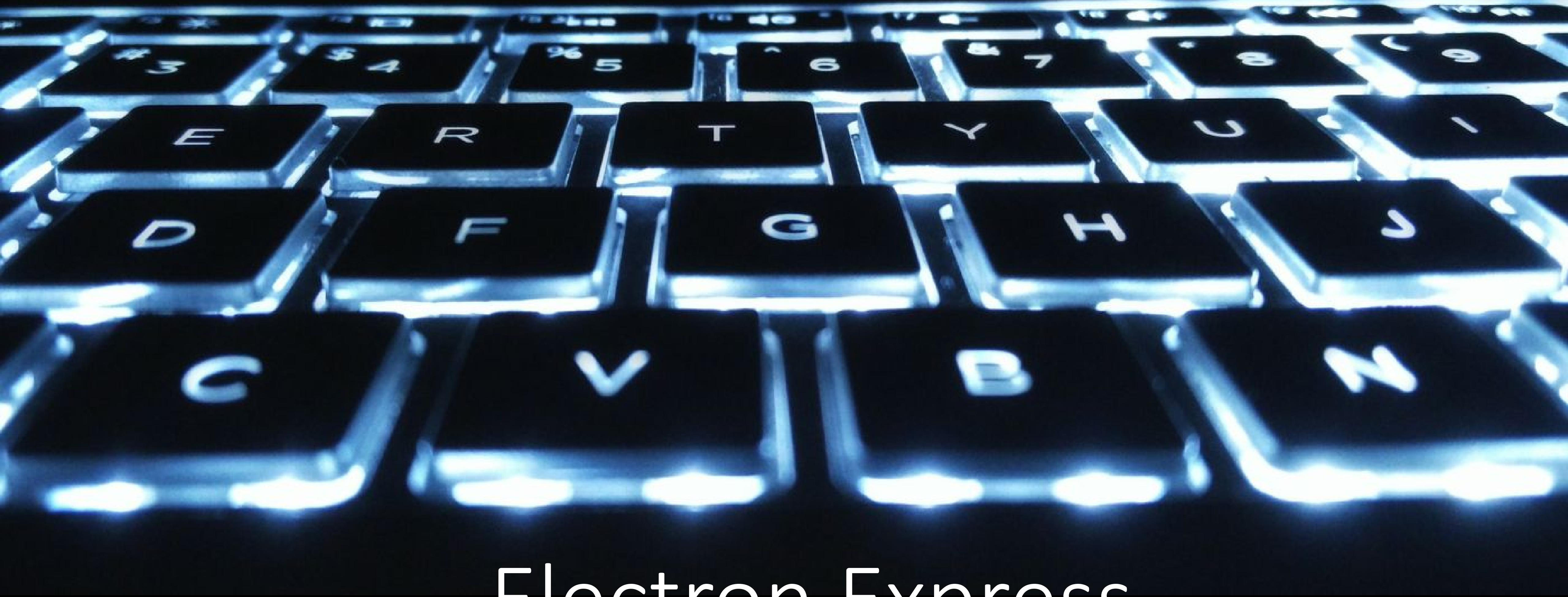


Electron Express

A Look at Node.js, Packages and Desktop Apps

Stephen Downes

National Research Council Canada

February 28, 2019

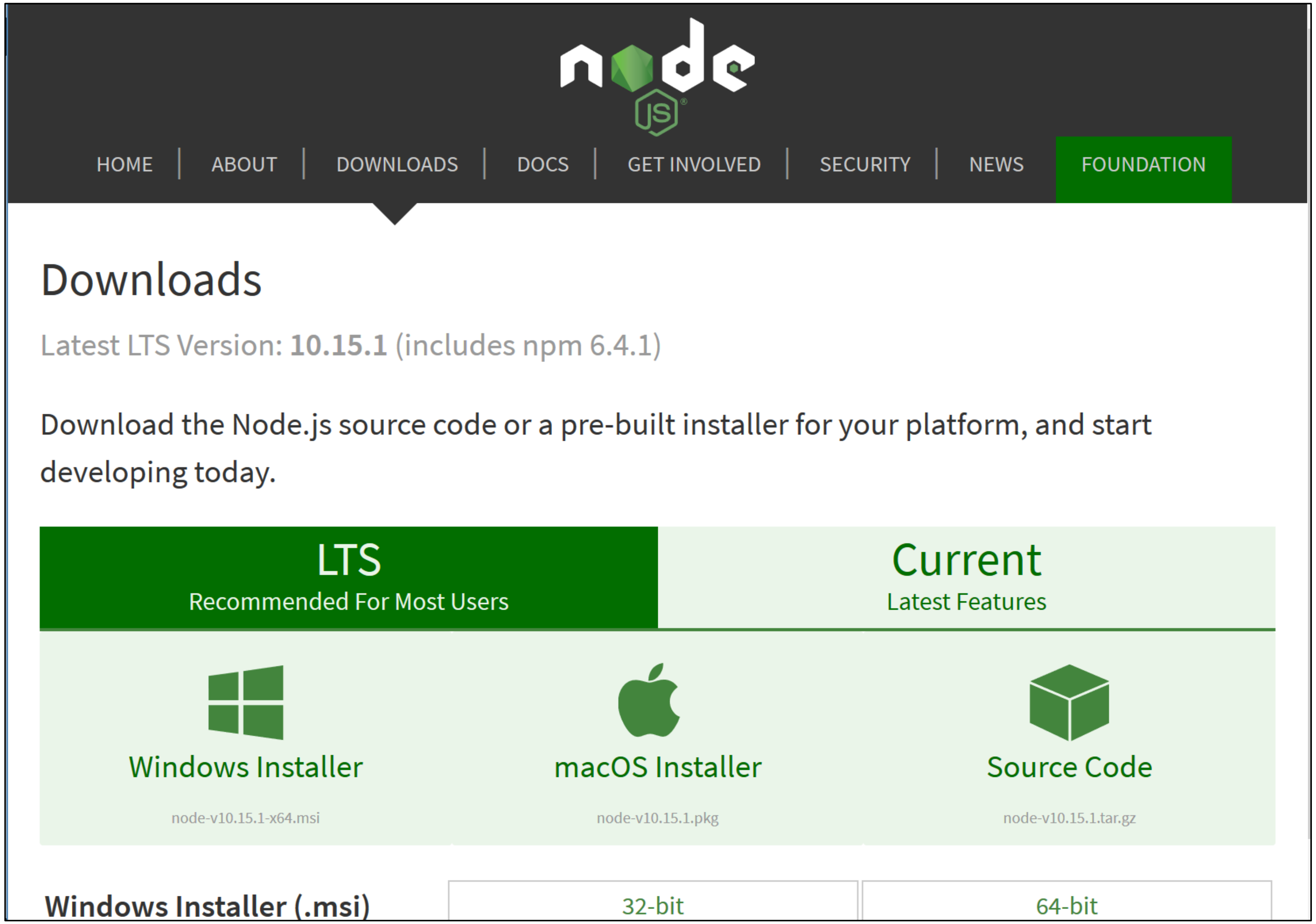
Install…

Node.js

Node.js is an environment that runs **Javascript** code.

Node can be used to run *web server* applications as well as *desktop* applications.

That's what this presentation is about.



Downloads

Latest LTS Version: **10.15.1** (includes npm 6.4.1)

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

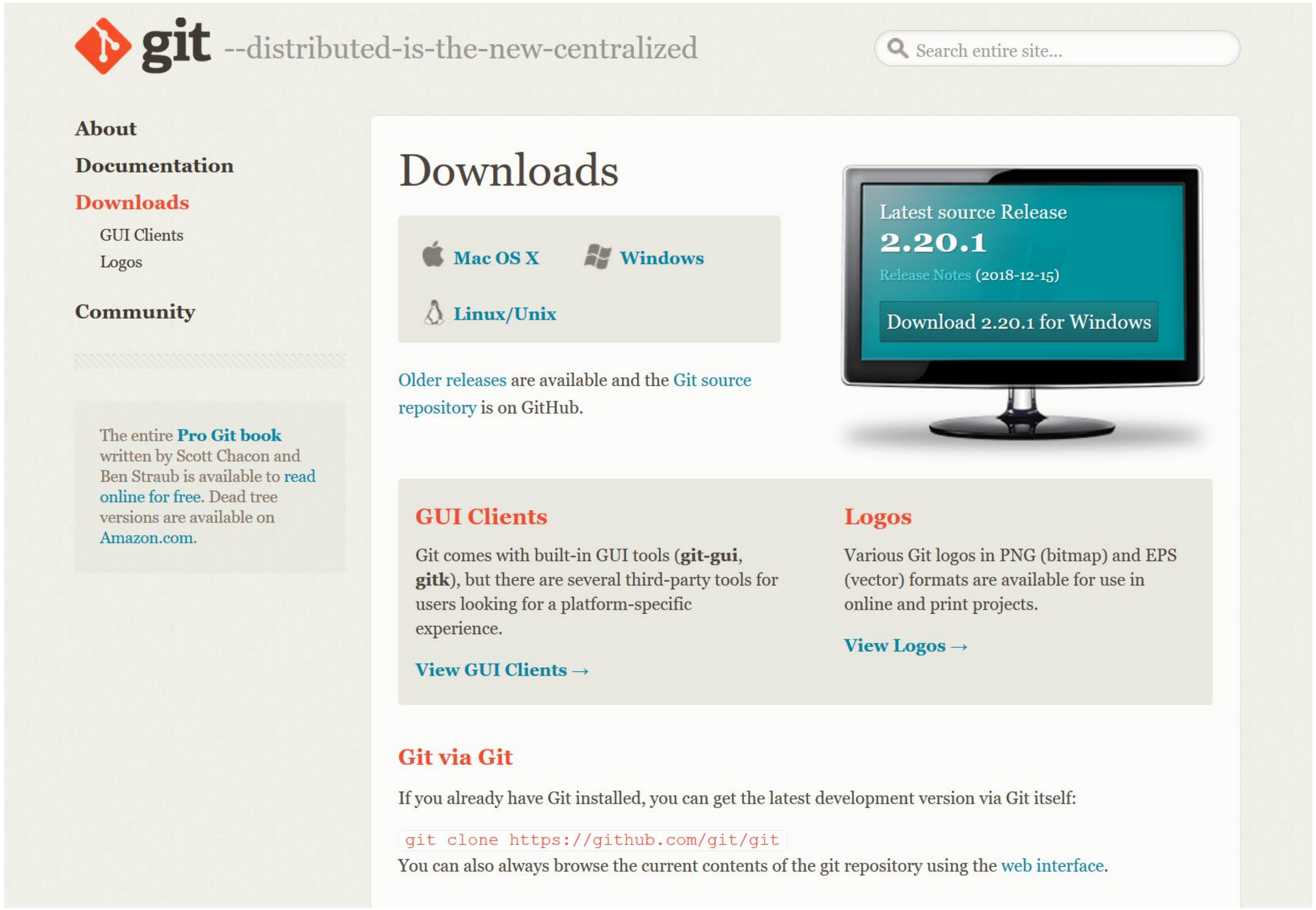
https://nodejs.org/en/download/

Install…

Git

Git allows to you access and update software from code versioning libraries.

