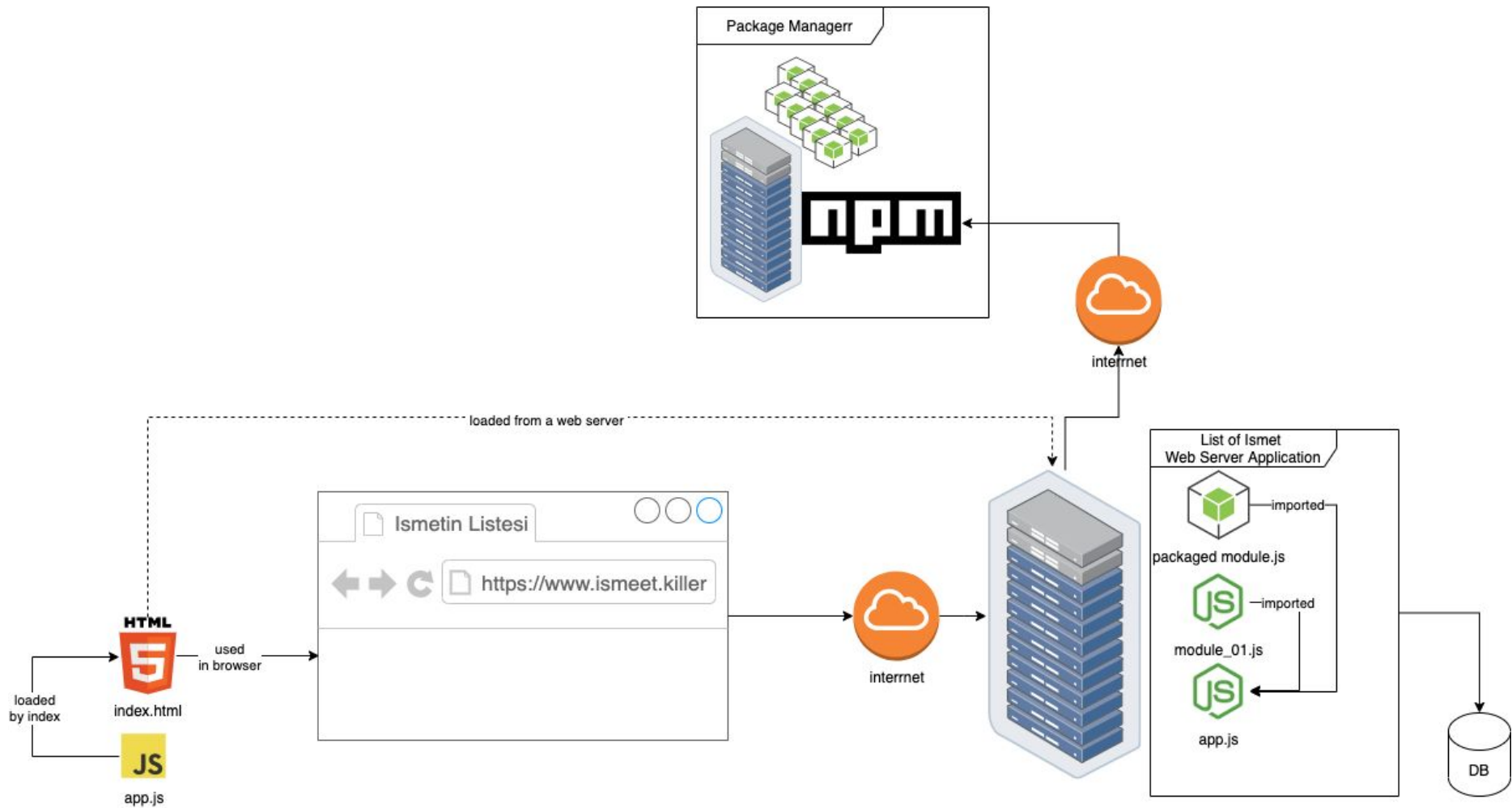


How it works?

Node is used in/as Server

- Nodejs has its own built-in http server
- Nodejs can deliver data to all internet clients (browser, mobile, cli, etc...)
- React is the frontend platform we will be learning soon
- Nodejs is the backend platform we need to learn as well





User

Frontend

Server



Access
web app



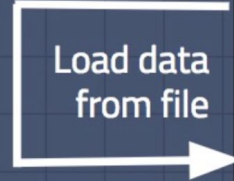
Connect
via API



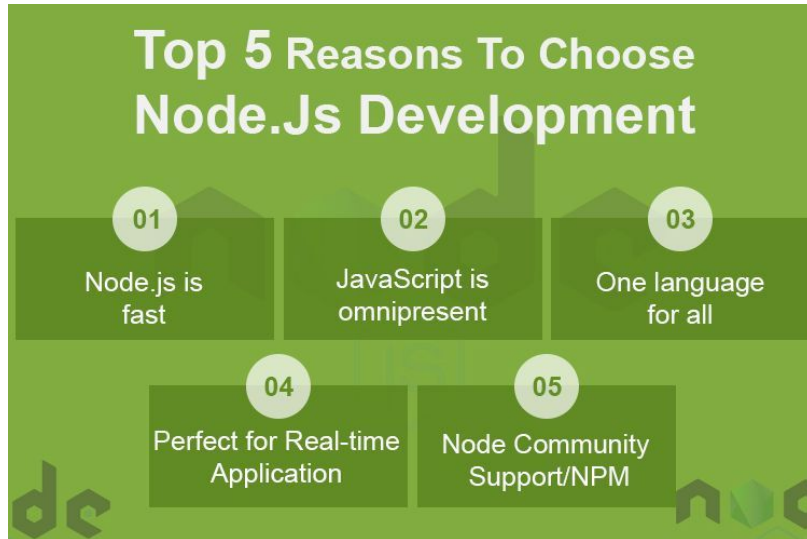
Query & Receive
the data



Load data
from file



Reasons why nodejs is trendy?



