

네트워크 프로그래밍

웹(Node.js) 기반의 소켓통신프로그래밍

- 2018-11-13
- 김 태 완



Node.js?

<https://ko.wikipedia.org/wiki/Node.js>



- 구글 크롬의 V8 Engine JavaScript 엔진
- JavaScript Runtime
- 확장성 있는 네트워크 어플리케이션
- Server-Side 플랫폼
- 뛰어난 확장성(Node)
- 가볍고, 효율적
- 라이선스 (MIT)
- 멀티 플랫폼
(Windows, Linux, MacOS , etc)

<https://nodejs.org/ko/>

<https://velopert.com/node-js-tutorials>

Node.js?

<https://ko.wikipedia.org/wiki/Node.js>



- Speed (run on google JS Engine)
- Asynchronous I/O
- Non-Blocking I/O
- Data Streaming
(HTTP request / response as a single event)
- Real-Time Application
(client / server side)
- Easy / Fast 코딩
- Open-Source (NPM)

<https://nodejs.org/ko/>

<https://velopert.com/node-js-tutorials>

Node.js?

<https://ko.wikipedia.org/wiki/Node.js>



+

Walmart*

ebay

PayPal®

DOW JONES

intuit.

NETFLIX

LinkedIn

The New York Times

Microsoft

UBER

YAHOO!

Kingfisher

<https://nodejs.org/ko/>

<https://velopert.com/node-js-tutorials>



Node.js?

<https://ko.wikipedia.org/wiki/Node.js>

A screenshot of a PayPal advertisement for a Business Debit MasterCard. The background is a close-up of a wooden surface and a laptop. The card is silver with the PayPal logo and MasterCard logo. The card number is 5412 7500 0000 0000, and the name is JOHN DOE. The expiration date is 06/18. The card is placed on a dark blue wallet.

PayPal Personal - Business - Send - Request Log In Sign Up

PayPal Business Debit MasterCard®

- Withdraw money from your PayPal balance at any ATM.
- No annual fee.
- Earn unlimited 1% cash back on eligible purchases.[†]
- MasterCard Zero Liability policy for unauthorized purchases.*

[Get a Card Today](#)

[†] Additional enrollment for Cash Back is required. Earn Cash Back when you use your card online, over the phone or sign up for a purchase. Cash Back will be earned on net purchases when the receipt is signed or when the purchase is authorized as a credit transaction by phone or online. Purchases made using a PIN are not eligible to earn Cash Back.

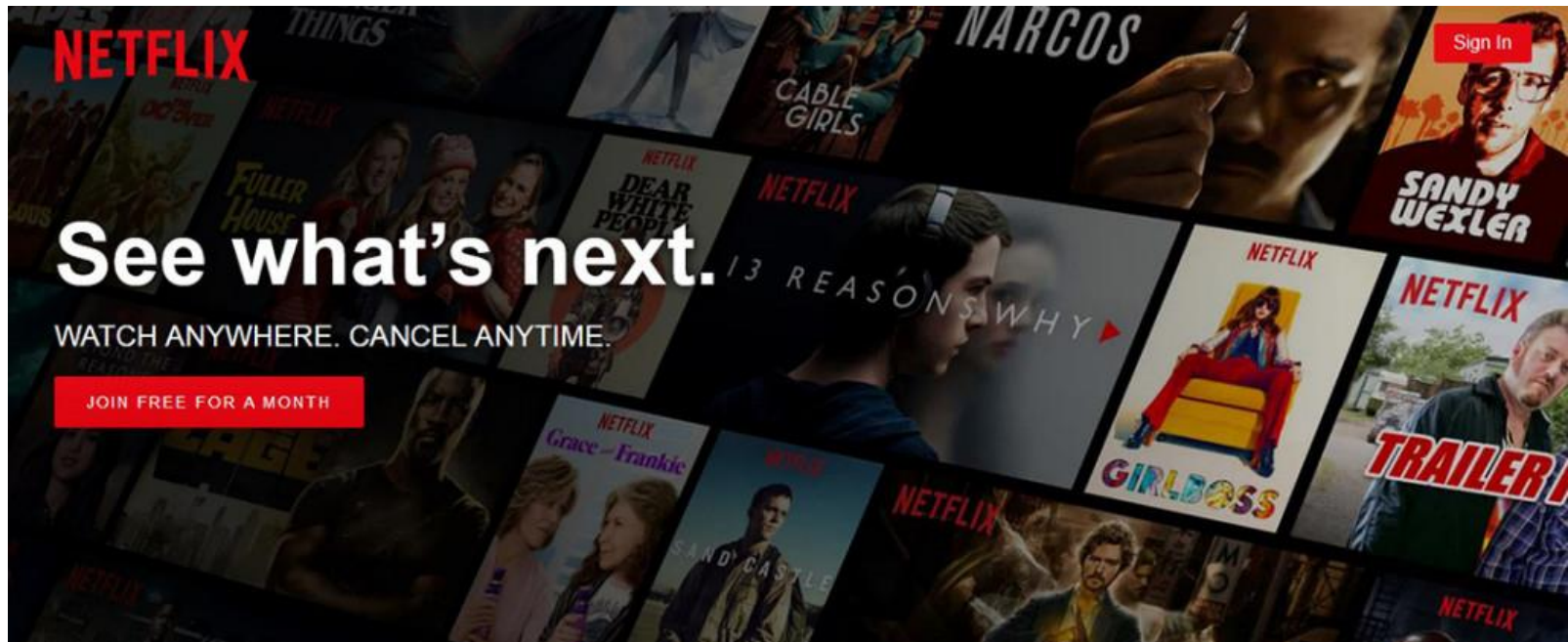
* Conditions and exceptions apply, see **Cardholder Agreement**.

<https://nodejs.org/ko/>



Node.js?

<https://ko.wikipedia.org/wiki/Node.js>



<https://nodejs.org/ko/>



Node.js?

<https://ko.wikipedia.org/wiki/Node.js>

Uber

드라이버 파트너

라이더

비즈니스

더 보기

로그인

가입

원하는 대로 이동하세요.

드라이버 파트너

원하는 시간에 자유롭게 운행하세요.
Uber 앱이 주변의 운행 기회를 찾아 드립니다.
[자세히 알아보기](#)

드라이버 파트너로 가입하기 →

라이더

버튼 하나로 원하는 곳까지 간편하게 이동하세요.
[자세히 알아보기](#)

라이더로 가입하기 →

<https://nodejs.org/ko/>



Node.js?

<https://ko.wikipedia.org/wiki/Node.js>

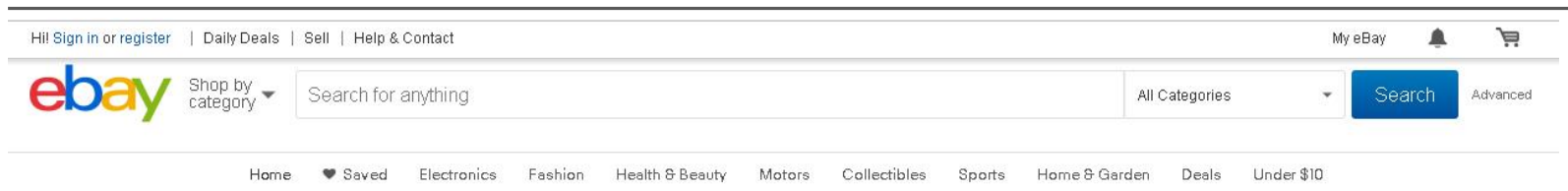
A screenshot of the LinkedIn homepage with a sign-up form overlay. The form is titled "최고의 분야 전문가되기" (Become the best expert in your field) and "LinkedIn에서 가능합니다. 무료로 가입하세요." (Possible on LinkedIn. Join for free). It contains input fields for "성" (Last name), "이름" (First name), "이메일 주소" (Email address), and "비밀번호(6자 이상)" (Password, 6+ characters). Below the fields is a checkbox for "회원 가입을 클릭하면 LinkedIn 이용약관, 개인정보 취급 방침, 쿠키정책에 동의하는 것으로 간주됩니다." (By clicking to join, you agree to the LinkedIn Terms of Service, Privacy Policy, and Cookie Policy). A blue "회원 가입" (Join) button is at the bottom of the form. The background shows a grid of diverse people's faces. At the top of the page, there are login fields for "이메일 주소" and "비밀번호" with a "로그인" button and a link "비밀번호를 잊으셨나요?". At the bottom, there is a search bar with "동료 찾기" (Find colleagues) and "검색" (Search) buttons, and a footer with "LinkedIn 회원 목록: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 더 보기" and "국가/지역으로 찾기" (Find by country/region).

<https://nodejs.org/ko/>



Node.js?

<https://ko.wikipedia.org/wiki/Node.js>



Explore popular categories



Under \$10



Health & Beauty



Parts and
Accessories



Sneakers



Smartphones &
Accessories



Watches



Electronics

<https://nodejs.org/ko/>



Node.js?

<https://ko.wikipedia.org/wiki/Node.js>

The image shows a Walmart Pay advertisement. At the top, there's a navigation bar with the Walmart logo, a search bar, and icons for account, location, and cart. Below the navigation bar, the text "Walmart Pay" is centered. The main content area is split into two parts. On the left, a photo shows a person's hand holding a smartphone over a Walmart Pay terminal. The terminal screen displays "Start Scanning" and a QR code. On the right, a blue background contains the text "Walmart Pay" and "Pay like a pro". Below this, it says "Shop without a wallet & check out faster in stores. With Walmart Pay, you can securely store your credit, debit or gift card on your phone & easily redeem your Savings Catcher rewards." At the bottom right, the Walmart Pay logo is displayed.

<https://nodejs.org/ko/>



Node.js?