We use it to get and run programs authored by other people.



git --distributed-is-the-new-centralized

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

Mac OS X Windows

Linux/Unix

Latest source Release
2.20.1
Release Notes (2018-12-15)
Download 2.20.1 for Windows

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 →

Git via Git

If you already have Git installed, you can get the latest development version via Git itself:

```
git clone https://github.com/git/git
```

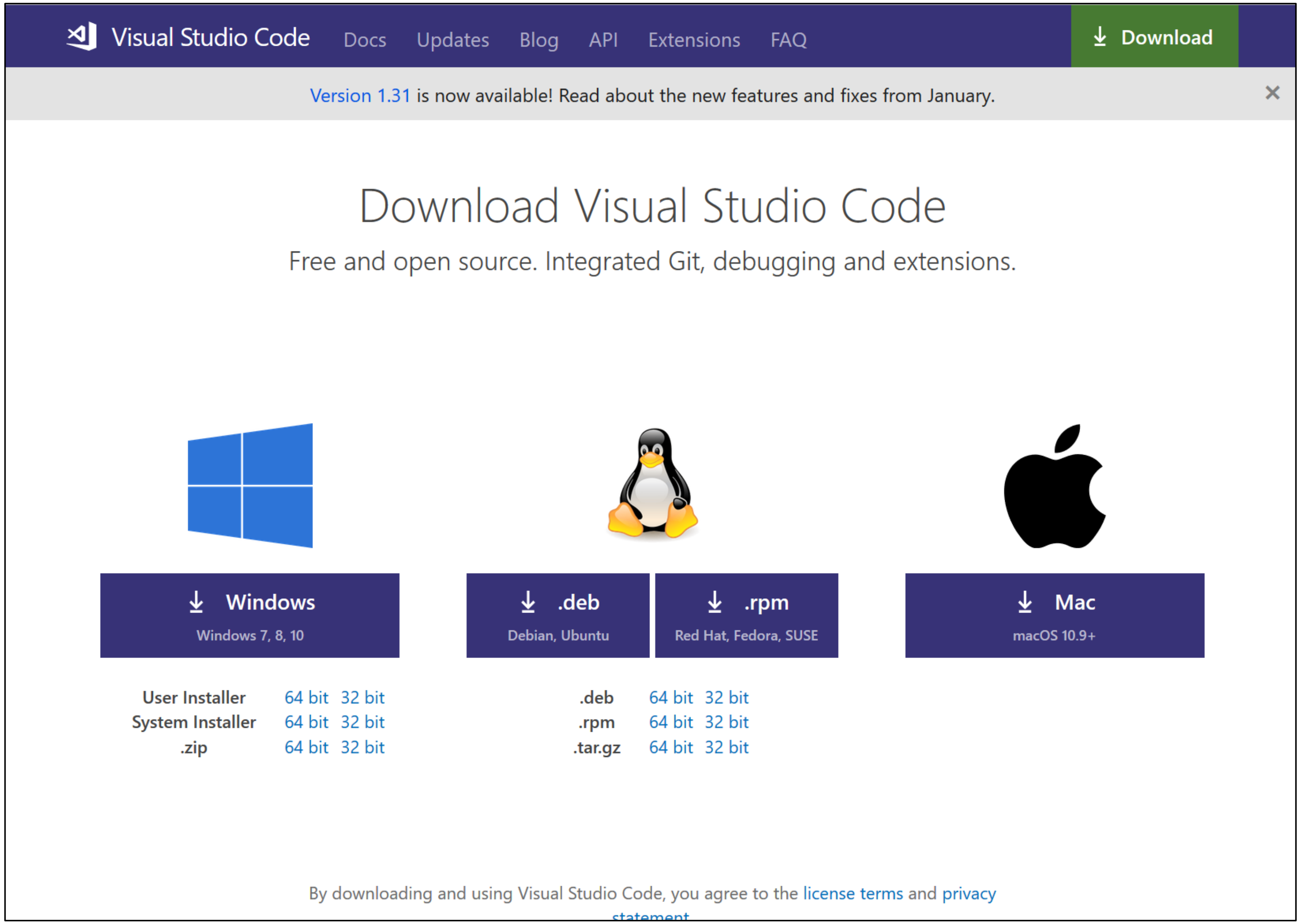
You can also always browse the current contents of the git repository using the web interface.

https://git-scm.com/downloads

Install…

Visual Studio Code

Visual Studio Code is an *Integrated Development Environment (IDE).*



Visual Studio Code Docs Updates Blog API Extensions FAQ Download

Version 1.31 is now available! Read about the new features and fixes from January.

Download Visual Studio Code

Free and open source. Integrated Git, debugging and extensions.

User Installer	64 bit	32 bit
System Installer	64 bit	32 bit
.zip	64 bit	32 bit

.deb	64 bit	32 bit
.rpm	64 bit	32 bit
.tar.gz	64 bit	32 bit

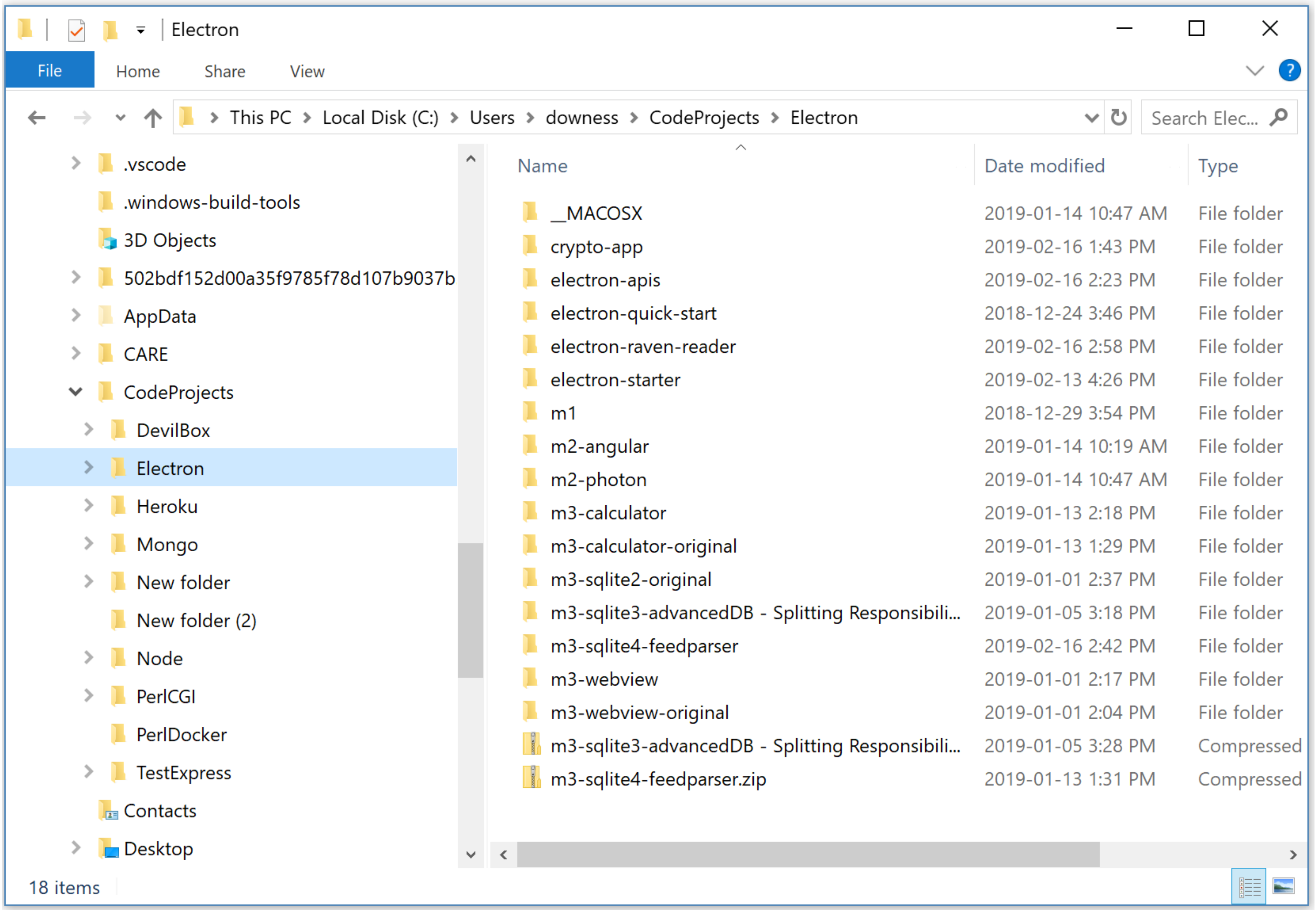
By downloading and using Visual Studio Code, you agree to the license terms and privacy statement

https://code.visualstudio.com/download

Core Concepts

Files and Folders

Like (say) Windows Explorer (pictured here)