What can one build by using node?

- Internet of Things. IoT (Internet of Things) is a network of devices such as sensors, beacons, actuators, and any other items embedded with electronics that enables them to send and exchange data. ...
- Real-Time Chats.
- Real-Time Collaboration Tools.
- Microservices Architecture.
- Desktop Applications
- Mobile Applications
- CLI Tools
- ...

Who uses nodejs



Install nodejs & npm

<https://nodejs.org/>

node --version

npm --version

Module Based Programming

Reuse programming models



- Node's minimal modularity concept are the modules
- Everything is built up on modules
- Modules can have modules
- Modules can include multiple functions, multiple classes
- Modules can contains raw json data.
- This is very similar what we try to achieve with our project structure. First divide concepts into smaller parts and them bring them together, if needed for a specific solution.

A Package

Reuse modules



- Simply put, it almost the same thing
- It differs only from which height you look at the modules
- A package is more deliverable module to outside
- It may have too many modules
- A package contains a “package.json”

Node Modules

- Modularization
- Create overview
- Reusability

/projet

application.js

```
require('./module');  
require('module2');
```

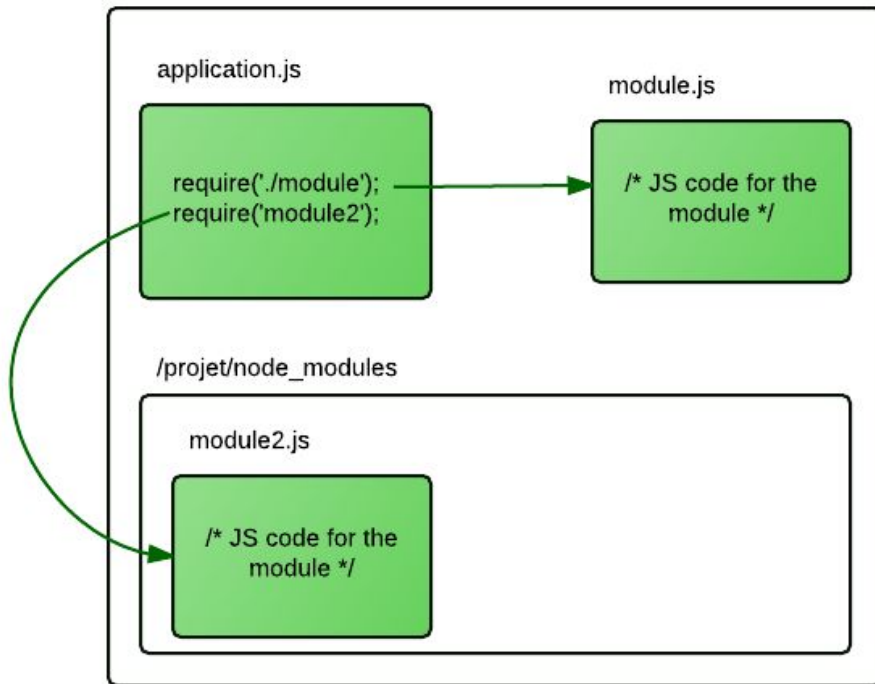
module.js

```
/* JS code for the  
module */
```

/projet/node_modules

module2.js

```
/* JS code for the  
module */
```



```
function add(){  
  return x+y;  
}  
  
function subtract(){  
  return x-y;  
}  
  
module.exports = {  
  add: add,  
  sub: subtract  
};|
```

This is what get exposed outside
of your module's closure



```
var utils = require('./utils.js');  
  
console.log(utils.add(1,100));  
console.log(utils.sub(100,1));|
```

Install & try the first code

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

const hostname = '127.0.0.1';
const port = 3000;

const server = http.createServer((req, res) => {
  res.statusCode = 200;
  res.setHeader('Content-Type', 'text/plain');
  res.end('Hello World');
});

server.listen(port, hostname, () => {
  console.log(`Server running at http://${hostname}:${port}/`);
});
```

DEMO

How to create a module?

How can we control packages?

- You can create packages by your own. There would be local packages belonging you.
- But you can use others packages through making use of NPM
- NPM stands for Node Package Manager (<https://npmjs.org>)
- Every developer publish her code into NPM (it is free)
- It is a central database, you can access and download any available packages
- The cli tool is bundled into nodejs installation file. So if you install node, it automatically installs NPM as well.
- NPM has been recently bought by GitHub
- GitHub has been bought by microsoft
- There is an incredible support for npm by GitHub.
- The key element in managing packages is the “package.json”

([https://www.npmjs.com/package/package.json](#))



```
1 {
2   "name": "npdemo",
3   "version": "1.0.0",
4   "description": "npm init demo Package",
5   "main": "index.js",
6   "scripts": {
7     "test": "echo \\\"Error: no test specified\\\" &&"
8   },
9   "author": "Geeks Read",
10  "license": "ISC",
11  "dependencies": {
12    "express": "^4.16.3",
13    "knock-knock-jokes": "^1.7.0"
14  }
15 }
```

package.json

```
>npm init
>npm init --save
>npm install express --save
```




🔍 Search packages

Search

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Build amazing things

We're npm, Inc., the company behind Node package manager, the npm Registry, and npm CLI. We offer those to the community for free, but our day job is building and selling useful tools for developers like you.

Take your JavaScript development up a notch

Get started today for free, or step up to npm Pro to enjoy a premium JavaScript development experience, with features like private packages.

DEMO

How to use NPM?