

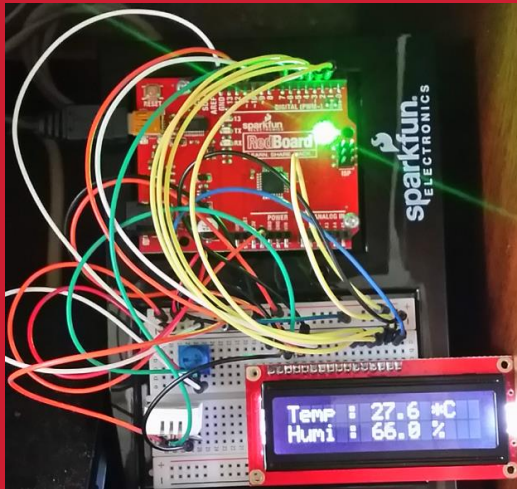
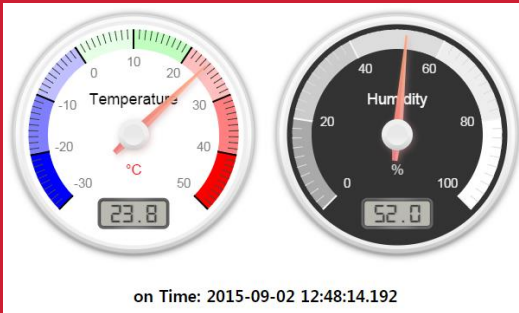


# HW-SW-Connectivity

[wk02]

## Node.js

## install & module test

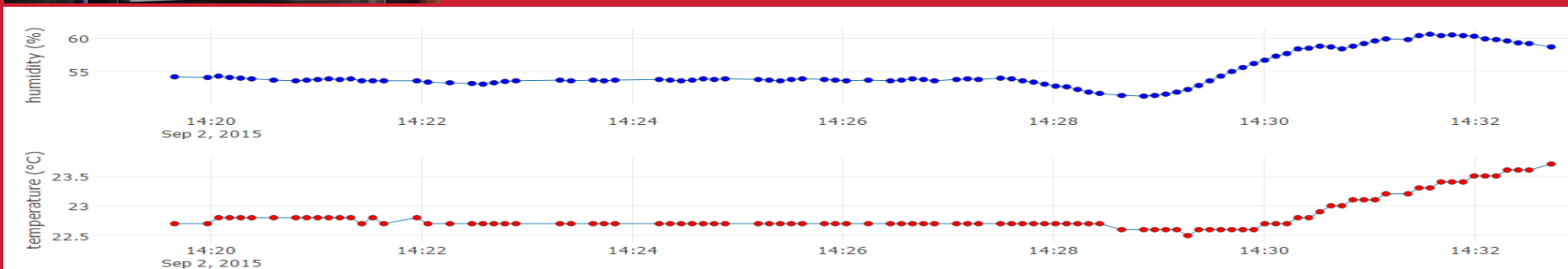


Basic HW and SW Integration using  
Arduino & Javascript

COMSI, INJE University

2<sup>nd</sup> semester, 2017

Email : [yish@inje.ac.kr](mailto:yish@inje.ac.kr)





# 주간계획서

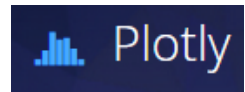
2017학년도 2학기

주간계획서			
주차	수업방법	수업내용	과제물
1	이론	교육과정 안내	가상강의 등록
2	이론/실습	모바일 서버 기초 : node.js 설치	
3	이론/실습	모바일 서버 프로그래밍 : node.js 응용	점검과제
4	이론/실습	기초 하드웨어: 아두이노 소개	점검과제
5	이론/실습	기초 하드웨어 프로그래밍: 아두이노 센서	프로젝트 1
6	이론/실습	시각화 프로그래밍: plotly.js	점검과제
7	이론/실습	아두이노 센서 신호 처리 및 시각화	프로젝트 1I
8	시험 또는 실습과제	중간고사	
9	이론/실습	아두이노 센서 신호 시각화 고급 프로그래밍	점검과제
10	이론/실습	모바일 데이터베이스 I: mongoDB 설치	점검과제
11	이론/실습	모바일 데이터베이스 II: mongoDB 응용 프로그래밍, Compass 활용	프로젝트 1II
12	이론/실습	모바일 클라이언트 프로그래밍 I: Angular.js 기초	점검과제
13	이론/실습	모바일 클라이언트 프로그래밍 II: Angular.js 응용 프로그래밍	점검과제
14	이론/실습	하드웨어와 소프트웨어 융합 IOT 프로젝트	프로젝트 IV
15	이론/실습	기말고사	

# Weekly schedule of HSC– 2<sup>nd</sup> semester, 2017



- **wk01** : Introduction to class and enrollment in cyber class (**Sublime text 3 install**)
- **wk02** : Basic mobile server : **node.js install** and test
- **wk03** : Mobile server programming : node.js App
- **wk04** : Basic HW : Arduino I. – circuit & programming, **Arduino SW install**
- **wk05** : Basic HW : Arduino II. – sensor circuit & programming
- **wk06** : Visualization using Javascript – **plyoly.js** and gauge.js
- **wk07** : Project-1 : Handling and visualization of signals from various sensors
- **wk08** : Mid-term exam.
- **wk09** : Advanced programming to visualize signals from sensors
- **wk10** : Mobile database I : **Mongo DB install**
- **wk11** : Mobile database II : Mongo DB App.
- **wk12** : Mobile client programming I : **Angular.js install**
- **wk13** : Mobile client programming II : Angular.js App.
- **wk14** : Project-2 : IOT project fusing HW & SW
- **wk15** : Final exam.