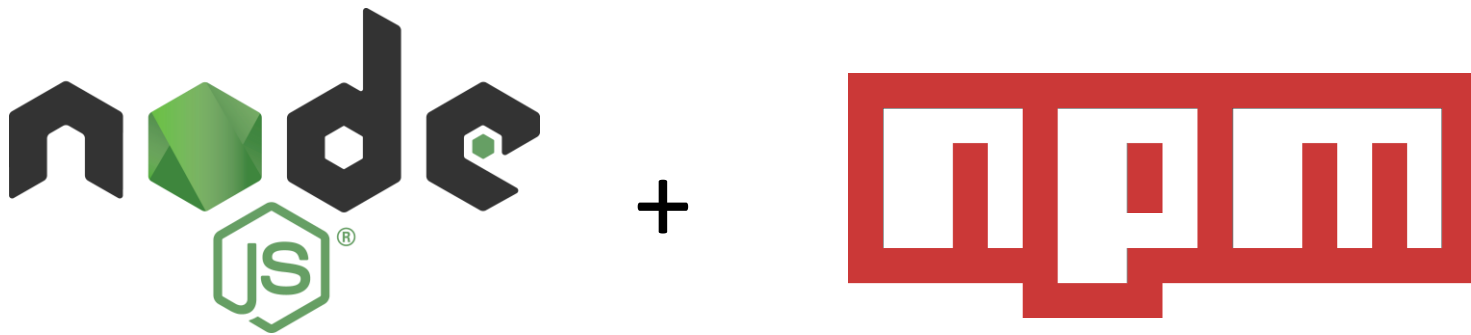
<https://ko.wikipedia.org/wiki/Node.js>

A screenshot of a Walmart Pay advertisement. The top section shows a navigation bar with the Walmart logo, a search bar, and icons for shopping, account, location, and cart. Below this, the text "Walmart Pay" is centered. The main image shows a person's hand holding a smartphone over a Walmart Pay terminal. The terminal screen displays "Start Scanning" and a QR code. To the right of the image, there is a blue text box with the heading "Walmart Pay" and "Pay like a pro". Below the heading, it says: "Shop without a wallet & check out faster in stores. With Walmart Pay, you can securely store your credit, debit or gift card on your phone & easily redeem your Savings Catcher rewards." At the bottom right of the blue box is the Walmart Pay logo.

<https://nodejs.org/ko/>

Node.js Open Source Library

<https://www.npmjs.com/>



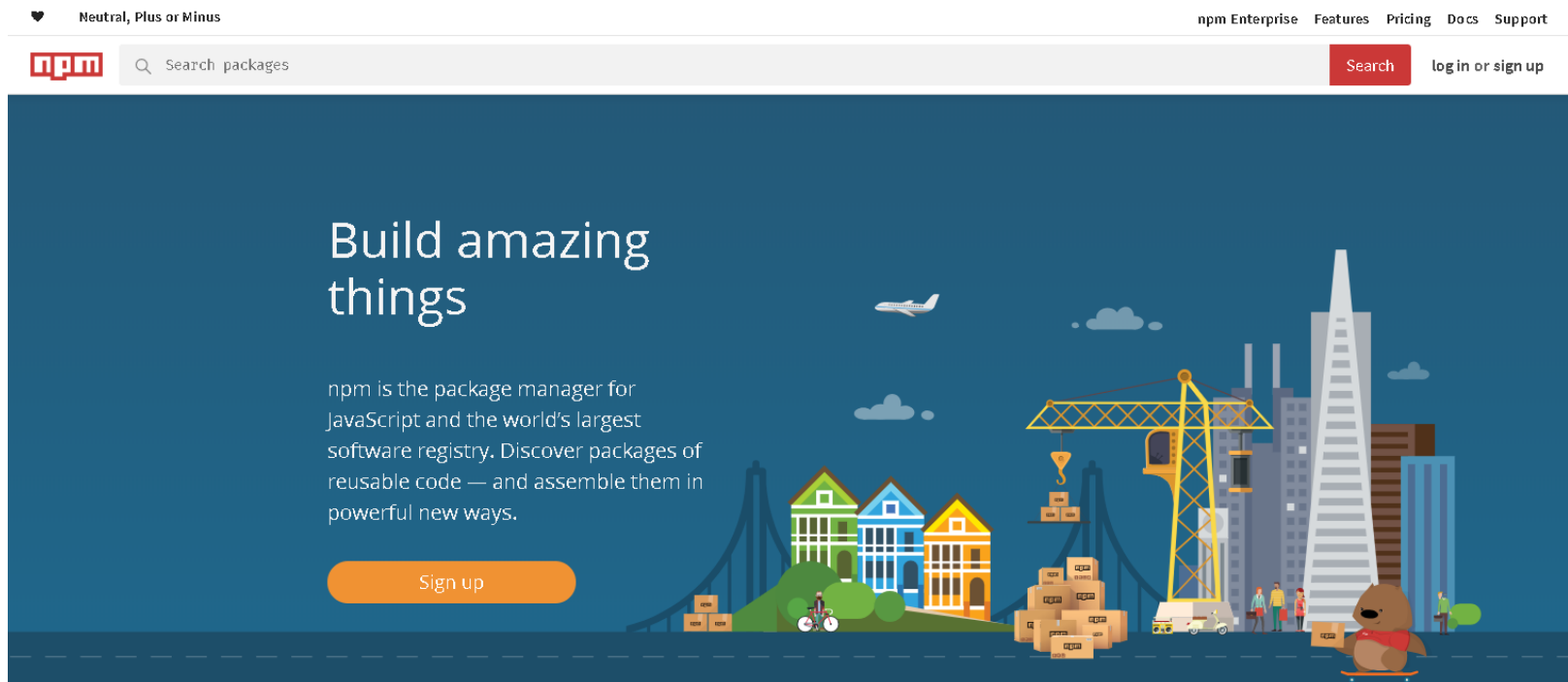
Open Source Library?

<https://nodejs.org/ko/>



Node.js Open Source Library

<https://www.npmjs.com/>



<https://nodejs.org/ko/>



♥ Nifty Pun Master

npm Enterprise Features Pricing Docs Support



socket

Search

log in or sign up

4655 packages found

1 2 3 ... 233 »

Sort Packages

Optimal

Popularity

Quality

Maintenance

Who's Hiring?

Triplebyte, MuleSoft, Callisto and lots of other companies are hiring javascript developers.

See all 19 companies

socket

Socket is a connect clone for simple socket based applications

 mountainmansoftware published 0.0.1 • 6 years ago

p
q
m

socket.io

Node.js realtime framework server

realtime framework websocket tcp events socket io

 darrachequesne published 2.1.1 • 6 months ago

p
q
m

WS

Simple to use, blazing fast and thoroughly tested websocket client and server for Node.js

HyBi Push RFC-6455 WebSocket WebSockets real-time

 lpinca published 6.1.0 • a month ago

p
q
m

socket.io-client

[[Build Status](https://secure.travis-ci.org/socketio/socket.io-client.svg?branch=master)](http://travis-ci.org/socketio/socket.io-client) [[Dependency Status](https://david-dm.org/socketio/socket.io-client.svg)](https://david-dm.org/socketio/socket.io-

realtime framework websocket tcp events client

 darrachequesne published 2.1.1 • 6 months ago

p
q
m

sockjs-client

SockJS-client is a browser JavaScript library that provides a WebSocket-like object.

p
q
m



Search packages

Search

log in or sign up

Share your code. npm Orgs help your team discover, share, and reuse code. [Create a free org »](#)

WS

6.1.0 • [Public](#) • Published a month ago

[Readme](#)

1 Dependencies

4,450 Dependents

99 Versions

ws: a Node.js WebSocket library

npm v6.1.0 build passing build passing coverage 100%

ws is a simple to use, blazing fast, and thoroughly tested WebSocket client and server implementation.

Passes the quite extensive Autobahn test suite: [server](#), [client](#).

Note: This module does not work in the browser. The client in the docs is a reference to a backend with the role of a client in the WebSocket communication. Browser clients must use the native [WebSocket](#) object. To make the same code work seamlessly on Node.js and the browser, you can use one of the many wrappers available on npm, like [isomorphic-ws](#).

Table of Contents

- [Protocol support](#)
- [Installing](#)
 - [Opt-in for performance and spec compliance](#)
- [API docs](#)

install

```
> npm i ws
```

± weekly downloads

444,351



version

6.1.0

license

MIT

open issues

13

pull requests

1

homepage

[github.com](#)

repository

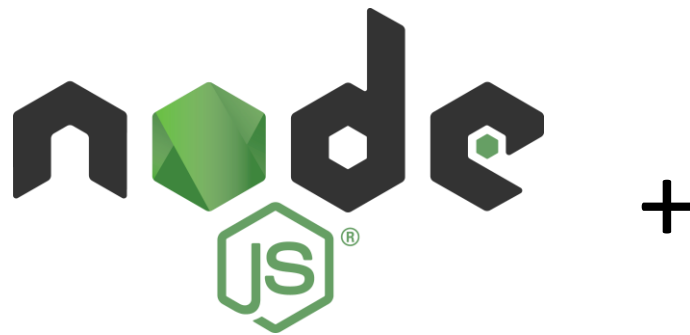
[github](#)

last publish

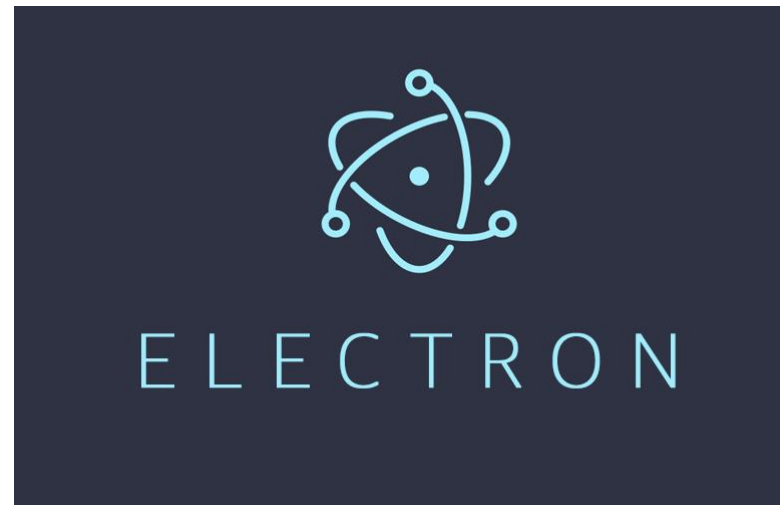
a month ago

collaborators

Node.js?



