

# Node.js (1)

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2017-2018



# 1.Contexte

Organisation du cours



# Planning



# Évaluation

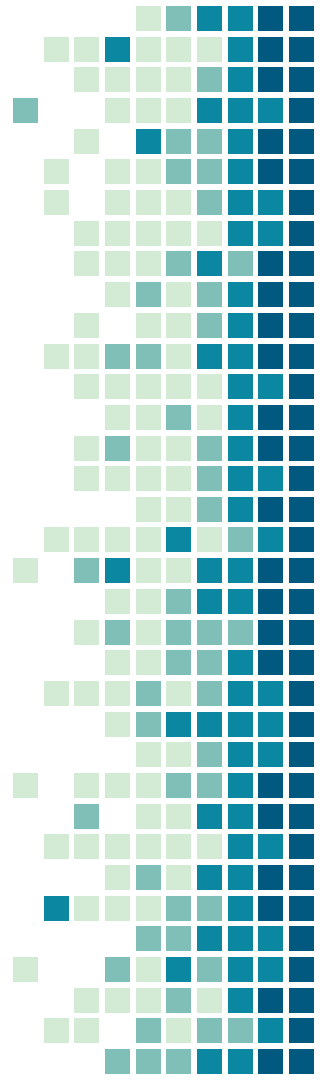
## Projet (85%)

Avec une série de contraintes imposées et une série de contraintes à choisir.

## Présentation (15%)

- Concerne une techno utilisée dans votre projet.
- 30 minutes

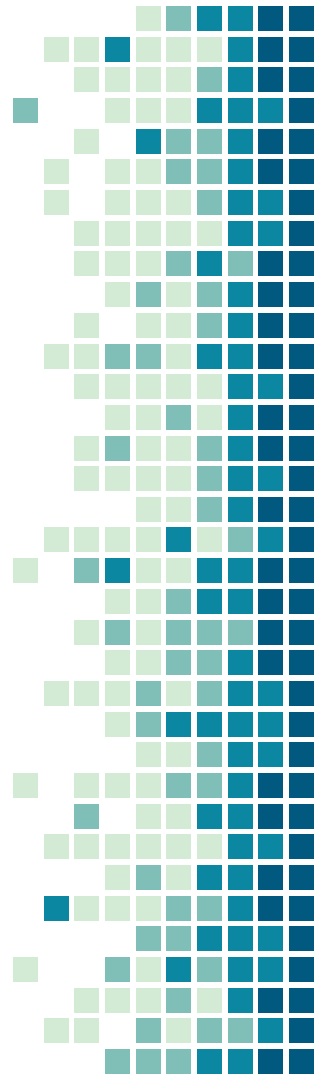
100% d'évaluation continue, pas d'examen et impossibilité de repasser en seconde session.

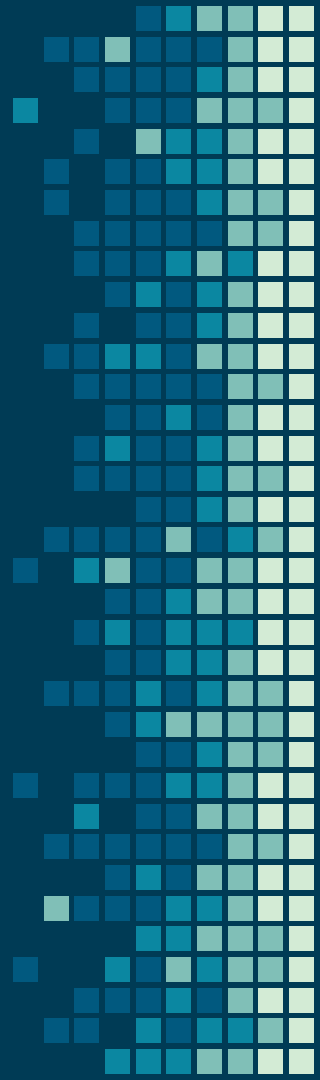


# Sujet de projet

- Surveillance d'avions
- Télécharger des app depuis Google Play
- Envoyer des chansons vers spotify depuis Youtube
- Course de flappy birds en multijoueurs
- Pentest chrome plugin
- Clone d'une app connue en Open Source
- ...