# Install sublime text 3 portable

[Home](#)[Download](#)[Buy](#)[Blog](#)[Forum](#)[Support](#)

## Sublime Text 3

### Download

Sublime Text 3 is currently in beta. The latest build is 3126.

- [OS X](#) (10.7 or later is required)
- [Windows](#) - also available as a [portable version](#)
- [Windows 64 bit](#) - also available as a [portable version](#)
- [Linux repos](#) - also available as a [64 bit](#) or [32 bit tarball](#)

Sublime Text may be downloaded and evaluated for free, however a license must be [purchased](#) for continued use. There is currently no enforced time limit for the evaluation.

For notification about new versions, follow [sublimehq](#) on twitter.

Even more bleeding-edge versions are available in the [dev builds](#).

[Sublime Text 2](#) is also still available.

<https://www.sublimetext.com/3>

◆ [Tip] Browse your html file from Sublime text3

◆ [Googling] “How to see html from sublime text3”

<http://michaelcrump.net/getting-sublime-3-to-launch-your-html-page-in-a-browser-with-a-key-combo/>

## Steps

- Tools -> Build System -> New Build System...
- Add the following Text for opening with Google Chrome

```
{      "cmd": ["open" "-a" "Google Chrome" "$file"]  }
```

- Save the file as : Chrome.sublime-build in your “User Folder”

Now select Tools -> Build System -> chrome and switch back to the HTML file and hit CMD-B on a Mac.

## What about Windows?

For Windows Machines following the same instructions except use the command :

```
{ "cmd": ["PATH_TO_YOUR_CHROME" "$file"] }
```

You can run it by pressing CTRL-B.



# 1.0 What is node.js?





# 1.0 What is node.js?

# Javascript on Server

Node.js is an open-source, runtime environment for developing **server-side and network applications in JavaScript**.

Its event-driven architecture and non-blocking I/O model makes it ideal for building **real-time applications that run across distributed devices**.



# 1.1 What is node.js?



홈 | ABOUT | 다운로드 | 문서 | 재단 | 참여하기 | 보안 | 뉴스

## Node.js®에 대해서

비동기 이벤트 주도 JavaScript 런타임으로써 Node는 확장성 있는 네트워크 애플리케이션을 만들 수 있도록 설계되었습니다. 다음 "hello world" 예제는 다수의 연결을 동시에 처리할 수 있습니다. 각 연결에서 콜백이 실행되는데 실행할 작업이 없다면 Node는 대기합니다.

```
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\n');
});

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





## 1.2 What is node.js?

- **Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.**
- **Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient.**
- **Node.js' package ecosystem, npm, is the largest ecosystem of open source libraries in the world.**



# 1.3 Non-blocking IO

## Blocking Code

```
var contents = readFile('/path/some/file.txt');  
console.log(contents);  
console.log('Another independent operation');
```

## Non-Blocking Code

```
var contents = readFile('/path/some/file.txt', function(err, contents){  
    console.log(err || contents);  
});  
  