+



Desktop Application?

<https://electronjs.org/>
<https://nodejs.org/ko/>



Node.js + Electron



Skype



GitHub Desktop



Figma



Flow



Discord



WordPress.com



Beaker Browser



Hyper



Kap



Now Desktop



Visual Studio Code



Kitematic



Insomnia



Svgsus



Simplenote



Collectie



Caret



JIBO



GitKraken



Ghost



WebTorrent



1Clipboard



Slack



Atom

<https://github.com>
<https://github.com>

2018-1



ELECTRON

Node.js + Electron

<https://electronjs.org/apps>



Filter apps by name, description, etc...

카테고리들

Productivity 198
Developer Tools 139
Utilities 108
Music 44
Social Networking 40
Photo & Video 40
Games 29
Finance 23
Business 20
Education 16
Graphics & Design 11
Entertainment 6
Books 5
News 4
Lifestyle 4
Medical 2
Travel 1
Health & Fitness 1



Dusk Player Minimal music player for your desktop.



RIDE Remote IDE for Dyalog APL.



Superscript A text editor for comic book writers



P3X Redis UI Redis UI based on redis-commander and phpRedisAdmin.



EasyHand Helpful tool of making easier to work with huge quantity of files, folders and IDEs in the same...



Tagstoo Software to tag folders and files, with multimedia and ebooks preview.



MoviePrint With MoviePrint you can create screenshots of entire movies in an instant.



Altair GraphQL Client Beautiful feature-rich GraphQL Client for all platforms



Raven Reader Simple RSS Reader for desktop without any distraction.



Genotify Light-weight, cross-species gene lookup and summarization for desktop.



tiny-timer Simple timer desktop app.



Excel Parser Processor A Cross-Platform Desktop App for processing all rows of excel files

<https://electronjs.org>

<https://nodejs.org>

2018-11-18



Node.js 준비물

1. Node.js 설치하기

<https://nodejs.org/ko/>



Node.js®는 Chrome V8 JavaScript 엔진으로 빌드된 JavaScript 런타임입니다.

다운로드 - Windows (x64)

10.13.0 LTS

안정적, 신뢰도 높음

[다른 운영 체제](#) | [변경사항](#) | [API 문서](#)

11.1.0 현재 버전

최신 기능

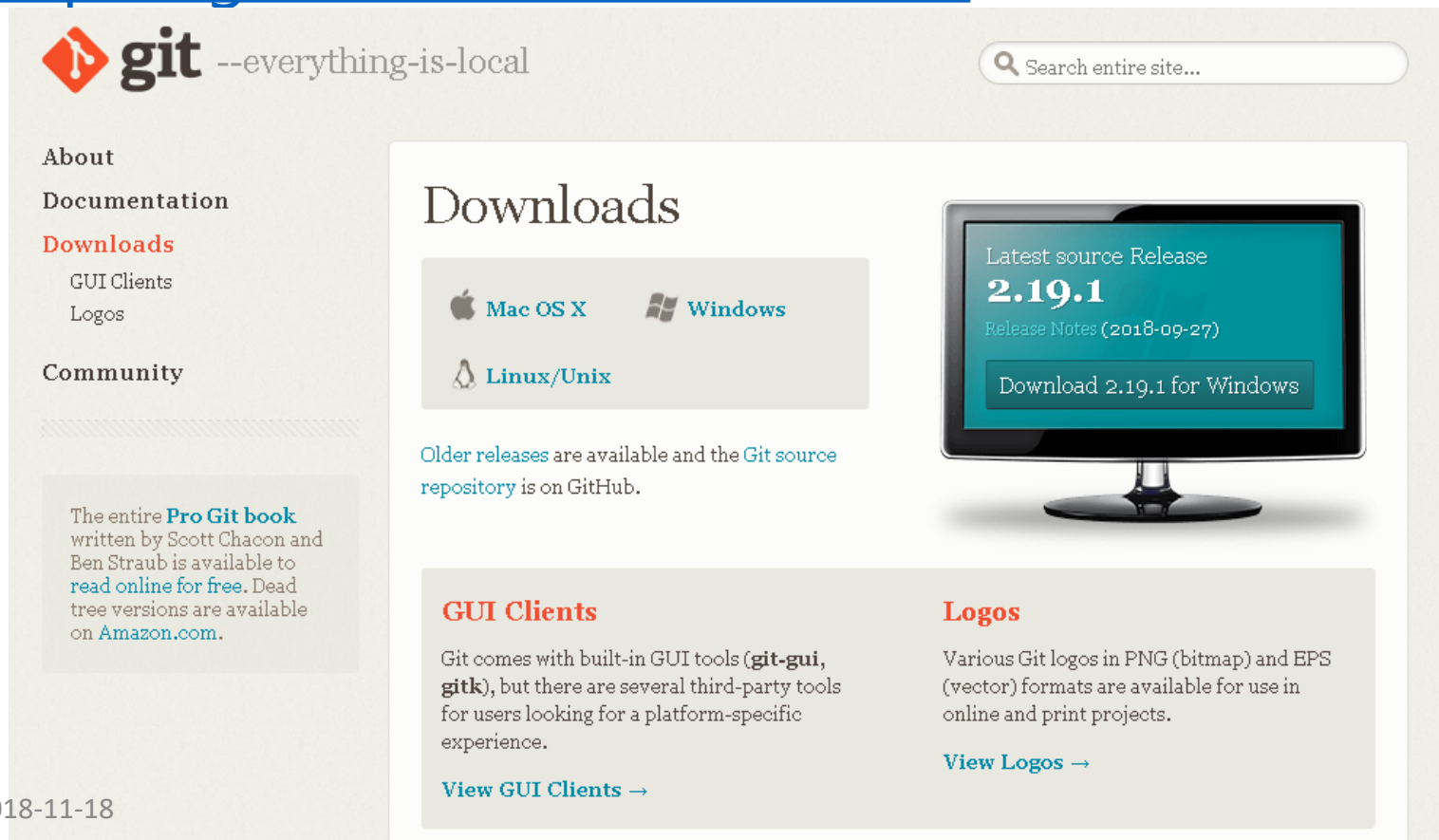
[다른 운영 체제](#) | [변경사항](#) | [API 문서](#)

LTS 일정은 [여기서](#) 확인하세요.

Node.js 준비물

2. git 설치하기

<https://git-scm.com/downloads>



The screenshot shows the Git website's Downloads page. The header features the Git logo and the tagline "--everything-is-local". A search bar is located in the top right. The left sidebar contains links for "About", "Documentation", "Downloads" (highlighted in red), "GUI Clients", "Logos", and "Community". Below the sidebar, a text box mentions the "Pro Git book" by Scott Chacon and Ben Straub, available for free on Amazon.com. The main content area is titled "Downloads" and includes a section for "Older releases" with a link to the "Git source repository" on GitHub. Below this, there are two columns: "GUI Clients" and "Logos". The "GUI Clients" column lists built-in tools (git-gui, gitk) and third-party tools. The "Logos" column mentions various Git logos in PNG and EPS formats. A large monitor graphic on the right displays the "Latest source Release 2.19.1" with a "Download 2.19.1 for Windows" button. The footer shows the date "2018-11-18" and the page number "20".

git --everything-is-local

Search entire site...

About
Documentation
Downloads
GUI Clients
Logos
Community

The entire **Pro Git book** written by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).

Downloads

Older releases are available and the [Git source repository](#) is on GitHub.

GUI Clients

Git comes with built-in GUI tools (**git-gui**, **gitk**), but there are several third-party tools for users looking for a platform-specific experience.

[View GUI Clients →](#)

Logos

Various Git logos in PNG (bitmap) and EPS (vector) formats are available for use in online and print projects.

[View Logos →](#)

Latest source Release
2.19.1
[Release Notes \(2018-09-27\)](#)
[Download 2.19.1 for Windows](#)

2018-11-18

20



Node.js 준비물

3. Visual Studio Code 설치하기

<https://code.visualstudio.com/>

The image shows the Visual Studio Code website and the VS Code interface. The website header includes links for Visual Studio Code, Docs, Updates, Blog, Community, Extensions, and FAQ, along with a Search Docs button and a Download button. A banner below the header states: "Version 1.28 is now available! Read about the new features and fixes from September." The main content area of the website features the text "Code editing. Redefined." and "Free. Open source. Runs everywhere." Below this is a "Download for Windows" button with a dropdown arrow, and a link for "Other platforms and Insiders Edition". A disclaimer at the bottom of the website states: "By using VS Code, you agree to its license and privacy statement." The VS Code interface is shown in the foreground, displaying the "EXTENSIONS" sidebar with a list of popular extensions: C# 1.22 (356K, 5 stars), Python 0.21.1K (5 stars), Debugger for Chrome (148), C/C++ 0.7.143K (5 stars), Go 0.6.39 (99K, 5 stars), and ESLint 0.10.1 (88K, 5 stars). The main editor area shows a TypeScript file named "app.ts" with the following code:

```
1 import app from './app';
2 import debugModule = require('debug');
3 import http = require('http');
4
5 const debug = debugModule('node-express-typescript:server');
6
7 // Get port from environment and store in Express.
8 const port = normalizePort(process.env.PORT || '3000');
9 app.set('port', port);
10
11 // create
12 const server = export
13 server.listen
14 server.on
15 server.on
16
17 /**
18  * Normal
19  */
20 function normalizePort(val: any): number|string|boolean {
21   let port = parseInt(val, 10);
22 }
```

The status bar at the bottom of the VS Code interface shows "master", "11 131", "0 0 0", "Ln 9, Col 21", "Spaces: 2", "UTF-8", "LF", and "TypeScript".