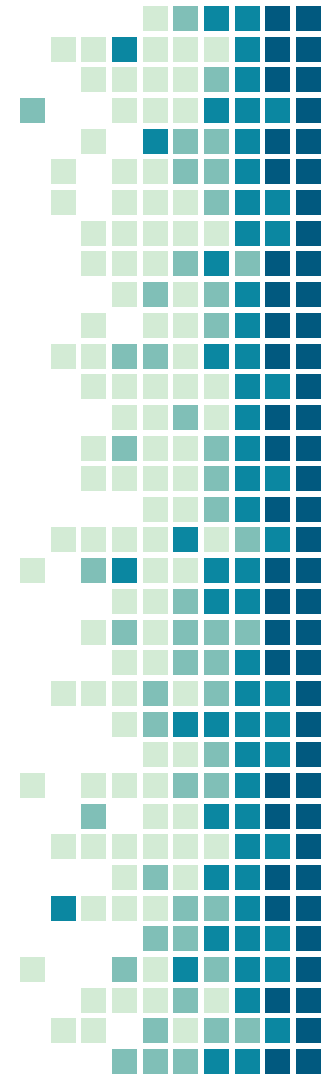
Venez nous proposer une idée !





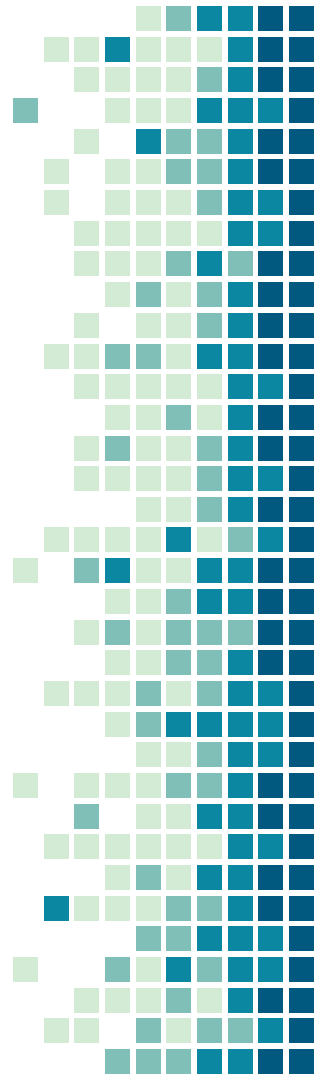
# Generalités

- Plateforme Javascript
- 2009
- Bas niveau
- Populaire comme plateforme serveur
- Stable
- SAP, LinkedIn, Microsoft, IBM, Paypal...



# Generalités

- Moteur Javascript V8 (Google)
- C++ / Javascript
- Cross-platform
- Usage : scripting, serveur, desktop...