console.log('Another independent operation');
```

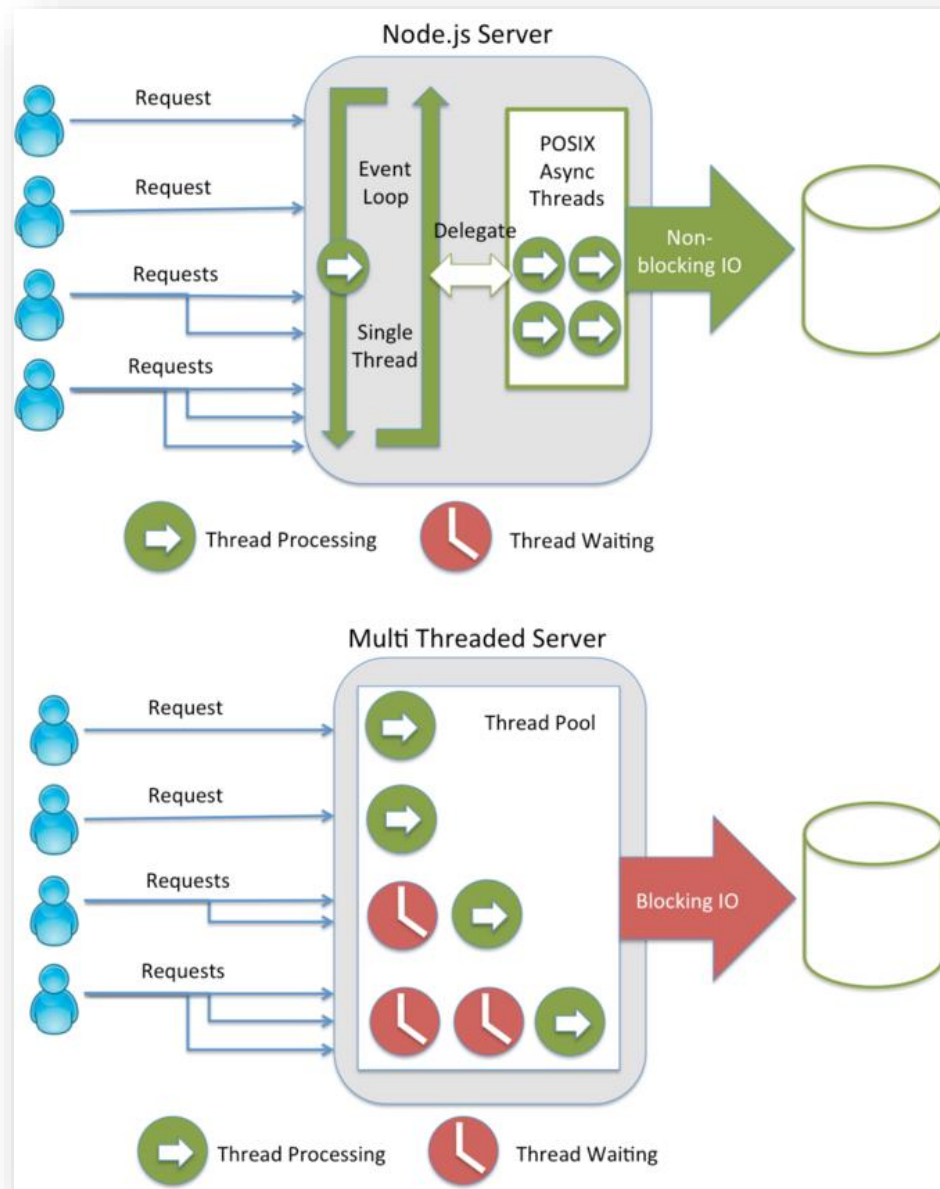
**[Quiz]** 계란 1 개를 삶을 때 10분이 걸린다.

그러면 계란 10 개를 삶을 때 걸리는 시간은?

**Blocking : ?**

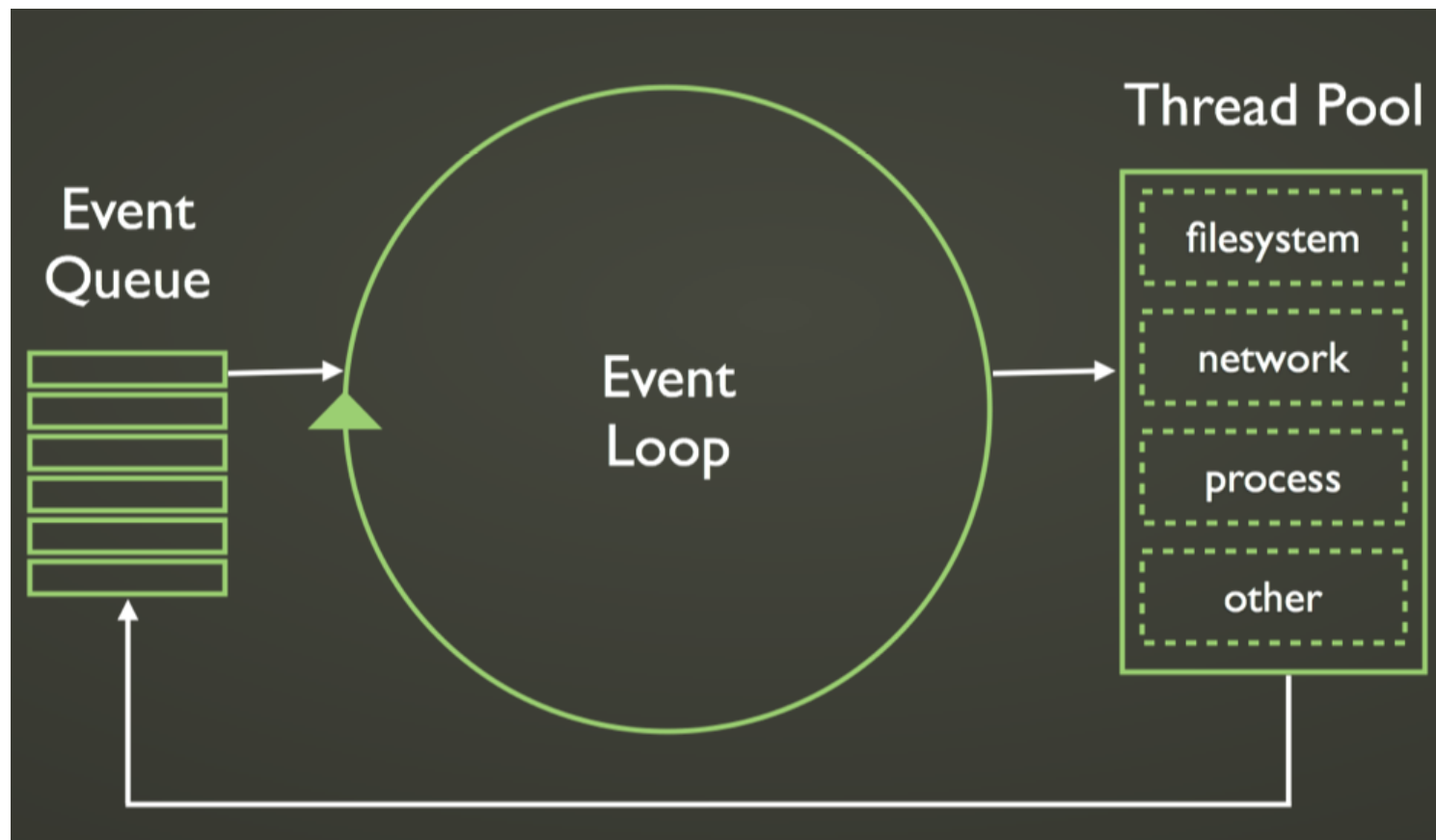
**Non-blocking : ?**

# 1.3 Non-blocking IO





# 1.4 Non-blocking event loop





# 2.1 Install node.js



홈 | ABOUT | 다운로드 | 문서 | 재단 | 참여하기 | 보안 | 뉴스

## 다운로드


최신 LTS 버전: v6.11.3 (includes npm 3.10.10)

플랫폼에 맞게 미리 빌드된 Node.js 인스톨러나 소스코드를 다운받아서 바로 개발을 시작하세요.

**LTS**  
대다수 사용자에게 추천

**현재 버전**  
최신 기능

  
**Windows Installer**  
node-v6.11.3-x64.msi

  
**Macintosh Installer**  
node-v6.11.3.pkg

  
**Source Code**  
node-v6.11.3.tar.gz

Windows Installer (.msi)	32-bit	64-bit	
Windows Binary (.zip)	32-bit	64-bit	
macOS Installer (.pkg)	64-bit		
macOS Binaries (.tar.gz)	64-bit		
Linux Binaries (x86/x64)	32-bit	64-bit	
Linux Binaries (ARM)	ARMv6	ARMv7	ARMv8
Source Code	node-v6.11.3.tar.gz		

<https://nodejs.org/ko>



## 2.2 Install node.js portable



<https://gareth.flowers/nodejs-portable/>



# 2.2 Install node.js portable

← → ↺ 🏠 GitHub, Inc. [US] | <https://github.com/garethflowers/nodejs-portable/releases/> 🔍 ☆ 📄 ⓘ

This repository Search Pull requests Issues Marketplace Explore

🖨️ [garethflowers / nodejs-portable](#) 👁 Watch ▾ 8

🔗 Code ⚠ Issues 6 🔗 Pull requests 3 📁 Projects 0 📖 Wiki Insights ▾

Releases Tags

Latest release

🔖 v5.7.0  
🔗 3d91ba6

## NodeJS Portable v5.7.0

garethflowers released this on 26 Feb 2016 · 2 commits to master since this release

- Updated to NodeJS v5.7.0.

### Downloads

[NodeJSPortable\\_5.7.0.paf.exe](#)

[Source code \(zip\)](#)

[Source code \(tar.gz\)](#)

<https://github.com/garethflowers/nodejs-portable/releases/>



## 2.3.1 Verify installation