2018-11-18

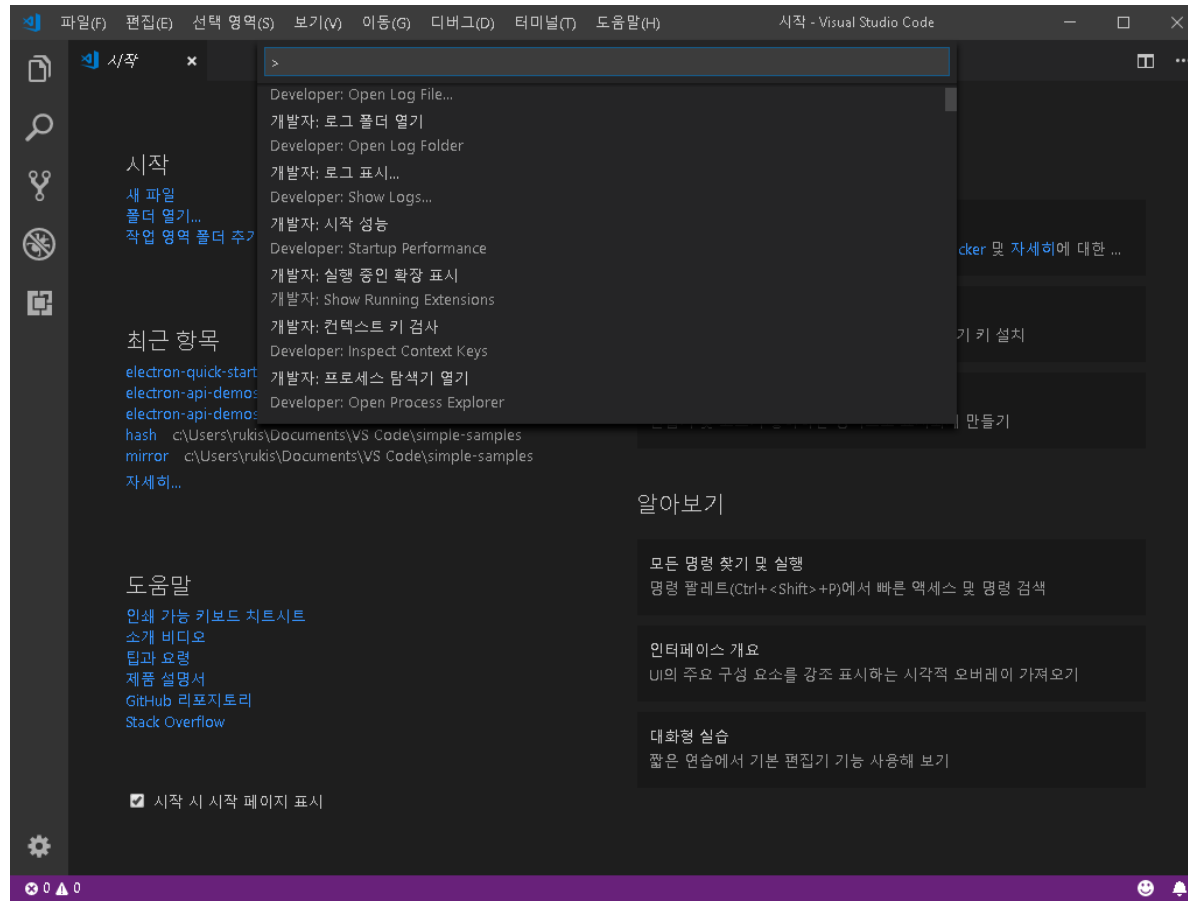
21



Node.js 시작하기

Visual Studio Code

➤ Ctrl + Shift + p / F1 (명령팔레트)

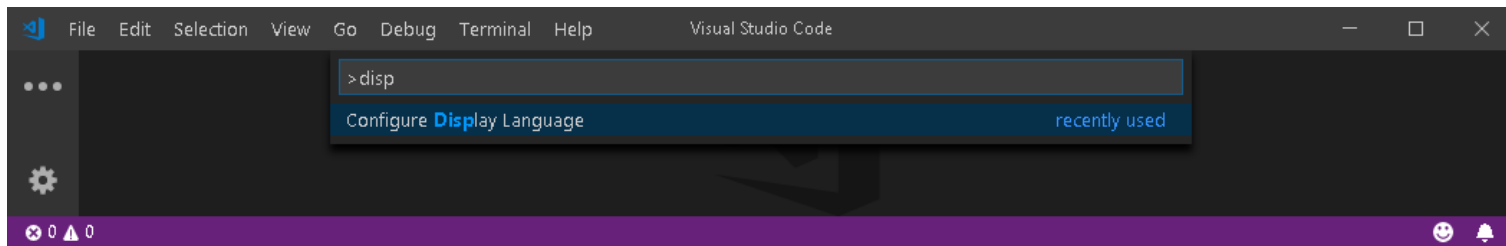




Node.js 시작하기

Visual Studio Code

➤ 한글화 -> F1 -> Configure Display Language



```
{ locale.json x
1 {
2   // Defines VS Code's display language.
3   // See https://go.microsoft.com/fwlink/?LinkId=761051 for a list of sup
4   "locale": "en" // Changes will not take effect until VS Code has been r
5 }
```



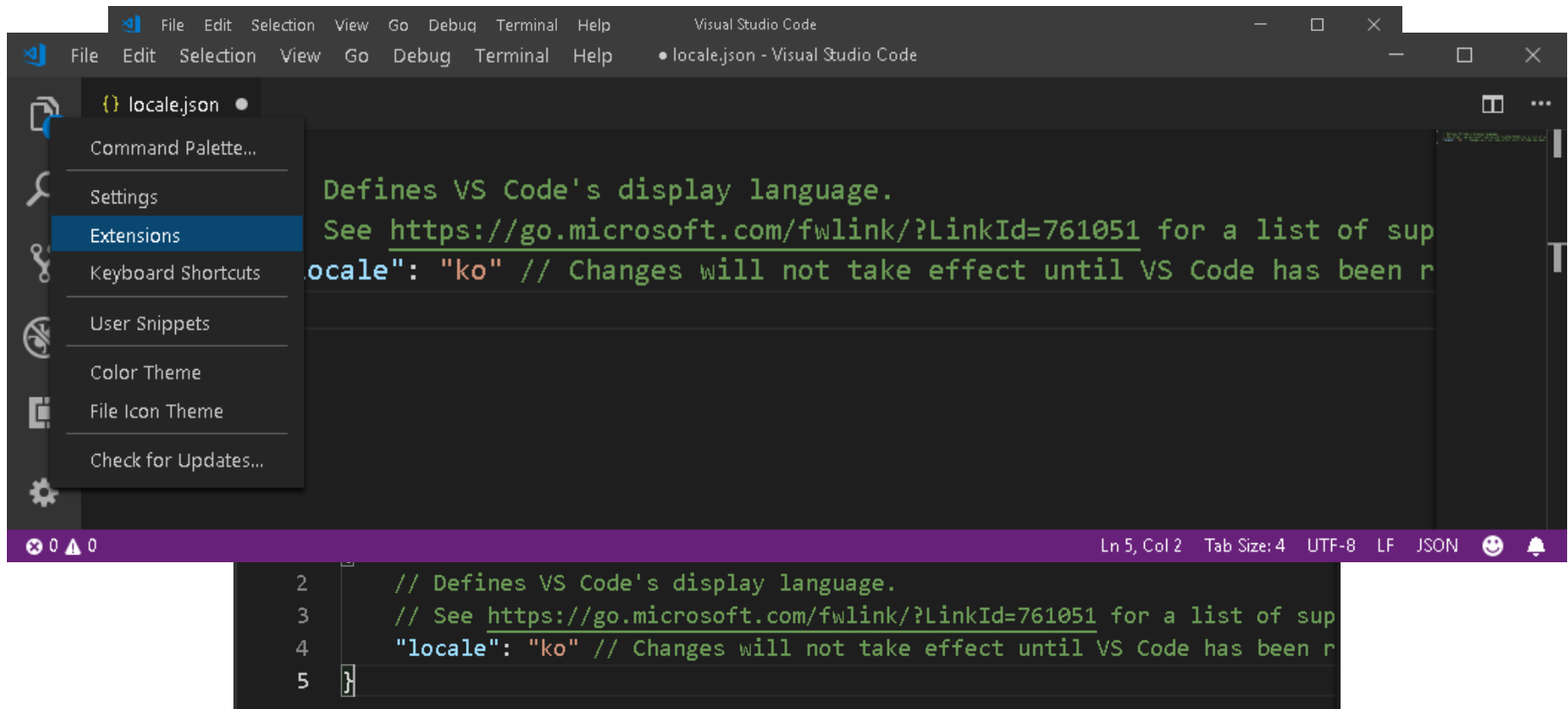
```
{ locale.json •
1 {
2   // Defines VS Code's display language.
3   // See https://go.microsoft.com/fwlink/?LinkId=761051 for a list of sup
4   "locale": "ko" // Changes will not take effect until VS Code has been r
5 }
```