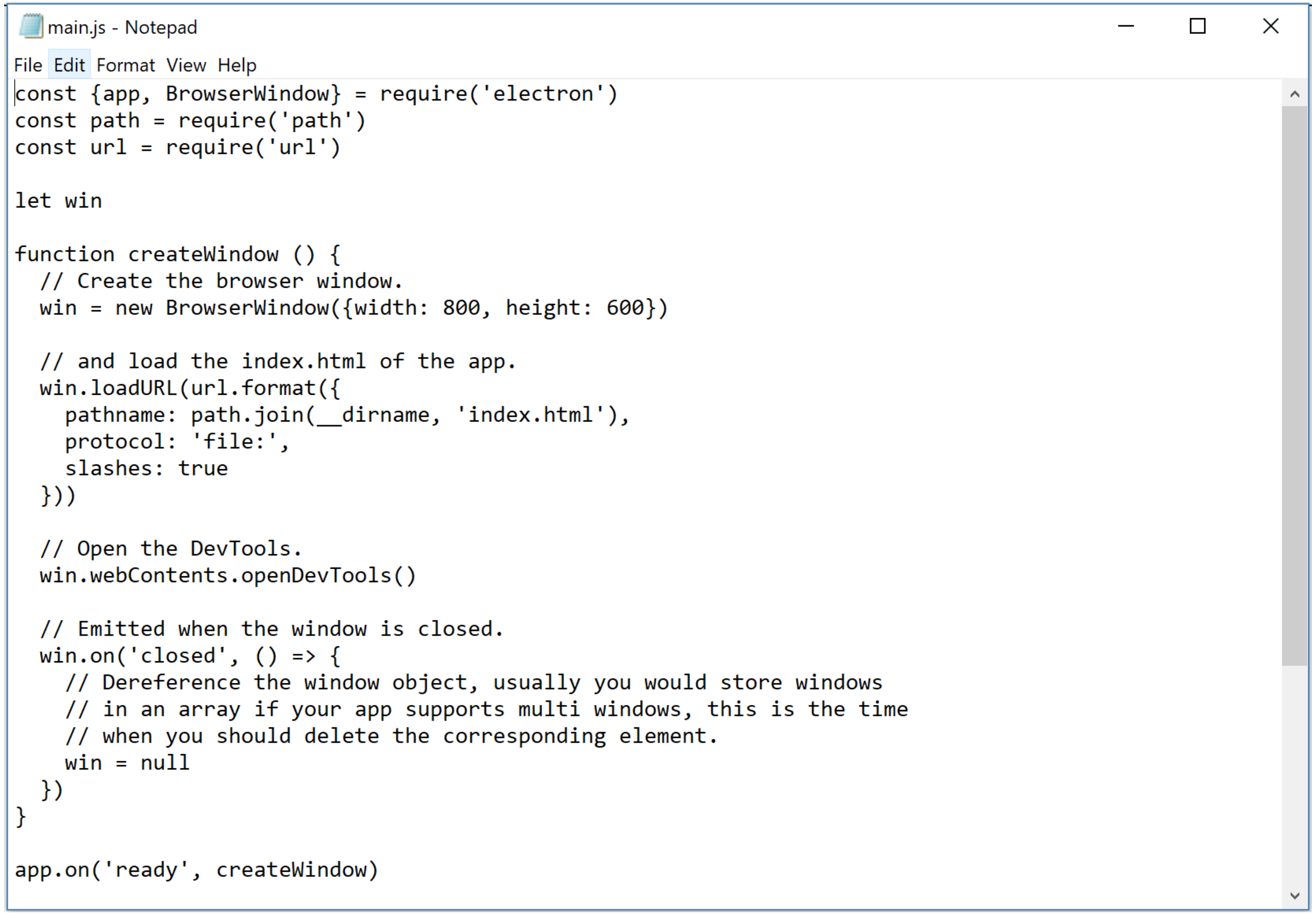


Name	Date modified	Type
__MACOSX	2019-01-14 10:47 AM	File folder
crypto-app	2019-02-16 1:43 PM	File folder
electron-apis	2019-02-16 2:23 PM	File folder
electron-quick-start	2018-12-24 3:46 PM	File folder
electron-raven-reader	2019-02-16 2:58 PM	File folder
electron-starter	2019-02-13 4:26 PM	File folder
m1	2018-12-29 3:54 PM	File folder
m2-angular	2019-01-14 10:19 AM	File folder
m2-photon	2019-01-14 10:47 AM	File folder
m3-calculator	2019-01-13 2:18 PM	File folder
m3-calculator-original	2019-01-13 1:29 PM	File folder
m3-sqlite2-original	2019-01-01 2:37 PM	File folder
m3-sqlite3-advancedDB - Splitting Responsibili...	2019-01-05 3:18 PM	File folder
m3-sqlite4-feedparser	2019-02-16 2:42 PM	File folder
m3-webview	2019-01-01 2:17 PM	File folder
m3-webview-original	2019-01-01 2:04 PM	File folder
m3-sqlite3-advancedDB - Splitting Responsibili...	2019-01-05 3:28 PM	Compressed
m3-sqlite4-feedparser.zip	2019-01-13 1:31 PM	Compressed

Core Concepts

Text Editor

Like (say) Windows Notepad (pictured here)



```
const {app, BrowserWindow} = require('electron')
const path = require('path')
const url = require('url')

let win

function createWindow () {
  // Create the browser window.
  win = new BrowserWindow({width: 800, height: 600})

  // and load the index.html of the app.
  win.loadURL(url.format({
    pathname: path.join(__dirname, 'index.html'),
    protocol: 'file:',
    slashes: true
  }))

  // Open the DevTools.
  win.webContents.openDevTools()

  // Emitted when the window is closed.
  win.on('closed', () => {
    // Dereference the window object, usually you would store windows
    // in an array if your app supports multi windows, this is the time
    // when you should delete the corresponding element.
    win = null
  })
}

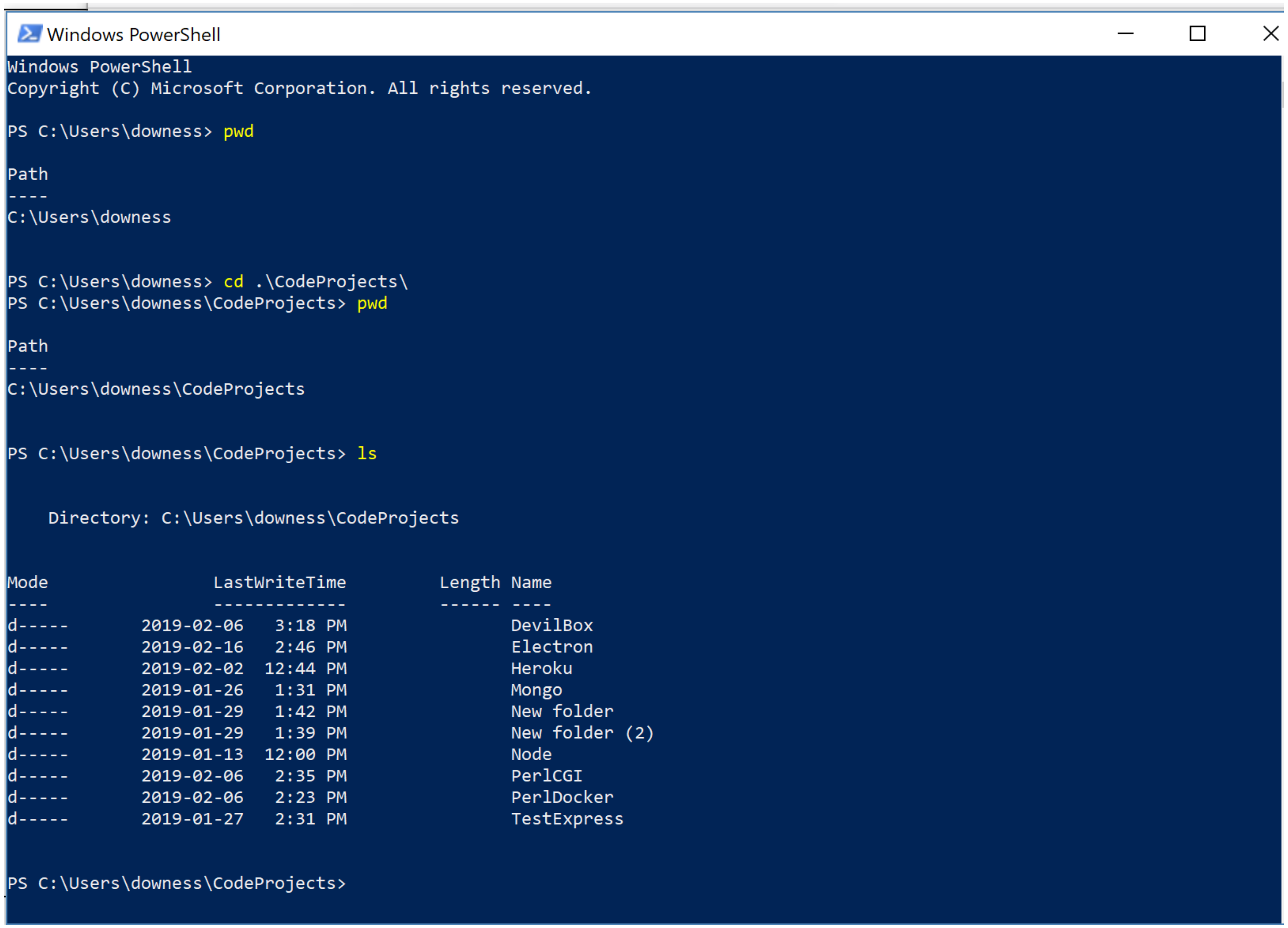
app.on('ready', createWindow)
```

Core Concepts

Command Shell

Like (say) Windows Command Prompt or Power Shell (pictured here).

Executes typed commands (instead of clicking on icons)