```
NodeJS
Node
v5.7.0
E:\#Coder\#NodeJSPortable\#Data>node -v
v5.7.0
E:\#Coder\#NodeJSPortable\#Data>npm -v
3.5.3
E:\#Coder\#NodeJSPortable\#Data>
```

**node -v**

**npm -v**





## 2.3.2 Check node folders.

```
NodeJS
E:\Coder\NodeJSPortable\Data>dir
E 드라이브의 볼륨: Lecture
볼륨 일련 번호: 2618-C99F

E:\Coder\NodeJSPortable\Data 디렉터리

2017-09-06 오전 09:37 <DIR> .
2017-09-06 오전 09:37 <DIR> ..
2016-02-26 오전 04:36 6,148 .DS_Store
2017-09-06 오전 09:37 <DIR> node_modules
2015-10-15 오전 07:21 296 npm
2015-10-15 오전 07:21 204 npm.cmd
2017-09-06 오전 09:37 89 PortableApps.comLauncherRuntimeData-NodeJSPortable.ini
2017-09-06 오전 09:37 <DIR> settings
4개 파일 6,737 바이트
4개 디렉터리 1,114,830,856,192 바이트 남음

E:\Coder\NodeJSPortable\Data>cd ..

E:\Coder\NodeJSPortable>dir
E 드라이브의 볼륨: Lecture
볼륨 일련 번호: 2618-C99F

E:\Coder\NodeJSPortable 디렉터리

2017-09-06 오전 09:37 <DIR> .
2017-09-06 오전 09:37 <DIR> ..
2017-09-06 오전 09:37 <DIR> App
2017-09-06 오전 09:37 <DIR> Data
2015-09-28 오전 07:22 5,003 Help.html
2015-09-28 오전 07:22 148,080 NodeJSPortable.exe
2017-09-06 오전 09:37 <DIR> Other
2개 파일 153,083 바이트
5개 디렉터리 1,114,830,856,192 바이트 남음

E:\Coder\NodeJSPortable>
```

**Data folder**

**Node.exe folder**



## 2.4 Testing node.js – node shell

```
NodeJS
E:\Coder\NodeJSPortable>node
> a=2
a=2
2
> b=5
5
> c=a+b
7
> c
7
> a*b
10
> a/b
0.4
>
(To exit, press ^C again or type .exit)
>
E:\Coder\NodeJSPortable>
```

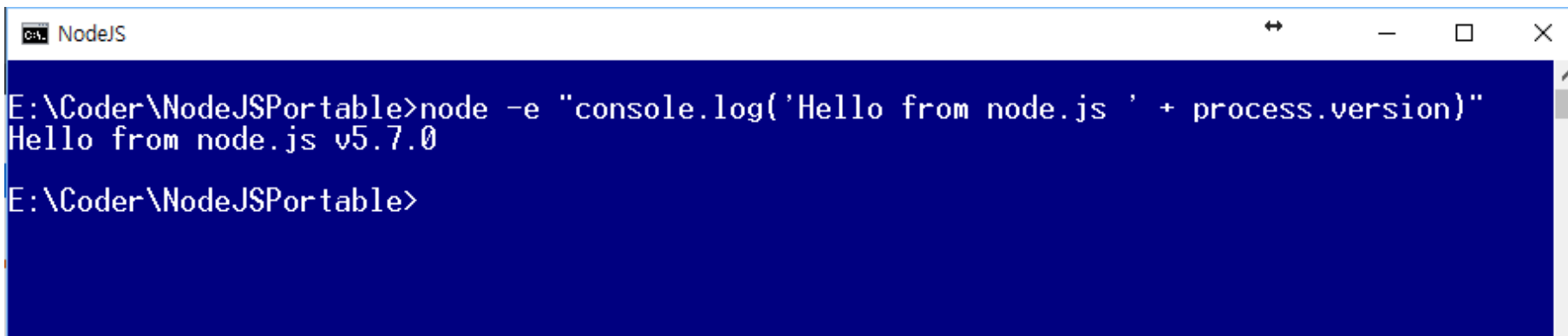
**// node shell**  
**node**  
**>**  
**>**  
**// exit**  
**^C^C**



## 2.5 Testing node.js – final test

**Final test if Node.js was installed correctly:**