Node.js 시작하기

Visual Studio Code

➤ 한글화 -> F1 -> Configure Display Language

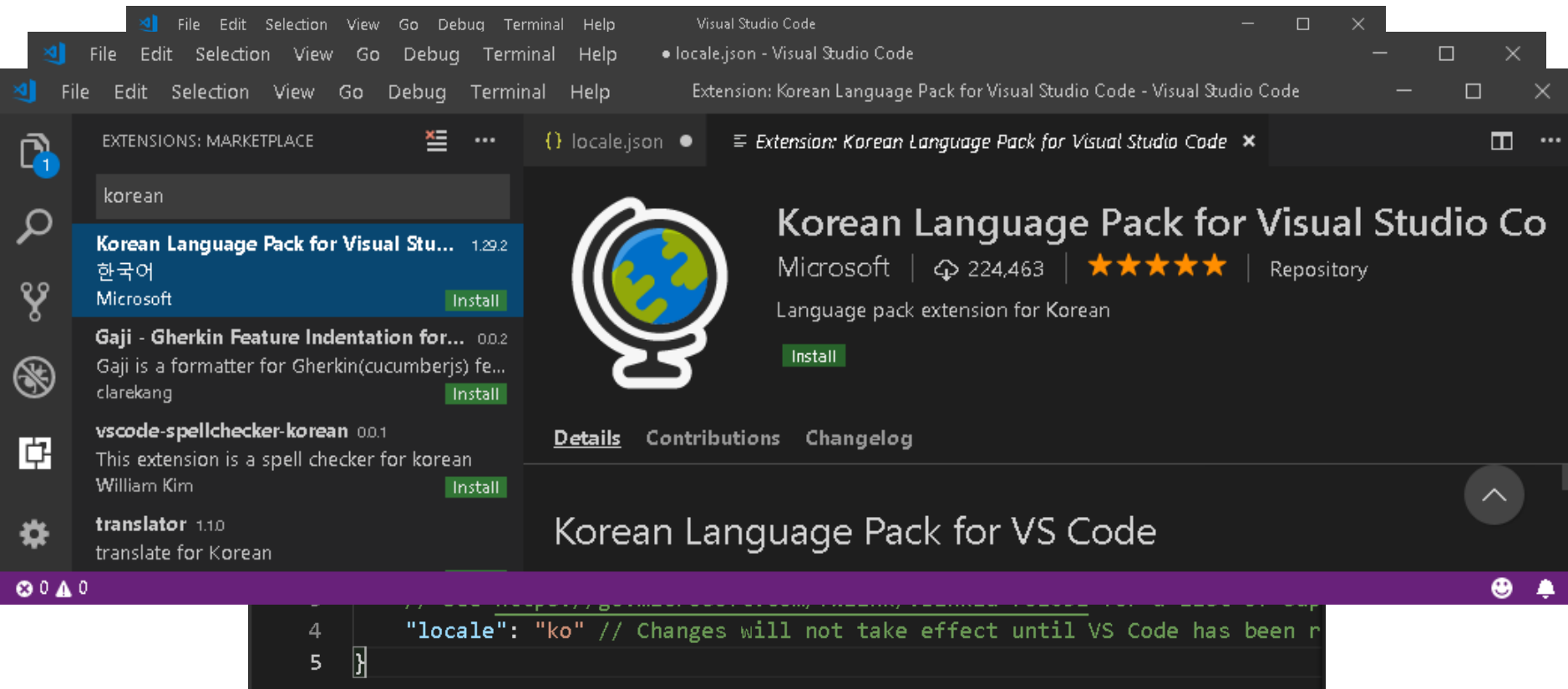




Node.js 시작하기

Visual Studio Code

➤ 한글화 -> F1 -> Configure Display Language

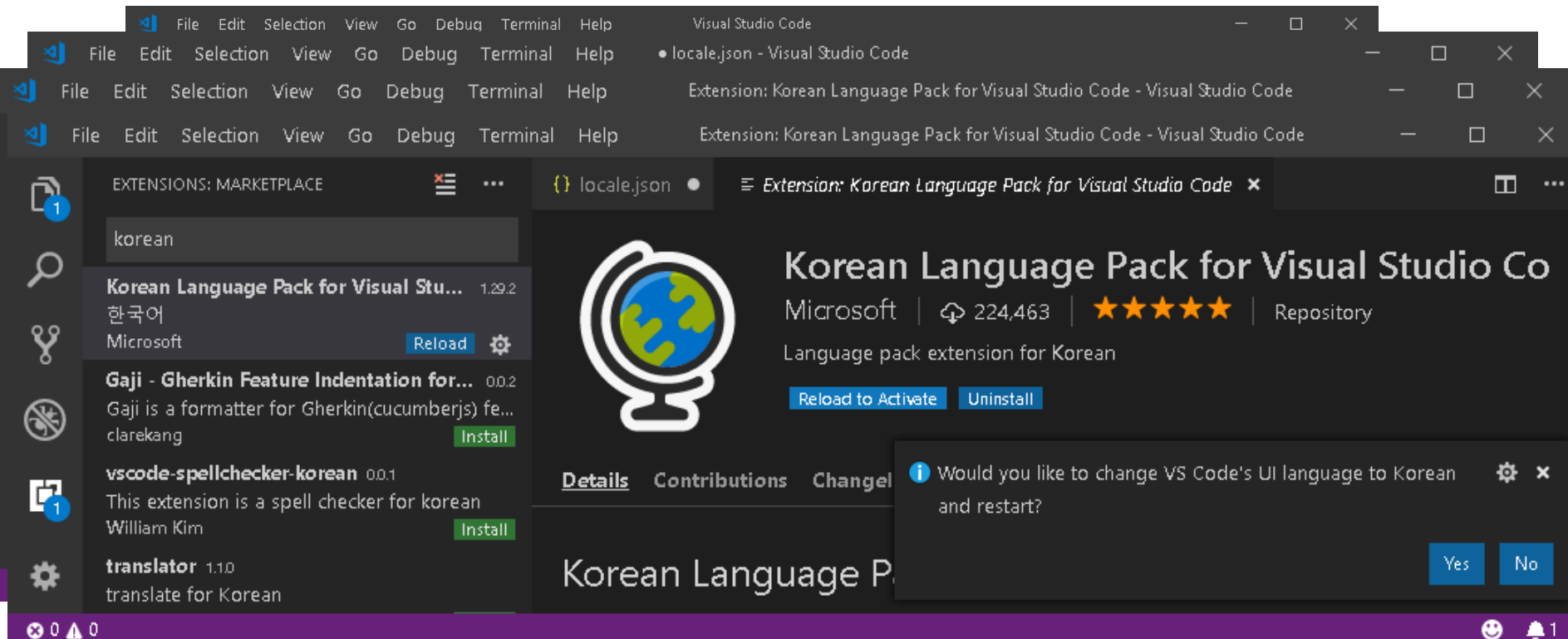




Node.js 시작하기

Visual Studio Code

➤ 한글화 -> F1 -> Configure Display Language





Node.js 시작하기

▶ HELLO NODE JS

파일(F) 편집(E) 선택 영역(S) 보기(V) 이동(G) 디버그(D) 터미널(T) 도움말(H) main.js - NetworkProgrammingStudy - Visual Studio Code

탐색기

- 열려 있는 편집기
 - JS main.js StartNode.js U
- NETWORKPROGRAMMINGSTUDY
 - StartNode.js
 - JS main.js U

1 `var msg = 'Hello Node.js';`
2 `console.log(msg);`

문제 출력 디버그 콘솔 터미널

```
C:\Program Files\nodejs\node.exe --inspect-brk=5889 StartNode.js\main.js
Debugger listening on ws://127.0.0.1:5889/a6dd7a74-082d-4e80-89eb-cb1ae86d3598
For help, see: https://nodejs.org/en/docs/inspector
Hello Node.js
```

main.js:2

master* 0 0 0 줄 2, 열 18 공백: 4 UTF-8 CRLF JavaScript



Node.js 프로젝트 생성

➤ Express 사용하기

➤ 파일 -> 폴더 열기 -> 선택

➤ `npm install -g express-generator`

```
문제  출력  디버그 콘솔  터미널
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\rukis\Documents\NetworkProgrammingStudy> npm install -g express-generator
```

➤ `express -e ./`

```
문제  출력  디버그 콘솔  터미널
1: powershell
PS C:\Users\rukis\Documents\NetworkProgrammingStudy> express -e ./프로젝트명 혹은 폴더명
```



Node.js 프로젝트 생성

➤ Express 프로젝트 생성

The screenshot shows a code editor with a file explorer on the left and a code editor on the right. The file explorer shows the project structure for 'EXPRESSAPP' with files like 'bin', 'public', 'routes', 'views', 'app.js', 'package-lock.json', and 'package.json'. The code editor shows the following code:

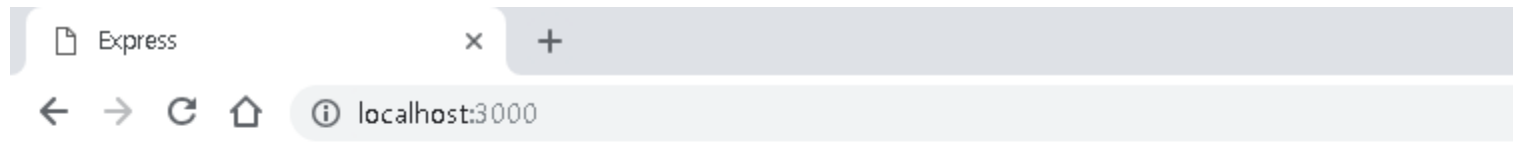
```
12 * Get port from environment and store in Express.
13 */
14
15 var port = normalizePort(process.env.PORT || '3000');
16 app.set('port', port);
17
18 /**
19 * Create HTTP server.
20 */
21
22 var server = http.createServer(app);
23
24 /**
25 * Listen on provided port, on all network interfaces.
```

➤ F1 -> npm install or 터미널 -> npm install

The screenshot shows a terminal window with the command `> npm install` entered. The output is `npm: Install Dependencies`. There is also a link `최근에 사용한 항목` (Recently used items).