Windows PowerShell

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\downess> pwd

Path
----
C:\Users\downess


PS C:\Users\downess> cd .\CodeProjects\
PS C:\Users\downess\CodeProjects> pwd

Path
----
C:\Users\downess\CodeProjects


PS C:\Users\downess\CodeProjects> ls


    Directory: C:\Users\downess\CodeProjects

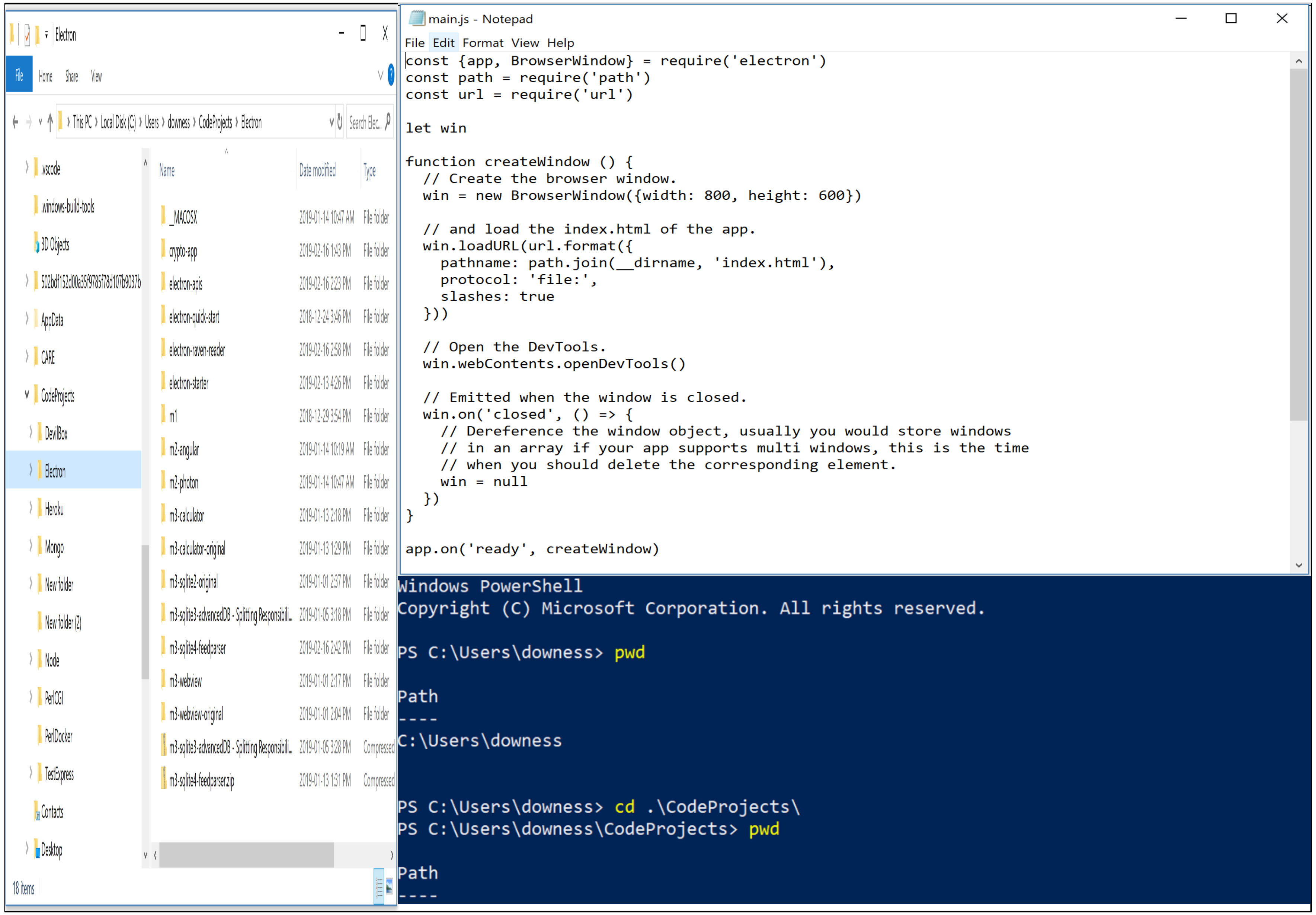

Mode                LastWriteTime         Length Name
----                -------------         ------ ----
d-----       2019-02-06   3:18 PM                DevilBox
d-----       2019-02-16   2:46 PM                Electron
d-----       2019-02-02  12:44 PM                Heroku
d-----       2019-01-26   1:31 PM                Mongo
d-----       2019-01-29   1:42 PM                New folder
d-----       2019-01-29   1:39 PM                New folder (2)
d-----       2019-01-13  12:00 PM                Node
d-----       2019-02-06   2:35 PM                PerlCGI
d-----       2019-02-06   2:23 PM                PerlDocker
d-----       2019-01-27   2:31 PM                TestExpress


PS C:\Users\downess\CodeProjects>
```

https://cdn.comparitech.com/wp-content/uploads/2018/08/Comparitech-Powershell-cheatsheet.pdf

Development Environment

Integrates explorer, text editor and command shell



Name	Date modified	Type
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m3-calculator	2019-01-13 2:18 PM	File folder
m3-calculator-original	2019-01-13 1:29 PM	File folder
m3-sqlite2-original	2019-01-01 2:37 PM	File folder
m3-sqlite3-advancedDB - Splitting Responsibili...	2019-01-05 3:18 PM	File folder
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m3-webview	2019-01-01 2:17 PM	File folder
m3-webview-original	2019-01-01 2:04 PM	File folder
m3-sqlite3-advancedDB - Splitting Responsibili...	2019-01-05 3:28 PM	Compressed
m3-sqlite4-feedparser.zip	2019-01-13 1:31 PM	Compressed

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    pathname: path.join(__dirname, 'index.html'),
    protocol: 'file:',
    slashes: true
  }))

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  win.webContents.openDevTools()

  // Emitted when the window is closed.
  win.on('closed', () => {
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    // in an array if your app supports multi windows, this is the time
    // when you should delete the corresponding element.
    win = null
  })
}

app.on('ready', createWindow)
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\downess> pwd

Path
----
C:\Users\downess

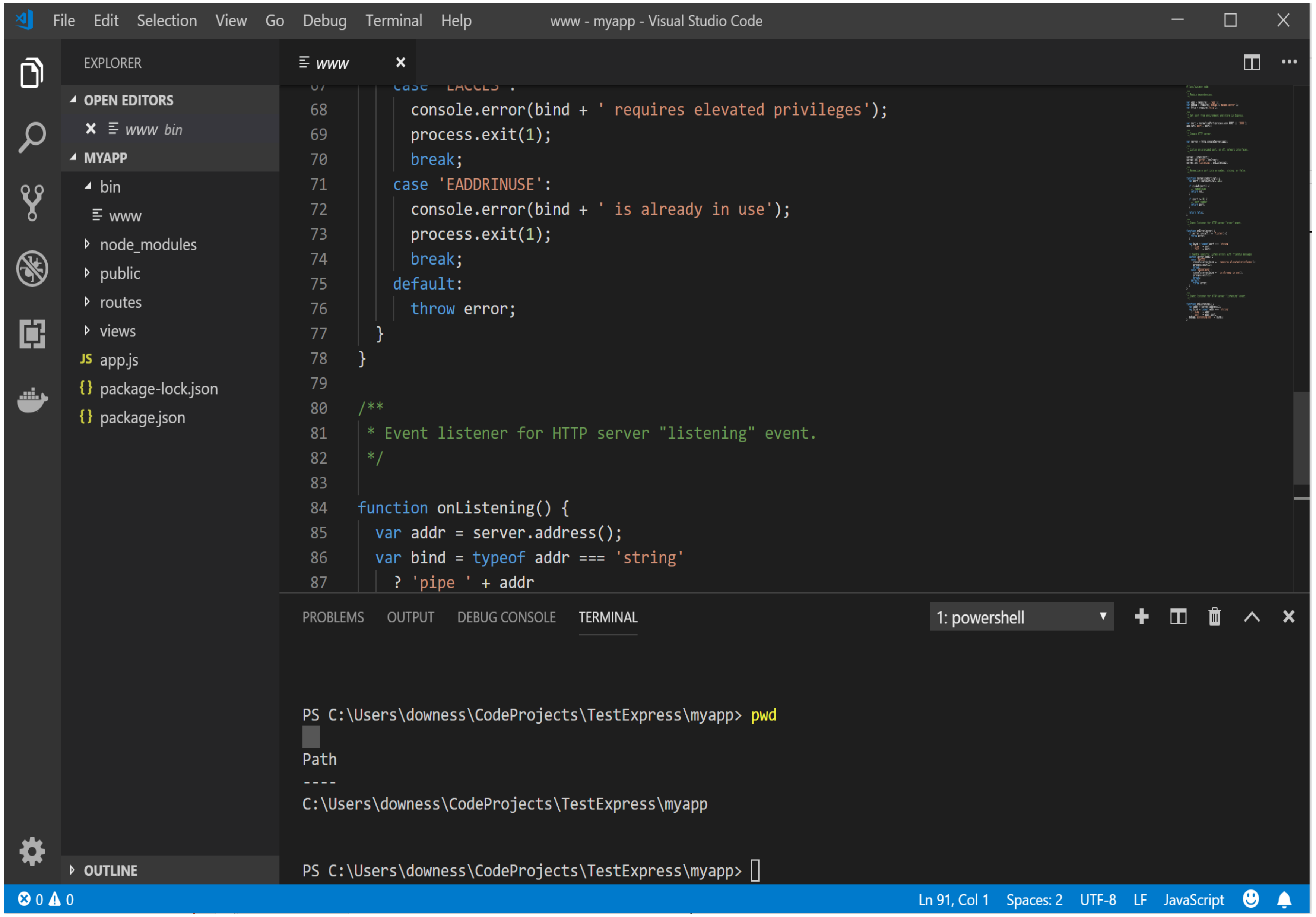

PS C:\Users\downess> cd .\CodeProjects\
PS C:\Users\downess\CodeProjects> pwd

Path
----
```

Development Environment

Visual Studio Code

Integrates and provides options for directories and files, text editor, and command window



```
    case 'EACCES':
      console.error(bind + ' requires elevated privileges');
      process.exit(1);
      break;
    case 'EADDRINUSE':
      console.error(bind + ' is already in use');
      process.exit(1);
      break;
    default:
      throw error;
  }
}

/**
 * Event listener for HTTP server "listening" event.
 */

function onListening() {
  var addr = server.address();
  var bind = typeof addr === 'string'
    ? 'pipe ' + addr
```

```
PS C:\Users\downess\CodeProjects\TestExpress\myapp> pwd

Path
----
C:\Users\downess\CodeProjects\TestExpress\myapp


PS C:\Users\downess\CodeProjects\TestExpress\myapp>
```