```
node -e "console.log('Hello from node.js ' + process.version)"
```



```
NodeJS
E:\Coder\NodeJSPortable>node -e "console.log('Hello from node.js ' + process.version)"
Hello from node.js v5.7.0
E:\Coder\NodeJSPortable>
```



## 3.1 Using node.js in Sublime text3

- Node.js 연결 : Tools > Build System > New Build System

```
{  
    "cmd": ["node.exe path", "$file"],  
    "selector": "source.js"  
}
```

Node.sublime-build 로 저장

E:\Coder\WSB3P3126\Data\Packages\User\Node.sublime-build (src) - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

FOLDERS

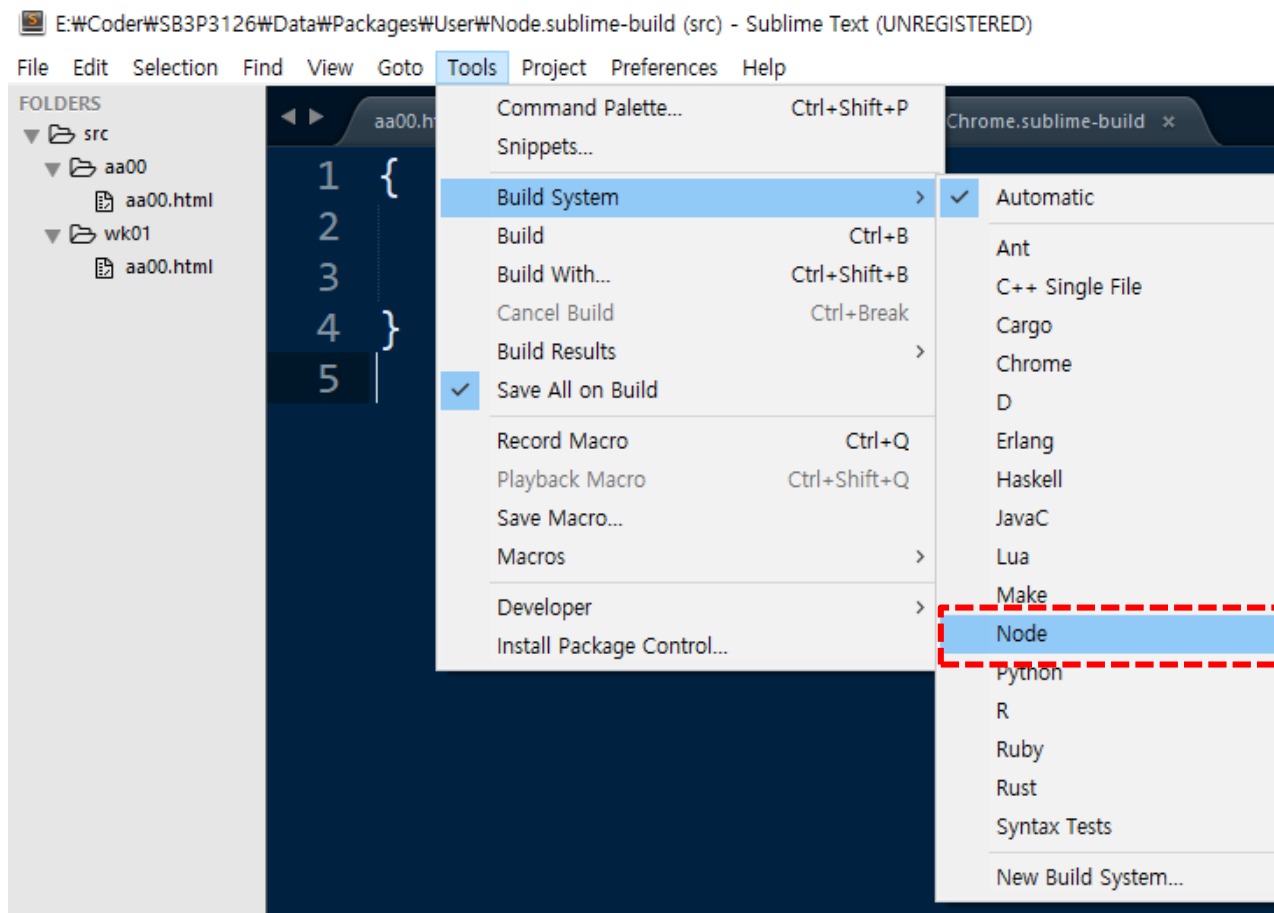
▼ src  
 ▼ aa00  
 aa00.html  
 ▼ wk01  
 aa00.html

```
1 {  
2   "cmd": ["E:/Coder/NodeJSPortable/App/NodeJS/node.exe", "$file"],  
3   "selector": "source.js"  
4 }  
5
```



## 3.2 Using node.js in Sublime text3

### ● Node.js 연결 : Check node from Build System





# Hands On



## 4.1 Node project : npm init