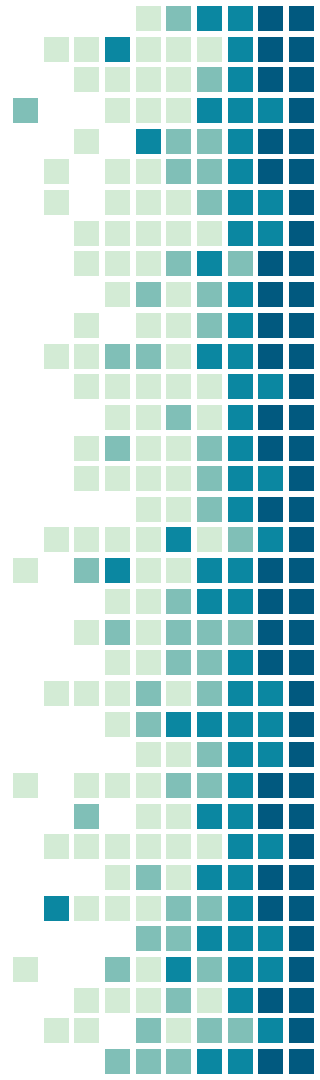




# Hello world !

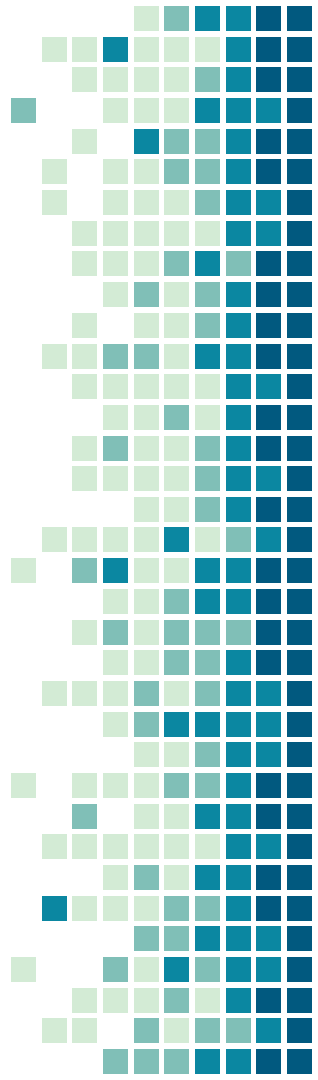
```
console.log("Hello world !");
```

```
> node hello.js  
Hello world !  
>
```



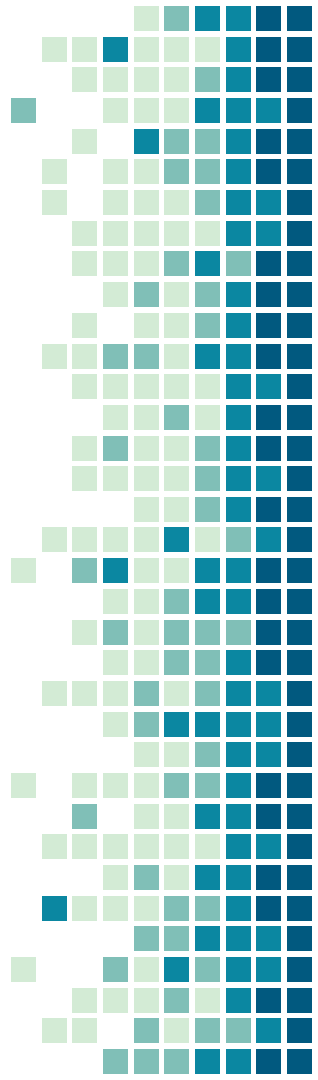
# Module

- 1 fichier JS
- Exports
- Imports
- Modules par défaut : http, os, net, tls, fs...



# Package

- Groupe de modules à partager
- Comme une bibliothèque
- 1 unique point d'entrée