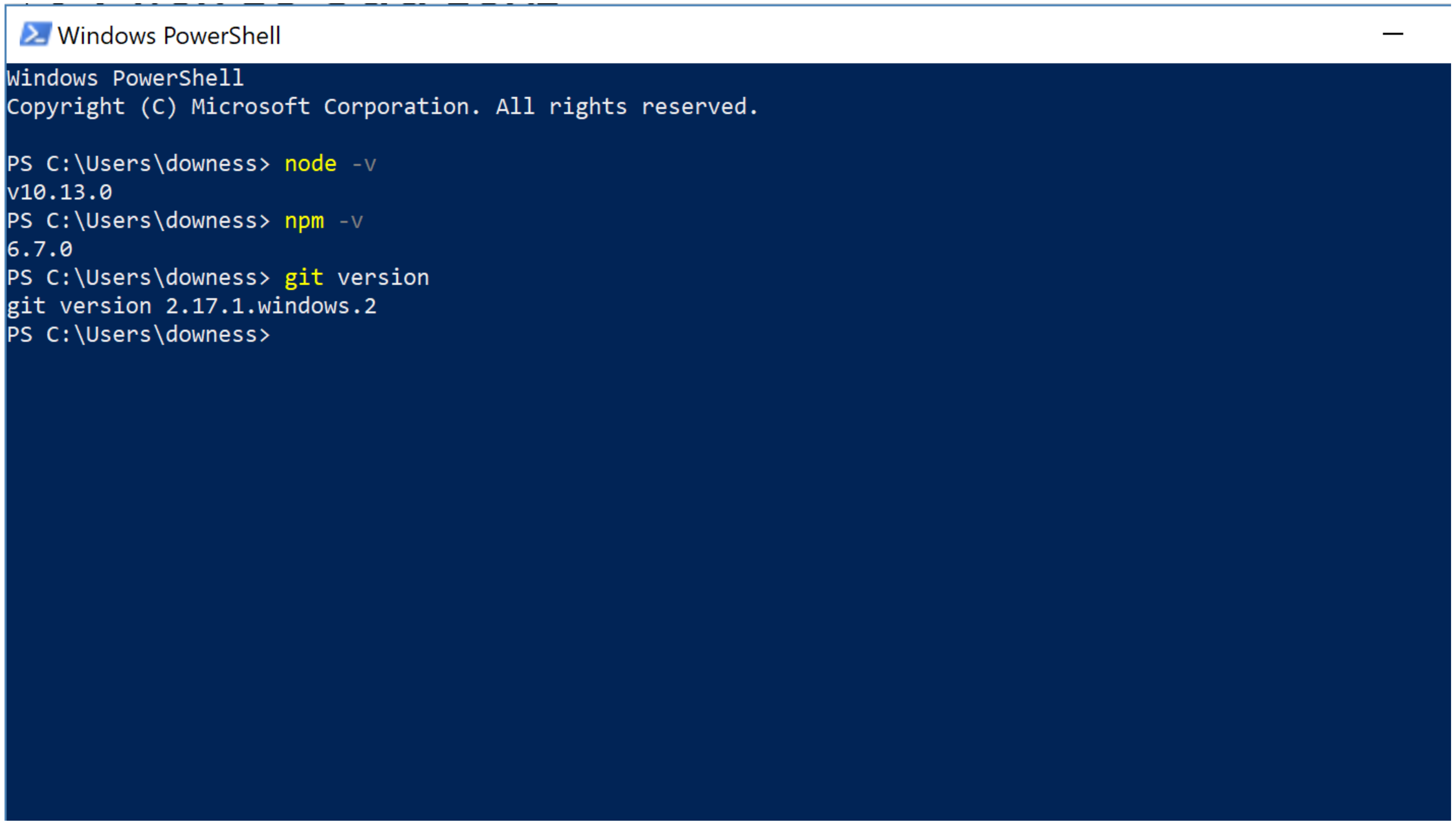
Path

Test

Git and Node run from the command line in the shell.

Test them in the command shell

If they don't work, they have to be added to the path (probably)



Windows PowerShell

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\downess> node -v
v10.13.0
PS C:\Users\downess> npm -v
6.7.0
PS C:\Users\downess> git version
git version 2.17.1.windows.2
PS C:\Users\downess>
```

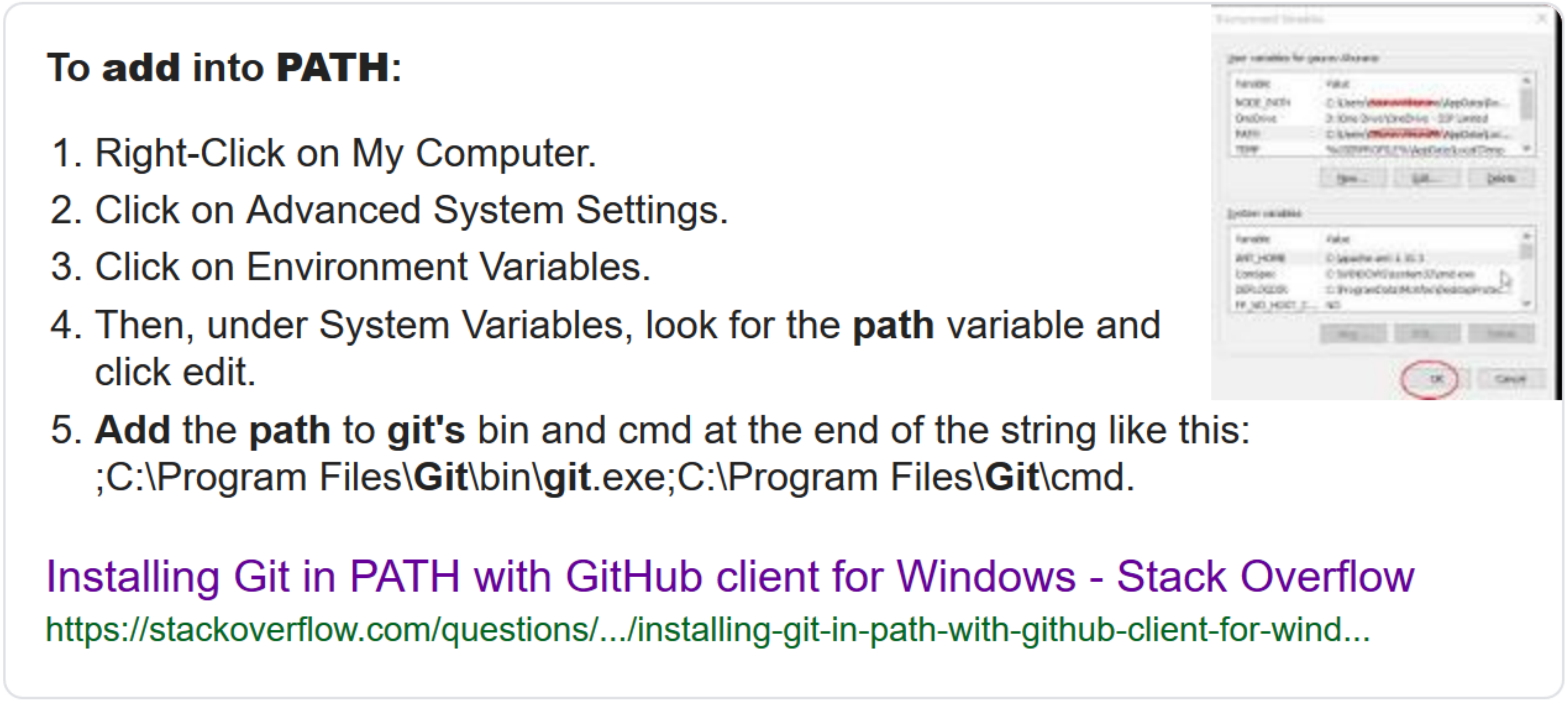
C:\Users\downess\CodeProjects

Path

Add to Path

Use the Windows system settings to add Git and/or Node to the Windows path.

The path tells Windows where to look for a command line program.



To add into PATH:

1. Right-Click on My Computer.
2. Click on Advanced System Settings.
3. Click on Environment Variables.
4. Then, under System Variables, look for the **path** variable and click edit.
5. **Add** the **path** to **git's** bin and cmd at the end of the string like this: ;C:\Program Files**Git**\bin**git**.exe;C:\Program Files**Git**\cmd.

Installing Git in PATH with GitHub client for Windows - Stack Overflow
https://stackoverflow.com/questions/.../installing-git-in-path-with-github-client-for-wind...

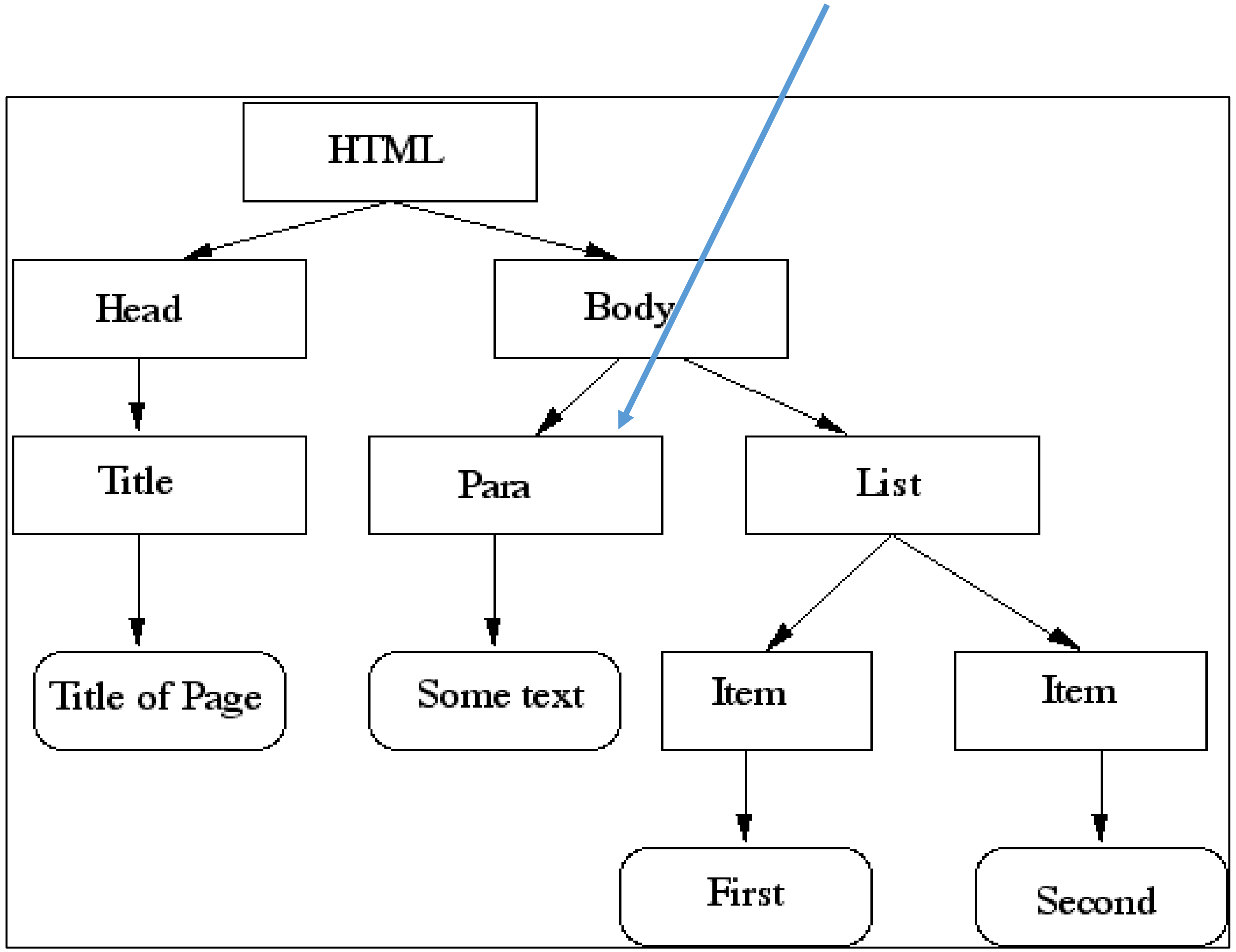
https://stackoverflow.com/questions/26620312/installing-git-in-path-with-github-client-for-windows

Javascript

DOM

Javascript uses *selectors* to interoperate with a web page Document Object Model (DOM) to get and manipulate web page values. There is also an analogous Browser Object Model (BOM).