```
NodeJS
E:\Coder\NodeJSPortable>cd data
E:\Coder\NodeJSPortable\Data>dir
E 드라이브의 볼륨: Lecture
볼륨 일련 번호: 2618-C99F

E:\Coder\NodeJSPortable\Data 디렉터리

2017-09-06 오전 09:37 <DIR> .
2017-09-06 오전 09:37 <DIR> ..
2016-02-26 오전 04:36 6,148 .DS_Store
2017-09-06 오전 09:37 <DIR> node_modules
2015-10-15 오전 07:21 296 npm
2015-10-15 오전 07:21 204 npm.cmd
2017-09-06 오전 09:37 89 PortableApps.comLauncherRuntimeData-NodeJSPortable
e.ini
2017-09-06 오전 09:37 <DIR> settings
4개 파일 6,737 바이트
4개 디렉터리 1,114,830,794,752 바이트 남음

E:\Coder\NodeJSPortable\Data>md aa00
E:\Coder\NodeJSPortable\Data>cd aa00
E:\Coder\NodeJSPortable\Data\aa00>md start
E:\Coder\NodeJSPortable\Data\aa00>cd start
E:\Coder\NodeJSPortable\Data\aa00\start>npm init
```



## 4.2 Node project : **npm init**

### **npm init**

```
cmd npm
E:\Coder\NodeJSPortable\Data\aa00\start>npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See 'npm help json' for definitive documentation on these fields
and exactly what they do.

Use 'npm install <pkg> --save' afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
name: (start) aa00
version: (1.0.0)
description: start node
entry point: (index.js)
test command:
git repository:
keywords: test
author: Redwoods
license: (ISC) MIT
About to write to E:\Coder\NodeJSPortable\Data\aa00\start\package.json:

{
  "name": "aa00",
  "version": "1.0.0",
  "description": "start node",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [
    "test"
  ],
  "author": "Redwoods",
  "license": "MIT"
}

Is this ok? (yes)
```





## 4.3 Node project : package.json

### package.json

type package.json

Use "cat" when  
"type" does not  
work

```
NodeJS
E:\Coder\NodeJSPortable\Data\aa00\start>dir
E 드라이브의 볼륨: Lecture
볼륨 일련 번호: 2618-C99F

E:\Coder\NodeJSPortable\Data\aa00\start 디렉터리

2017-09-06 오전 10:27 <DIR>          .
2017-09-06 오전 10:27 <DIR>          ..
2017-09-06 오전 10:27                250 package.json
                           1개 파일          250 바이트
                           2개 디렉터리 1,114,830,794,752 바이트 남음

E:\Coder\NodeJSPortable\Data\aa00\start>type package.json
{
  "name": "aa00",
  "version": "1.0.0",
  "description": "start node",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [
    "test"
  ],
  "author": "Redwoods",
  "license": "MIT"
}

E:\Coder\NodeJSPortable\Data\aa00\start>
```

Save as

AAnn\_package.png



## 4.4 Node project : package.json

The screenshot shows the Sublime Text 3 interface. The title bar indicates the file path: E:\Coder\NodeJSPortable\Data\aa00\start\package.json (src, Data) - Sublime Text (UNREGISTERED). The menu bar includes File, Edit, Selection, Find, View, Goto, Tools, Project, Preferences, and Help. On the left, the 'FOLDERS' sidebar shows a tree structure with 'src' expanded, containing 'aa00' (which contains 'aa00.html') and 'wk01' (which contains 'aa00.html'). Under 'Data', 'aa00' is expanded to show 'start', which contains the 'package.json' file currently being edited. The main editor area shows the content of 'package.json' with line numbers 1 through 15. The JSON content is as follows:

```
1 {
2   "name": "aa00",
3   "version": "1.0.0",
4   "description": "start node",
5   "main": "index.js",
6   "scripts": {
7     "test": "echo \"Error: no test specified\" && exit 1"
8   },
9   "keywords": [
10    "test"
11  ],
12   "author": "Redwoods",
13   "license": "MIT"
14 }
15
```

**Sublime Text 3**

**Project > Add Folder to Project**

**Select folder: NodeJSPortable/Data**

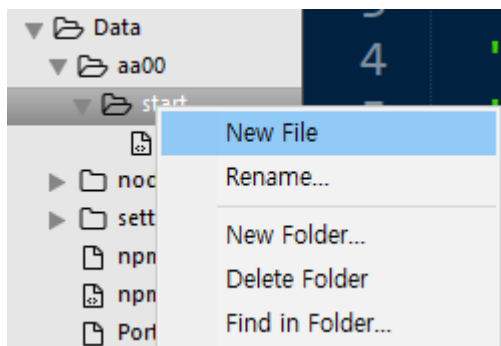


## 5. Node Apps

# Node Apps



# 5.1.1 Hello Node! – hello.js



E:\Coder\NodeJSPortable\Data\aa00\start\hello.js (src, Data) - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

FOLDERS

▼ src  
    ▼ aa00  
        aa00.html  
    ▼ wk01  
        aa00.html  
▼ Data  
    ▼ aa00  
        ▼ start  
            hello.js  
            package.json  
▶ node\_modules  
▶ settings  
npm  
npm.cmd  
PortableApps.com

```
package.json x hello.js x aa00.html x  
1 // aann's first node app  
2 console.log("Hello Node!!!");
```

```
Hello Node!!!  
[Finished in 0.1s]
```



## 5.1.2 Hello Node! – node hello.js

NodeJS

E:\Coder\NodeJSPortable\Data\aa00\start 디렉터리