Node.js 시작하기

- Express 프로젝트 생성
- 빌드 -> F5, 웹 접속 (localhost:3000)

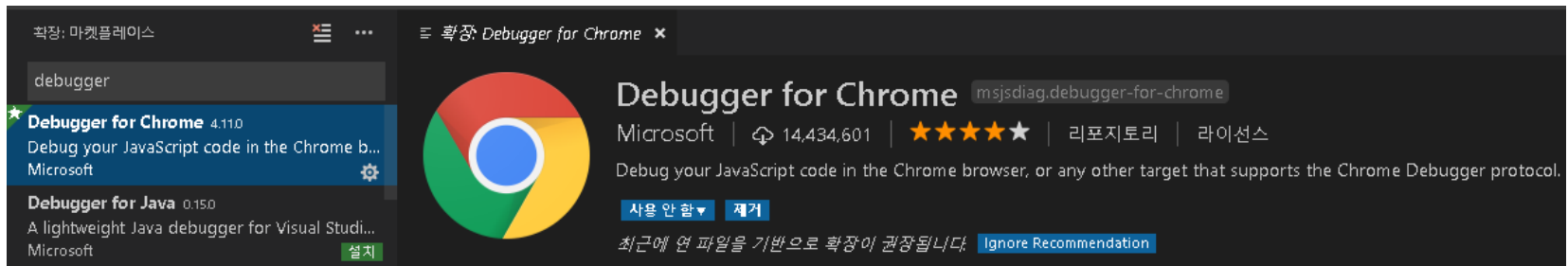


Express

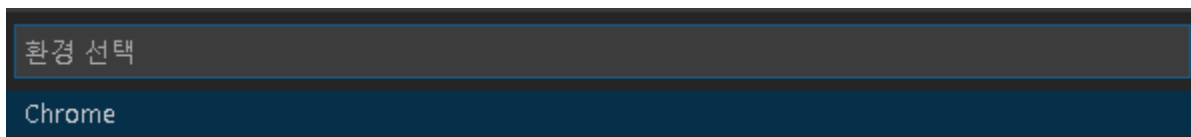
Welcome to Express

Node.js 시작하기

- Express 프로젝트 (Debugging)
- Debugger for Chrome 확장 설치

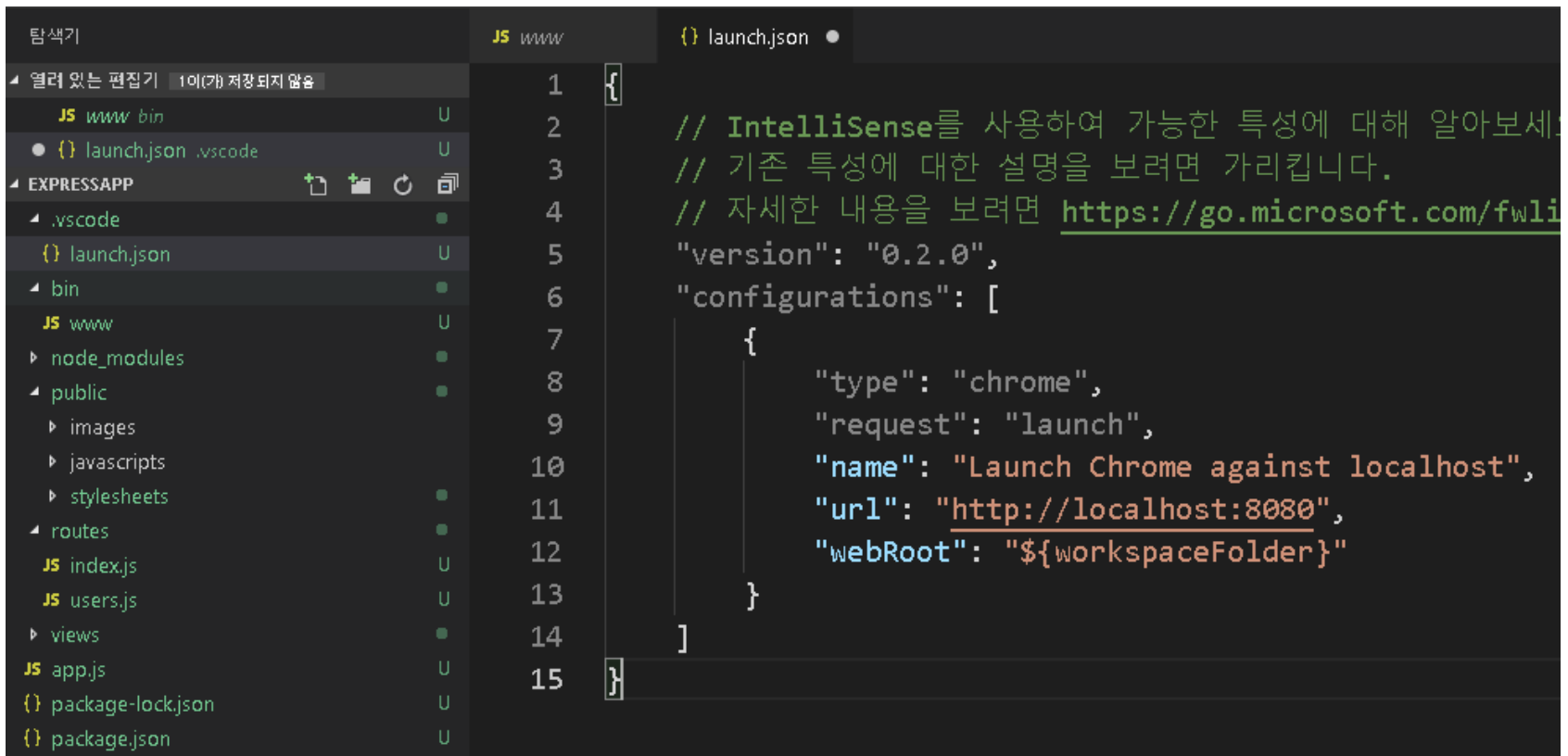


- 빌드 > F5 > Chrome



Node.js 시작하기

- Express 프로젝트 (Debugging)
- .vscode/launch.json 파일 자동생성

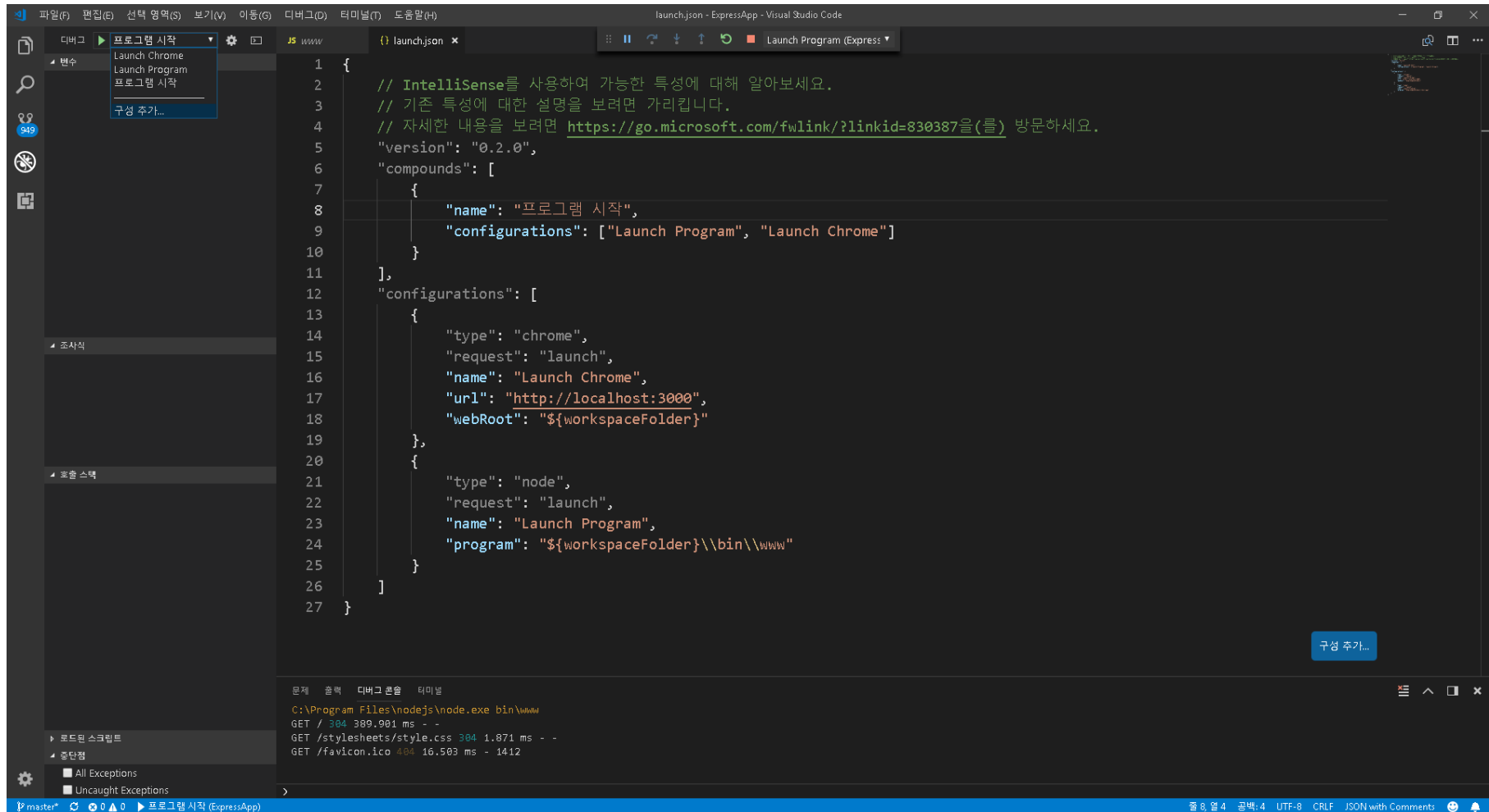


```
1 {  
2     // IntelliSense를 사용하여 가능한 특성에 대해 알아보세요.  
3     // 기존 특성에 대한 설명을 보려면 가리킵니다.  
4     // 자세한 내용을 보려면 https://go.microsoft.com/fwlink?linkID=829390  
5     "version": "0.2.0",  
6     "configurations": [  
7         {  
8             "type": "chrome",  
9             "request": "launch",  
10            "name": "Launch Chrome against localhost",  
11            "url": "http://localhost:8080",  
12            "webRoot": "${workspaceFolder}"  
13        }  
14    ]  
15 }
```