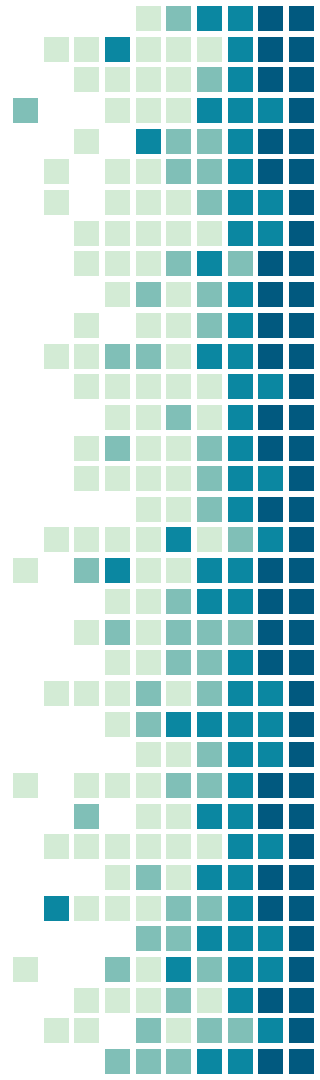


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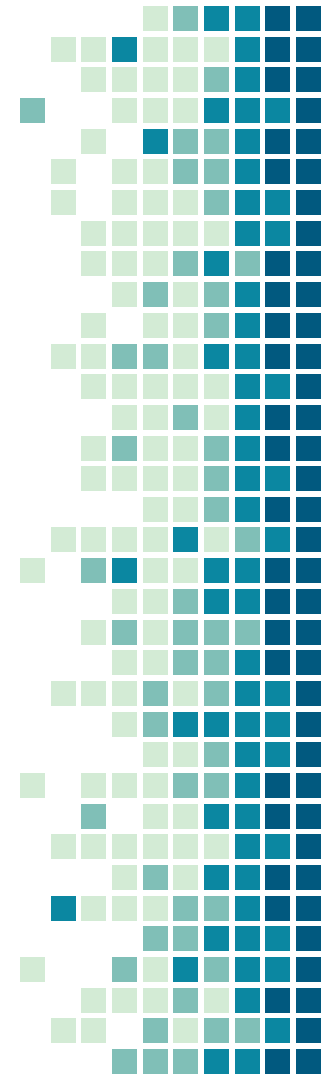
# NPM

- Node Package Manager
- Ecrit en Javascript
- Registry



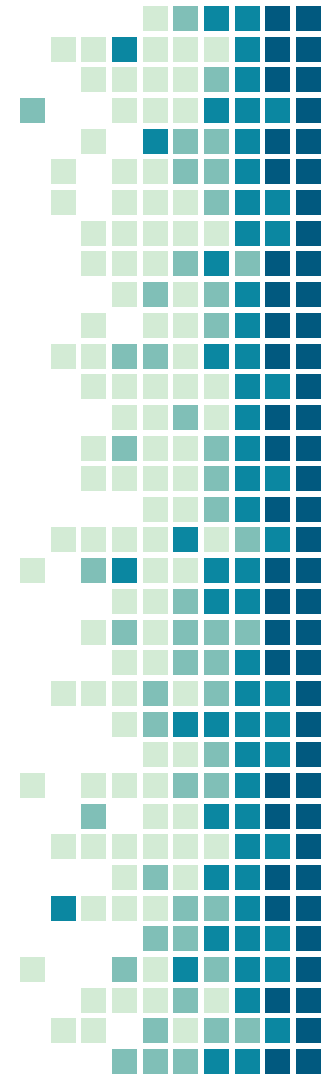
# package.json

```
{
  "name": "reseau-front",
  "version": "0.9.1",
  "description": "Application de gestion pour le réseau",
  "main": "index.js",
  "scripts": {
    "start": "webpack-dev-server --open",
    "build-dev": "webpack --progress --hide-modules",
    "build-preprod": "webpack -p --progress --hide-modules"
  },
  "author": "Laurent Leleux",
  "license": "ISC",
  "devDependencies": {
    "express": "^4.14.1",
    "webpack": "^2.2.1",
    "webpack-dev-server": "^2.3.0"
  },
  "dependencies": {
    "jquery": "^3.1.1",
    "lodash": "^4.17.4"
  }
}
```

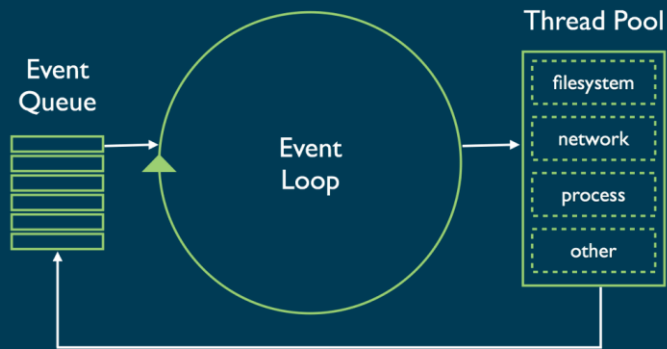


# NPM

- > npm init
- > npm install
- > npm install --save
- > npm update
- > npm remove
- > npm prune
- ...