```
2017-09-06 오전 10:40 <DIR> .
2017-09-06 오전 10:40 <DIR> ..
2017-09-06 오전 10:40      55 hello.js
2017-09-06 오전 10:27    250 package.json
                305 바이트
                2개 파일
                2개 디렉터리 1,114,822,864,896 바이트 남음
```

```
E:\Coder\NodeJSPortable\Data\aa00\start>node hello.js
Hello Node!!!
```

```
E:\Coder\NodeJSPortable\Data\aa00\start>■
```

// node cmd  
node hello.js



## 5.1.3 Hello Node! – npm start

E:\Coder\NodeJSPortable\Data\aa00\start\package.json • (src, Data) - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

FOLDERS

- ▼ src
  - ▼ aa00
    - aa00.html
  - ▼ wk01
    - aa00.html
  - ▼ Data
    - ▼ aa00
      - start
        - hello.js
        - package.json
  - ▶ node\_modules
  - ▶ settings
  - npm
  - npm.cmd
  - PortableApps.com

```
1 {
2   "name": "aa00",
3   "version": "1.0.0",
4   "description": "start node",
5   "main": "index.js",
6   "scripts": {
7     "start": "node hello.js",
8     "test": "echo \"Error: no test specified\" && exit 1"
9   },
10  "keywords": [
11    "test"
12  ],
13  "author": "Redwoods",
14  "license": "MIT"
15 }
16
```

NodeJS

E:\Coder\NodeJSPortable\Data\aa00\start> npm start

> aa00@1.0.0 start E:\Coder\NodeJSPortable\Data\aa00\start  
> node hello.js

Hello Node!!!

E:\Coder\NodeJSPortable\Data\aa00\start>



## 5.2.1 Using function in node

E:\Coder\Node\SPortable\Data\aa00\start\hello\_function.js (src, Data) - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

FOLDERS

- ▼ src
  - ▼ aa00
    - aa00.html
  - ▼ wk01
    - aa00.html
  - ▼ Data
    - ▼ aa00
      - ▼ start
        - hello.js
        - hello\_function.js
        - package.json
    - node\_modules
    - settings
      - npm
      - npm.cmd
      - PortableApps.comLauncher

```
1 // aann's first node app
2 console.log("Hello Node!!!");
3
4 function hello(what){
5     console.log("Hello " + what + " !");
6 }
7
8 hello("COMSI");
9 hello("aa00");
```

```
Hello Node!!!
Hello COMSI !
Hello aa00 !
[Finished in 0.2s]
```



## 5.2.2 Using module in node

```
D:\#Node#jv00#start#using_module.js (MSnn, jv00) - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

OPEN FILES
x index.js
x using_module.js

FOLDERS
▶ MSnn
▼ jv00
  ▶ start
    index.js
    package.json
    using_module.js

1 // Using module in node.
2 var util = require('util');
3
4 function hello(what) {
5     util.print('Hello ' + what + "!\n");
6 }
7
8 hello("Node");
9 hello("JV00");

(node) util.print is deprecated. Use console.log instead.
Hello Node!
Hello JV00!
[Finished in 0.2s]

https://nodejs.org/api/util.html#util_util_print

Line 9, Column 15 Tab Size: 4 JavaScript
```

```
// Using module in node.
var util = require('util');
```





## 5.2.3 Using local module – hello\_module.js

E:\Coder\NodeJS\Portable\Data\aa00\start\hello\_module.js (src, Data) - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

FOLDERS

- src
- Data
  - aa00
    - start
      - hello.js
      - hello\_call.js
      - hello\_function.js
      - hello\_module.js
      - package.json
- node\_modules

```
1 // locale module
2
3 module.exports = function(what) {
4     console.log("Hello " + what + " !");
5 }
6
```

E:\Coder\NodeJS\Portable\Data\aa00\start\hello\_call.js • (src, Data) - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

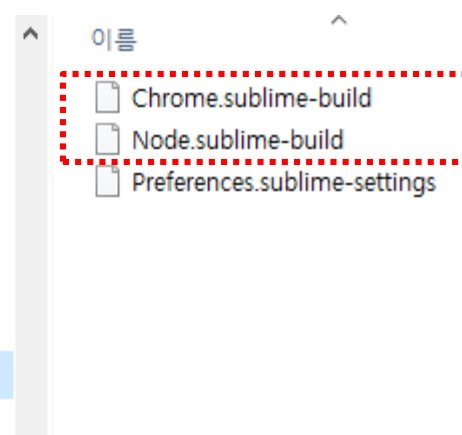
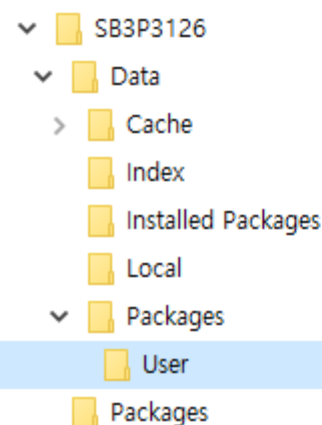
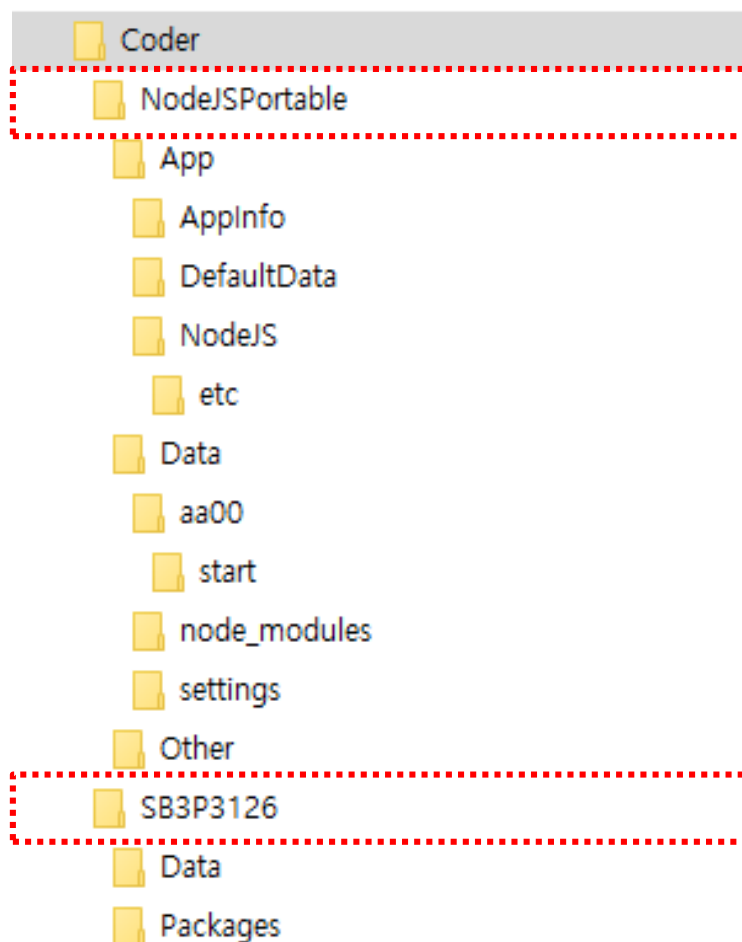
FOLDERS

- src
- Data
  - aa00
    - start
      - hello.js
      - hello\_call.js
      - hello\_function.js
      - hello\_module.js
      - package.json
- node\_modules
- settings