```
document.getElementById("p1").innerHTML = "New text!";
```

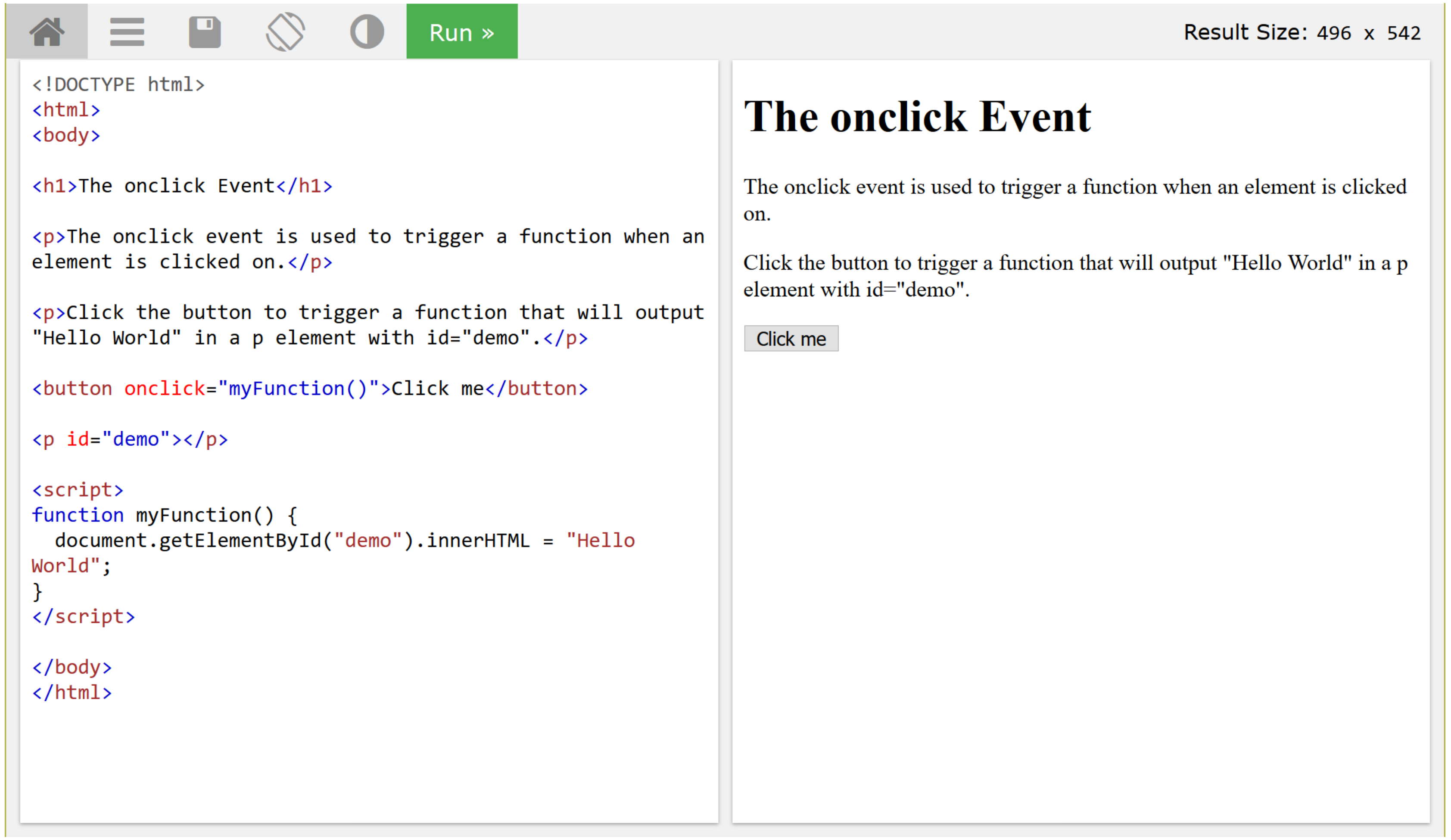


https://www.w3schools.com/js/js_htmldom.asp

Javascript

Events

Javascript uses *listeners* to respond to events on a web page such as page loads, clicks, changes in forms, mouse hovers, etc.



```
<!DOCTYPE html>
<html>
<body>

<h1>The onclick Event</h1>

<p>The onclick event is used to trigger a function when an
element is clicked on.</p>

<p>Click the button to trigger a function that will output
"Hello World" in a p element with id="demo".</p>

<button onclick="myFunction()">Click me</button>

<p id="demo"></p>

<script>
function myFunction() {
  document.getElementById("demo").innerHTML = "Hello
World";
}
</script>

</body>
</html>
```

The onclick Event

The onclick event is used to trigger a function when an element is clicked on.

Click the button to trigger a function that will output "Hello World" in a p element with id="demo".

https://www.w3schools.com/jsref/tryit.asp?filename=tryjsref_onclick

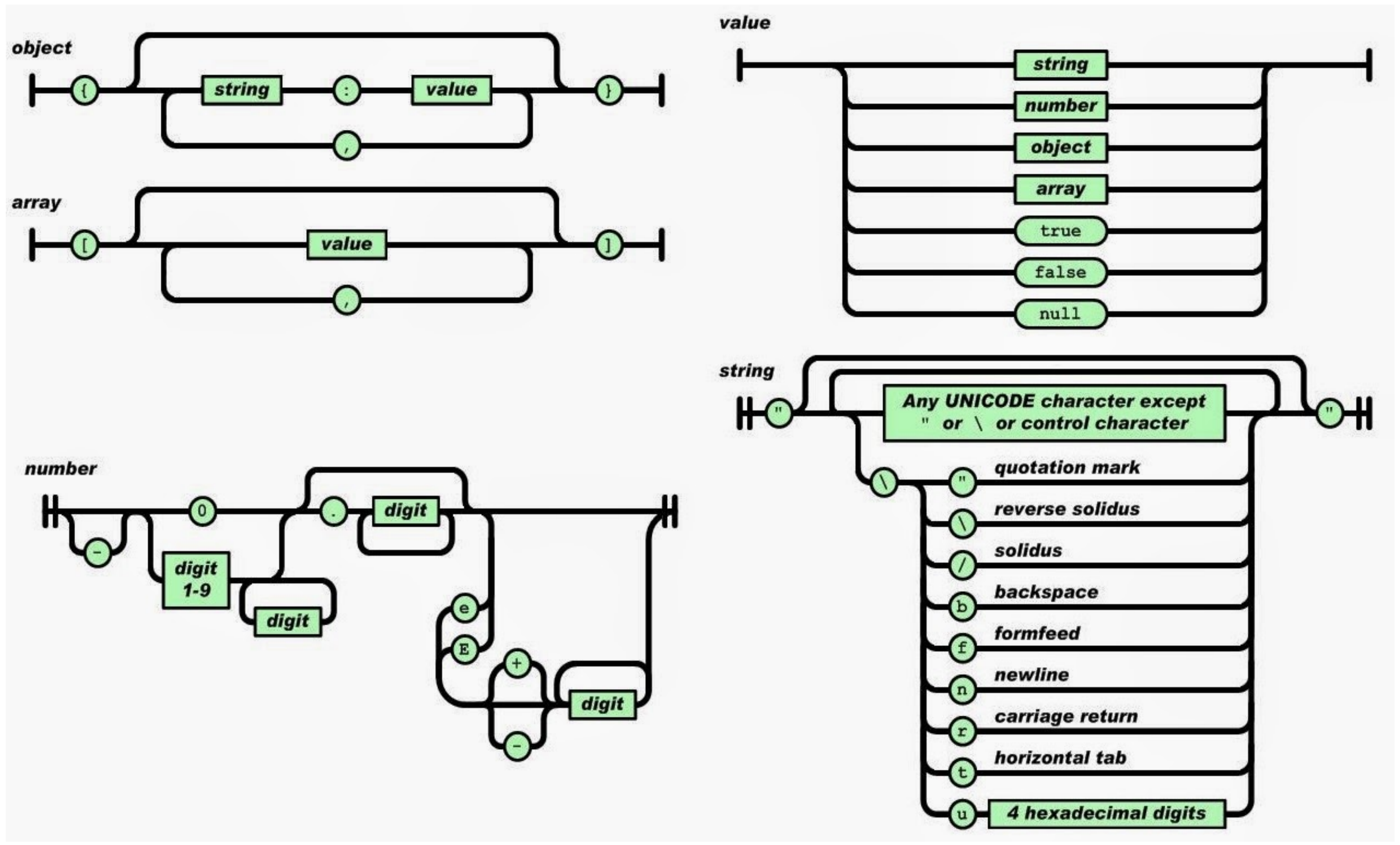
https://www.w3schools.com/jsref/dom_obj_event.asp

Javascript

JSON

In Javascript data structures are represented using text formatted as *Javascript Object Notation* (JSON).

Because JSON is text, it can be easily edited, and sent and stored almost anywhere.



https://www.w3schools.com/js/js_json_intro.asp

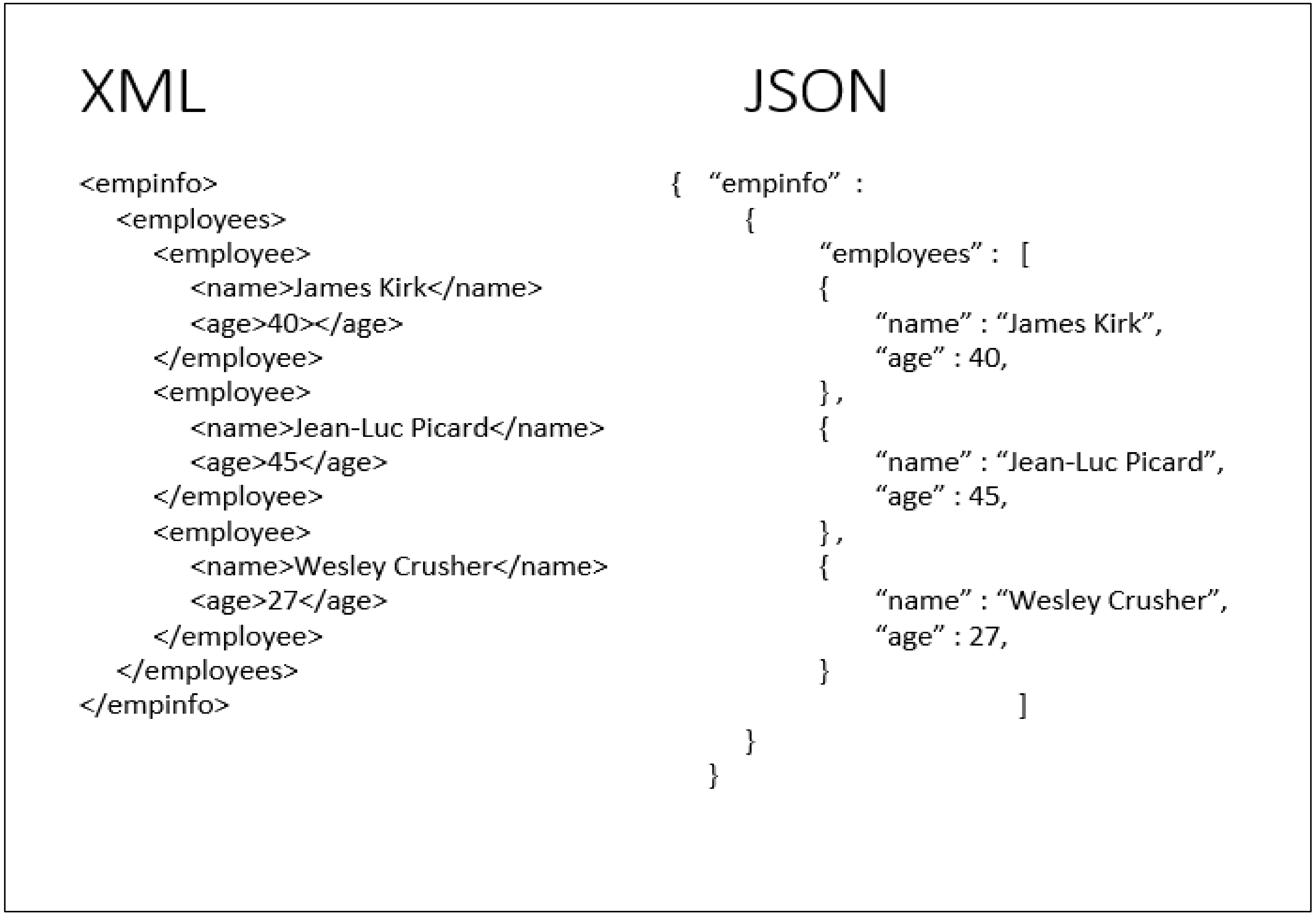
https://www.json.org/

Javascript

JSON

JSON is a *native* Javascript format. You can read and write to it directly using a selector.

So there is no complicated parsing of data being exchanged, as there is in XML.



XML