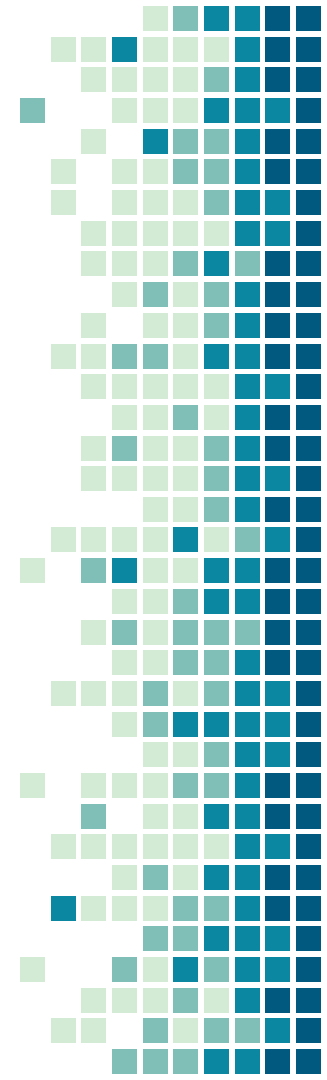
# Event loop





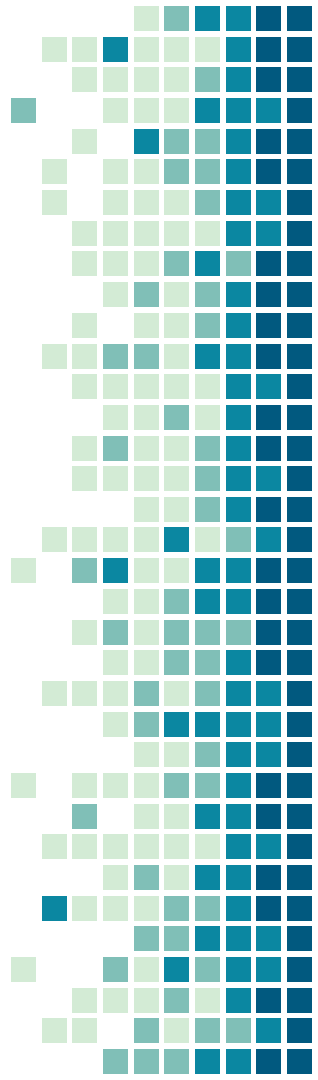
# Le coût des I/O

■ Cache L1	3 cycles
■ Cache L2	14 cycles
■ RAM	250 cycles
■ Disque	41 000 000 cycles
■ Réseau	240 000 000 cycles