```
1 // hello_call.js - call local module hello_module.js
2
3 var olleh = require('./hello_module');
4
5 olleh("COMSI");
6 olleh("aa00");
```

Call local module 'hello\_module.js' from hello\_call.js

# Checking – Portable working folders





# [Practice]

## ◆ [wk02]

- Node module : **aanninfo.js**
- Upload file name : **AAnn\_Rpt01.zip**



# [practice] local module : aanninfo.js

**index\_aann.js** uses local module **aanninfo.js**.

The screenshot shows a Sublime Text editor window with the following content:

```
E:\Coder\NodeJS\Portable\Data\aa00\start\index_aa00.js (src, Data) - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help

FOLDERS
└─ src
  └─ Data
    └─ aa00
      └─ start
        ├── aa00info.js
        ├── hello.js
        ├── hello_call.js
        ├── hello_function.js
        ├── hello_module.js
        └─ index_aa00.js
      └─ package.json
  └─ node_modules
  └─ settings
  └─ npm
  └─ npm.cmd
  └─ PortableApps.comLauncher

index_aa00.js
aa00info.js

1 // index_aann.js
2
3 var myinfo = require('./aa00info');
4
5 myinfo("aa00", "Redwoods", '010-8558-5527');
6
7 myinfo("aa88", "COMSI", '010-1234-5678');
8

My Info
ID : aa00
Name : Redwoods
Phone : 010-8558-5527

My Info
ID : aa88
Name : COMSI
Phone : 010-1234-5678

[Finished in 0.2s]
```

**Save as  
AAnn\_info.png**

## ◆ [Target of this week]

### My Info using node module – aanninfo.js

1. **Make local module – aanninfo.js**
2. **Call aanninfo.js from index\_aann.js.**
3. **Capture your result.**

**제출파일명 : AAnn\_Rpt01.zip**

■ 압축할 파일들

- ① **AAnn\_package.png**
- ② **AAnn\_info.png**
- ③ **aanninfo.js**

[\[참고\] Node local module 만들기](#)

## ● References & good sites

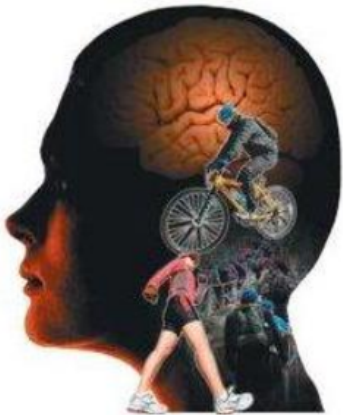
- ✓ <http://www.nodejs.org/ko> Node.js
- ✓ <http://www.arduino.cc> Arduino Homepage
- ✓ <http://www.w3schools.com> By w3schools
- ✓ <http://www.github.com> GitHub
- ✓ <http://www.google.com> Googling



[Features](#) [Business](#) [Explore](#) [Marketplace](#) [Pricing](#)

Search GitHub

[Sign in](#) or [Sign up](#)



**Redwoods Yi**

Redwoods

Block or report user

📍 GimHae, Republic of Korea

Overview

Repositories 5

Stars 2

Followers 0

Following 0

## Pinned repositories

### [dht22-iot-project](#)

lot project to monitor data streaming from DHT22 wired at Arduino.

● HTML

### [Lec](#)

All lectures by Redwoods in Inje University

### [arduino-nodejs-plotly-streaming](#)

This repo introduces a simple and efficient way to plot the streaming data from Arduino with Easy Pulse ppg sensor or DHT11 sensor.

● HTML

### [hw-coding](#)

Resource for lecture of Hardware Programming (2017, Inje university)

● Arduino