Node.js 시작하기

➤ Express 프로젝트 (Debugging)





Node.js + Express + Html

<http://jade-lang.com/>

<https://ejs.co/>

➤ Jade vs Ejs

➤ Jade 의 경우 기능이 더 뛰어나다.

➤ Ejs 의 경우 html 코드를 그대로 사용하여 이질감이 없다.

➤ html 파일 사용하기

➤ views/index.ejs => views/index.html 파일명 수정

➤ app.js 코드 수정

```
// view engine setup
app.set('views', path.join(__dirname, 'views'));
/// ***** html 사용을 위한 ejjs module 추가
App.engine('html', require('ejs').renderFile);
App.set('view engine', 'html');
```



Node.js + Express + Html

➤ routes/index.js

<https://www.w3schools.com/html/>

<https://ejs.co/>

```
res.render('index', { title: 'test' });
```

➤ views/index.html

```
<html> <head>
<title><%=title%></title> </head>
<body>
<h1>This is a Heading</h1>
<p>This is a paragraph.</p>
</body> </html>
```

Node.js 데이터 입력

<https://www.w3schools.com/html/>

➤ routes/index.js

```
// POST
router.post('/', function (req, res) {
  var returnVal = { result: '' };
  if (req.body.msg) {
    console.log("client message : " + req.body.msg);
    returnVal.result= 'success';
  }
  else {
    returnVal.result= 'failure';
  }
  res.json(returnVal);
});
```




Node.js 데이터 입력

➤ javacripts/test.js

<https://www.w3schools.com/html/>
<https://api.jquery.com/>

```
function test()
{
    var data = { msg:
        $("#name").val()
    };
    console.log(data);
    $("#result").text(data.msg);
    $.ajax({
        type: 'POST',
        url: '/',
        data: data,
        contentType:
            'application/json',
        async: true,
        success: function (data) {
```

```
        var res = data;
        if (res.result == 'success') {
            console.log("success!!");
        } else if (res.result ==
            'failure') {
            console.log("failure!!");
        } else {
            alert(JSON.stringify(res));
        }
        $("#result").text(res.result)
    });
}
```



Node.js 데이터 입력

➤ views/index.html

<https://www.w3schools.com/html/>

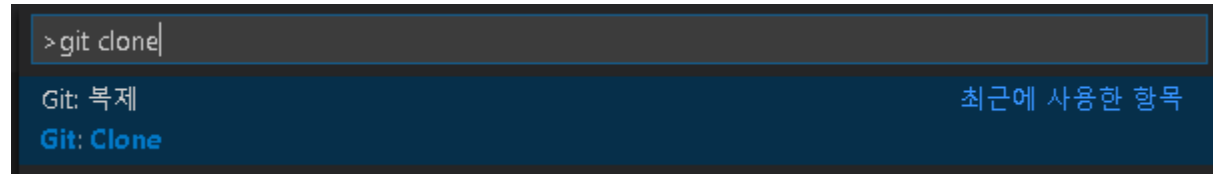
```
<head>
<title><%=title%></title>
<script type="text/javascript" src="https://code.jquery.com/jquery-3.3.1.min.js">
<script type="text/javascript" src="/javascripts/test.js"/>
</head>
```

```
<body>
  User Name: <input type="text" id="name" name="name" value="test">
  <br/>
  <button onclick="test()">input</button>
  <br/>
  result: <label id="result"></label>
</body>
```

Node.js 로그인 처리

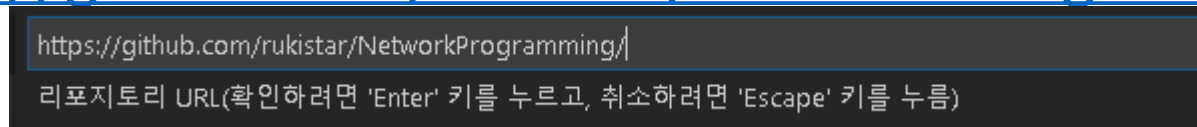
➤ F1 -> Git Clone

<https://www.w3schools.com/html/>

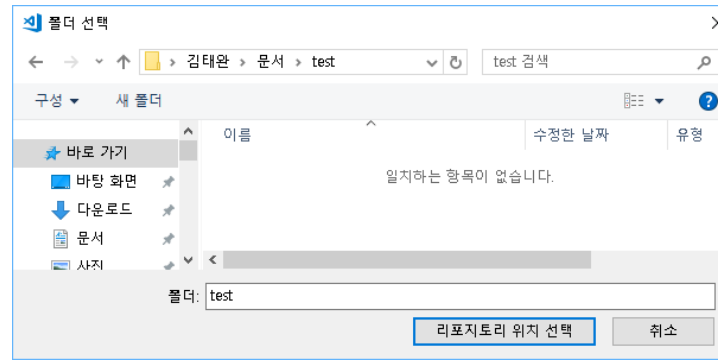


➤ 주소 입력 :

<https://github.com/rukistar/NetworkProgramming/>



➤ 폴더 지정

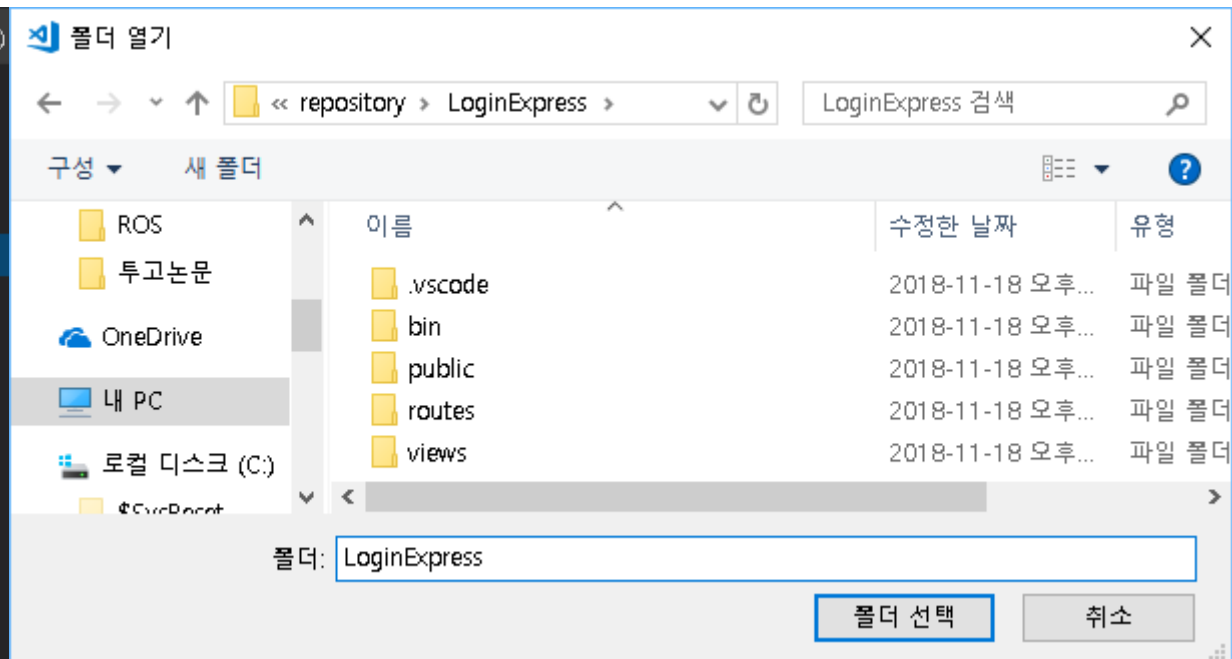
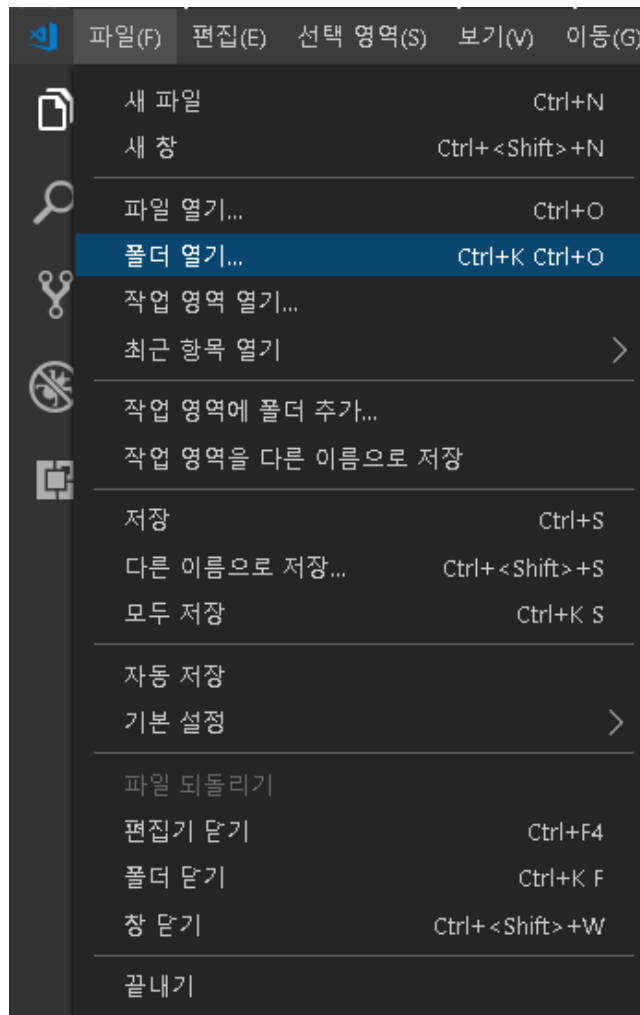