# Comment les gérer

- Synchrone
- Nouveau process (fork)
- Threads

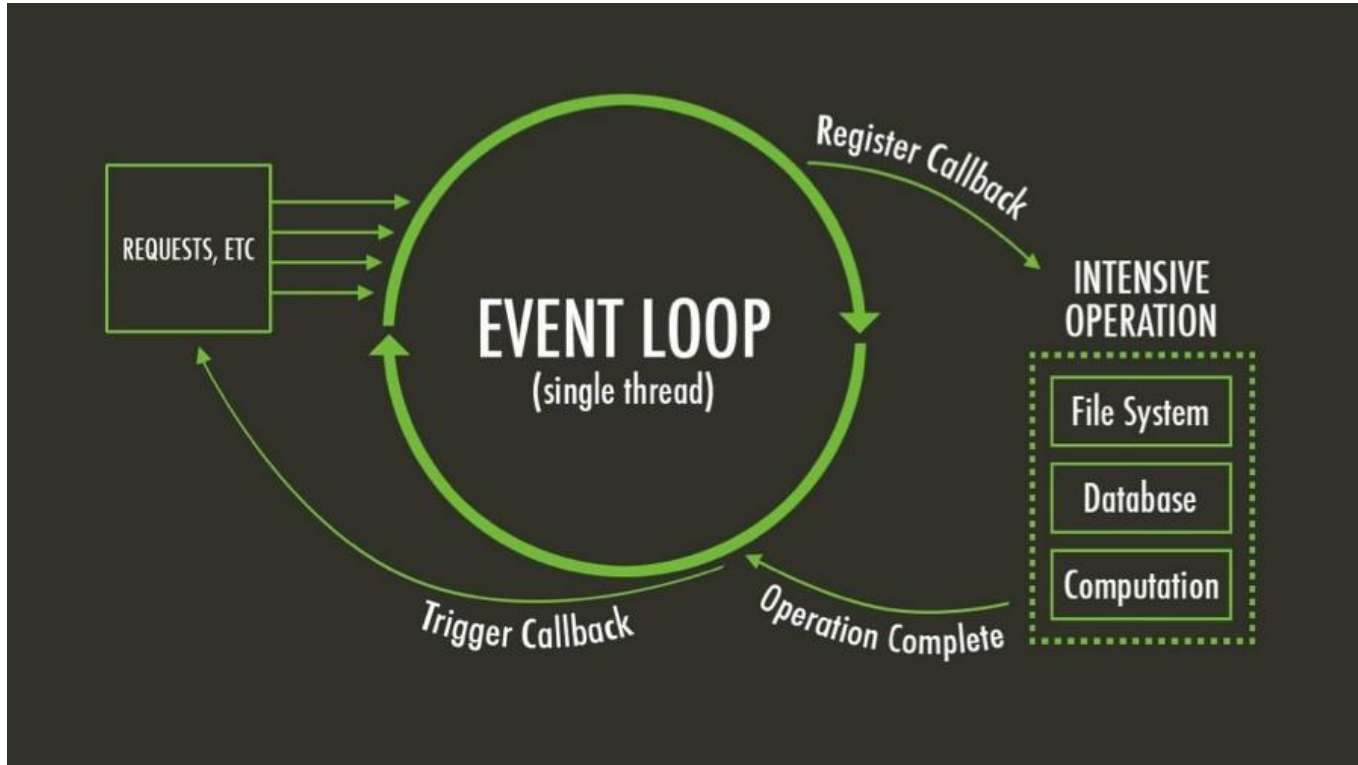


# Lecture de fichier synchrone

```
const fs = require('fs');  
const data = fs.readFileSync('/file.md');  
console.log('done');
```

# Lecture de fichier asynchrone

```
const fs = require('fs');
fs.readFile('/file.md', (err, data) => {
  console.log('Here is the data !')
  if (err) throw err;
});
console.log('done');
```




# PM2

```
[joni] ~/keymetrics/PM2 $ pm2 list
```

App name	id	mode	pid	status	restart	uptime	memory	watching
API	0	cluster	26076	online	0	2m	22.582 MB	disabled
API	1	cluster	26085	online	0	2m	22.527 MB	disabled
API	2	cluster	26274	online	1	2m	22.566 MB	disabled
API	3	cluster	26133	online	0	2m	22.563 MB	disabled
Worker	4	fork	0	stopped	0	0	0 B	enabled
Mailer	5	fork	26165	online	0	2m	15.125 MB	disabled
Front	7	fork	26865	online	0	12s	14.465 MB	enabled

```
PM2 monitoring :
```

```
● API [0] [cluster_mode] [ 76 % ] 64.434 MB
● API [1] [cluster_mode] [ 80 % ] 64.949 MB
● Worker [2] [fork_mode] [ 0 % ] 15.125 MB
● Mailer [3] [fork_mode] [ 0 % ] 15.133 MB
```



Keymetrics

Conqueror

AXM-INTERACTION-APP

alexandre

Dashboard

Servers Signs

Apps Signs

Exceptions

Transactions

Custom actions

Events 2

Probes

Alerts

Settings

Help/Integration

Keymetrics production plan - 3 active servers - 10 applications

Public key

XXXXXXXXXX

Secret key

XXXXXXXXXX

Server #1 - Conqueror (62.210.94.153)

Status

Online

PM2 version

0.12.2

Memory usage

92.0 GB / 94.4 GB

CPU load average

0.19

CPU numbers

8

Hostname

Conqueror

MY-API

online

online for an hour

CPU

7 %

MEM

261.2 MB

Errors

2

Latency

0 ms

git@github.com:keymetrics/km-api.git

"add some features to be"

master

Versioning

Processes: 1

Restart: 61

Mode: fork

Interpreter: node

Process Metadata

Probes

Cached buckets

62

PM2 Connected

25

Realtime user

15

Save status mean

3.56ms

UDP

31.27req/s

Actions

data realtime user

data pm2 connected

Report an issue

Monitor more servers and applications with:

\$ pm2 interact XXXXXXXXXXX XXXXXXXXXXX [optional hostname]