Node.js 로그인 처리

➤ 파일 -> 폴더열기

<https://github.com/rukistar/NetworkProgramming/>

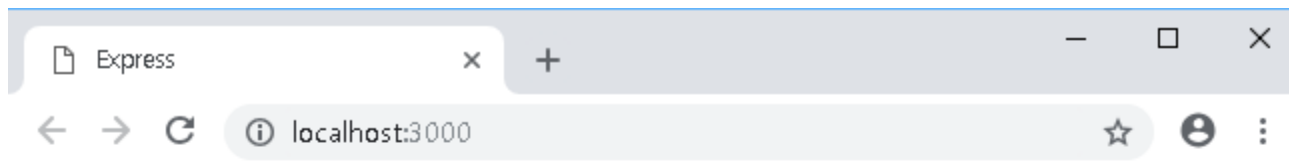


Node.js 로그인 처리

➤ index.html

/LoginExpress

<https://www.w3schools.com/w3css>



Express

Welcome to Express

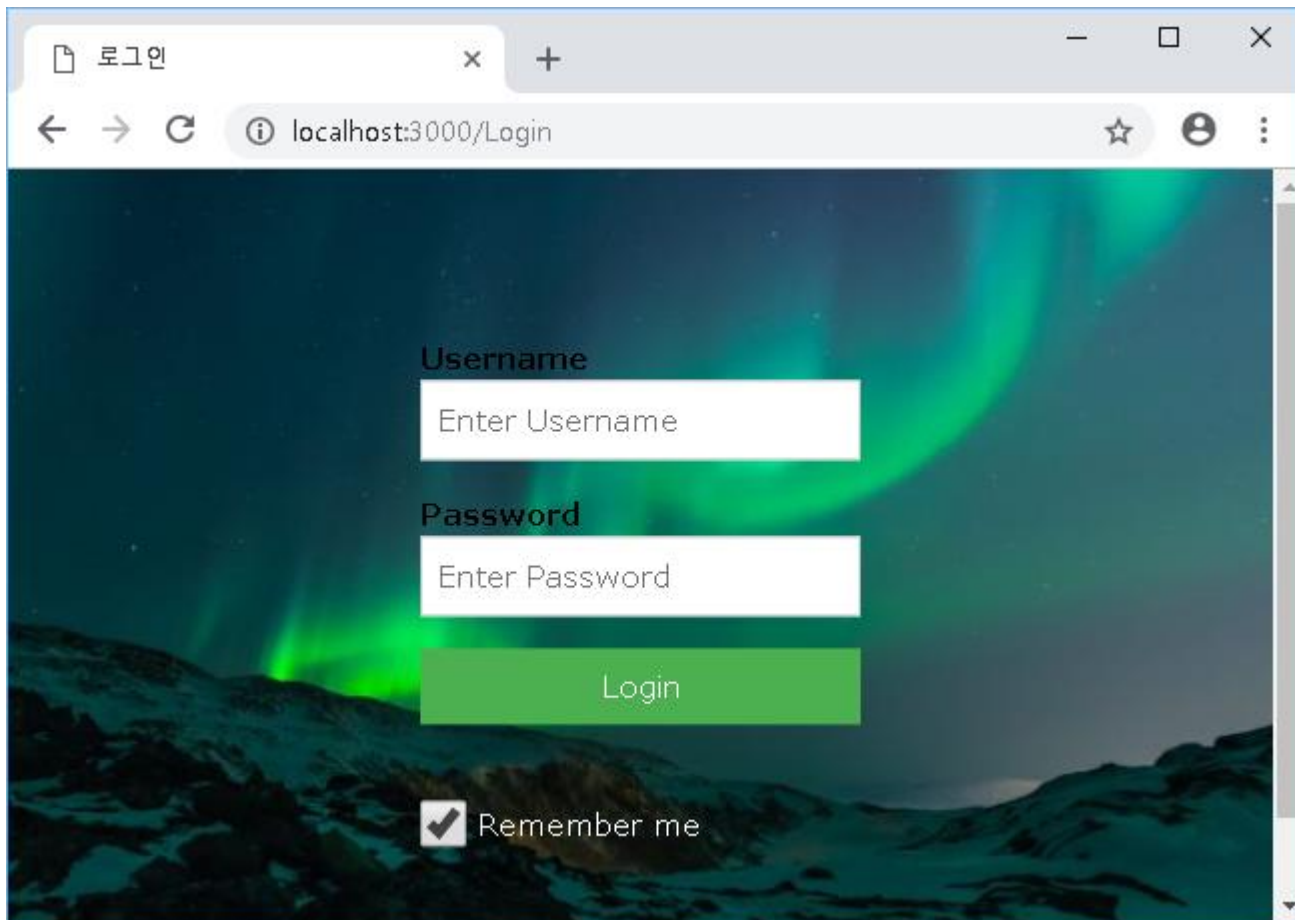
[로그인 페이지](#)

Node.js 로그인 처리

➤ login.html

/LoginExpress

<https://www.w3schools.com/w3css>





Node.js 소켓 프로그래밍

➤ Websocket vs Socket.io

<https://www.npmjs.com/package/ws>

➤ Websocket

- http Web은 http프로토콜을 이용 요청 / 응답 동작
- Web에서 TCP/IP Socket 처럼 실시간 통신 할 수 없음
- 그래서 등장 WebSocket(ws) 프로토콜
- Websocket을 이용하면 웹브라우저
- 실시간 데이터 주고 받을 수 있음
- 최근 대부분 브라우저에서 Websocket지원
- InternetExplorer 의 경우 version 10부터 지원



Node.js 소켓 프로그래밍

➤ Websocket vs Socket.io

<https://www.npmjs.com/package/ws>

➤ Websocket

- `npm install -g express-generator`
- `express -e ./`
- `npm install`
- `npm install ws`

Node.js 소켓 프로그래밍



➤ Websocket vs Socket.io

<https://socket.io>

➤ Socket.io

- Node.js 기반 OpenSource Library
- WebSocket처럼 실시간 데이터 처리 가능
- 멀티 디바이스 (Web, android, iOS, Windows, 등)
- WebSocket이 지원되지 않는 브라우저도 가능

Node.js 소켓 프로그래밍



➤ Socket.io

<https://socket.io>

➤ Server

➤ npm install socket.io

➤ Client

➤ npm install socket.io-client

Node.js 응용 프로그래밍



➤ Electron

- <https://electronjs.org/docs/tutorial/first-app>
- <https://github.com/electron/electron-quick-start>
- <https://github.com/electron/electron-api-demos>



Node.js 응용프로그래밍

- Electron – Socket.io, Chat
 - Git clone <https://github.com/electron/electron-quick-start>
 - npm install
 - npm install jquery
 - npm install socket.io
 - npm install socket.io-client
 - /socket/server.js
 - index.html 수정



Node.js 응용 프로그래밍

➤ Electron – Socket.io, Chat

➤ /socket/server.js

```
var app = require('express')();
var http = require('http').Server(app);
var io = require('socket.io')(http);
var port = process.env.PORT || 3000;
app.get('/', function(req, res){
  res.sendFile(__dirname + '/index.html');
});
io.on('connection', function(socket){
  socket.on('chat message', function(msg){
    io.emit('chat message', msg);
  });
});
http.listen(port, function(){
  console.log('listening on *:' + port);
});
```



Node.js 응용프로그래밍

➤ Electron – Socket.io, Chat

➤ index.html 수정

```
<body>
<ul id="messages"></ul>
<form action="">
<input id="m" autocomplete="off" /><button>Send</button>
</form>
<script>
window.$ = window.jQuery = require('jquery');
require('./renderer.js')
</script>
</body>
```

Node.js 응용 프로그래밍

➤ Electron – Socket.io, Chat

➤ ./renderer.js

```
$(function () {  
  var socket = require('socket.io-client')  
  ('http://localhost:3000');  
  // var socket = io();  
  $('form').submit(function () {  
    socket.emit('chat message', $('#m').val());  
    $('#m').val('');  
    return false;  
  });  
  socket.on('chat message', function (msg) {  
    $('#messages').append($('- ').text(msg));  
    window.scrollTo(0, document.body.scrollHeight);  
  });  
});

```