```
<empinfo>
    <employees>
        <employee>
            <name>James Kirk</name>
            <age>40></age>
        </employee>
        <employee>
            <name>Jean-Luc Picard</name>
            <age>45</age>
        </employee>
        <employee>
            <name>Wesley Crusher</name>
            <age>27</age>
        </employee>
    </employees>
</empinfo>
```

JSON

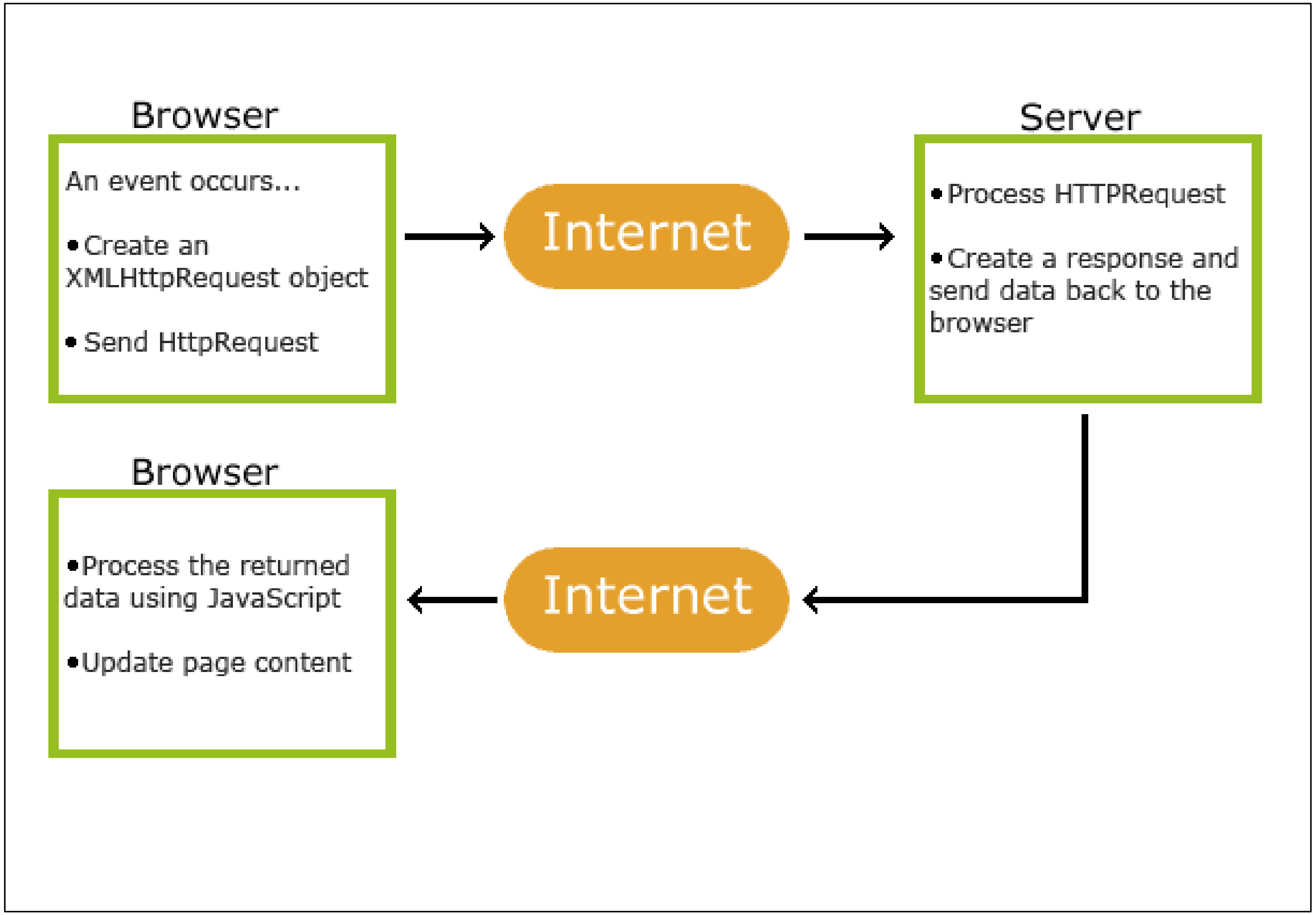
```
{   “empinfo” :
        {
                “employees” :  [
                {
                    “name” : “James Kirk”,
                    “age” : 40,
                } ,
                {
                    “name” : “Jean-Luc Picard”,
                    “age” : 45,
                } ,
                {
                    “name” : “Wesley Crusher”,
                    “age” : 27,
                }
                               ]
        }
    }
```

https://www.w3schools.com/js/js_json_intro.asp https://www.json.org/

Javascript

AJAX

Javascript uses *Asynchronous JavaScript And XML* (AJAX) to read data from a web server after the page has loaded, update a web page without reloading the page, and send data to a web server - in the background.

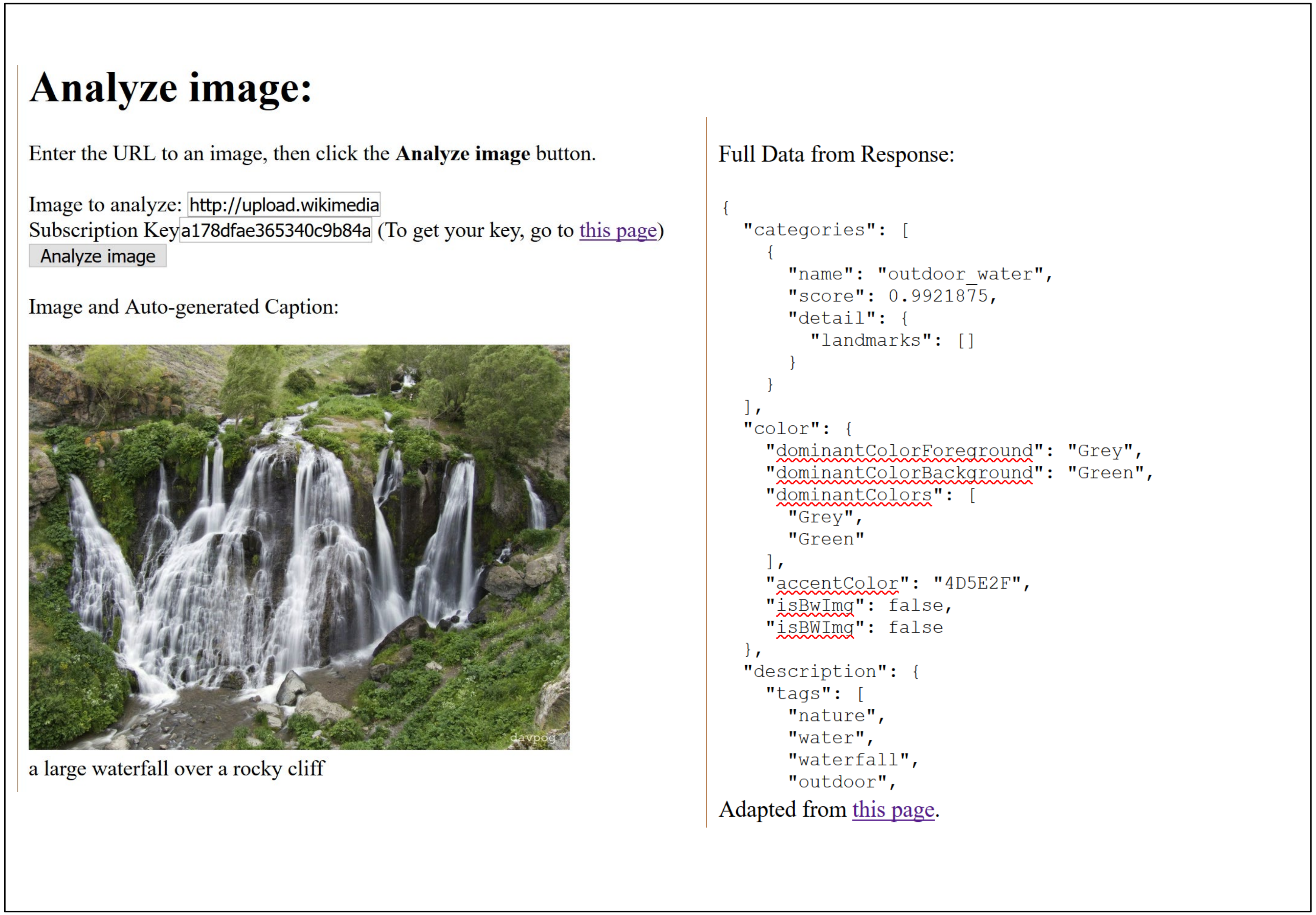

Browser
An event occurs...
• Create an XMLHttpRequest object
• Send HttpRequest
Internet
Server
• Process HTTPRequest
• Create a response and send data back to the browser
Internet
Browser
• Process the returned data using JavaScript
• Update page content

https://www.w3schools.com/js/js_ajax_intro.asp

Javascript

AI Services

Send an API request using AJAX and API key to MS Cognitive Services (Computer Vision) to create alt text for images.



Analyze image:

Enter the URL to an image, then click the **Analyze image** button.

Image to analyze: http://upload.wikimedia
Subscription Key a178dfae365340c9b84a (To get your key, go to this page)

Image and Auto-generated Caption:

a large waterfall over a rocky cliff

Full Data from Response:

```
{
  "categories": [
    {
      "name": "outdoor_water",
      "score": 0.9921875,
      "detail": {
        "landmarks": []
      }
    }
  ],
  "color": {
    "dominantColorForeground": "Grey",
    "dominantColorBackground": "Green",
    "dominantColors": [
      "Grey",
      "Green"
    ],
    "accentColor": "4D5E2F",
    "isBwImg": false,
    "isBWImg": false
  },
  "description": {
    "tags": [
      "nature",
      "water",
      "waterfall",
      "outdoor",
```

Adapted from this page.

C:\Users\downess\CodeProjects\MS-API\Computer Vision

https://www.downes.ca/files/msindex.html

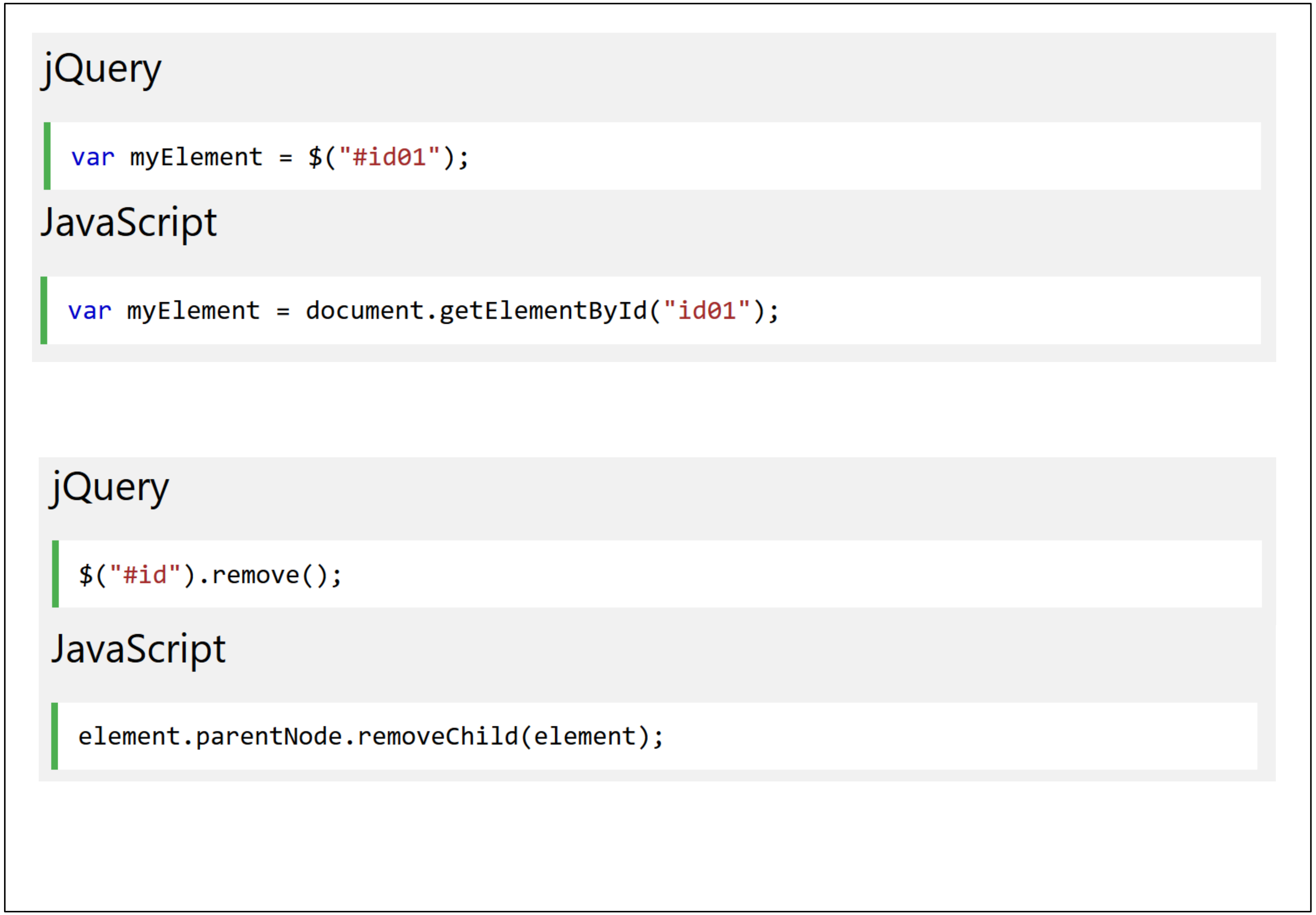
https://docs.microsoft.com/en-us/azure/cognitive-services/Computer-vision/quickstarts/javascript-analyze

Javascript

jQuery

jQuery is a Javascript library that simplifies Javascript (and especially selectors and listeners).

It's often included in web pages as a remote script (ie., `<script src="jquery.js">`)



jQuery

```
var myElement = $("#id01");
```

JavaScript

```
var myElement = document.getElementById("id01");
```

jQuery

```
$("#id").remove();
```

JavaScript

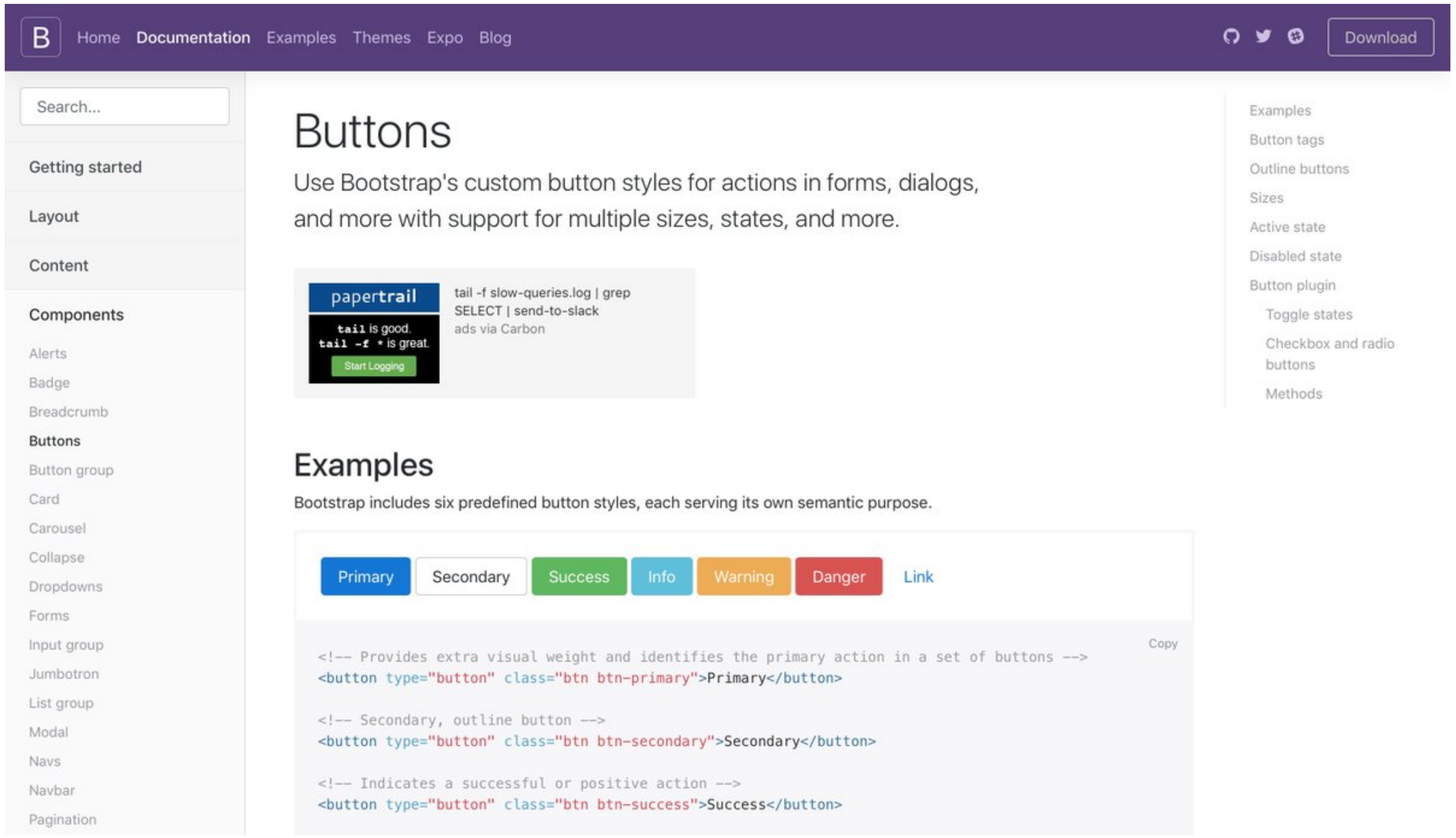
```
element.parentNode.removeChild(element);
```

https://www.w3schools.com/jquery/default.asp

Javascript

Bootstrap

Bootstrap is a Javascript library built on top of jQuery that automates a lot of web page styling and interface elements. It makes it a lot easier to support mobile devices and accessibility standards (aka ARIA).



Buttons

Use Bootstrap's custom button styles for actions in forms, dialogs, and more with support for multiple sizes, states, and more.

tail -f slow-queries.log | grep SELECT | send-to-slack
ads via Carbon

Examples

Bootstrap includes six predefined button styles, each serving its own semantic purpose.

```
<!-- Provides extra visual weight and identifies the primary action in a set of buttons -->
<button type="button" class="btn btn-primary">Primary</button>

<!-- Secondary, outline button -->
<button type="button" class="btn btn-secondary">Secondary</button>

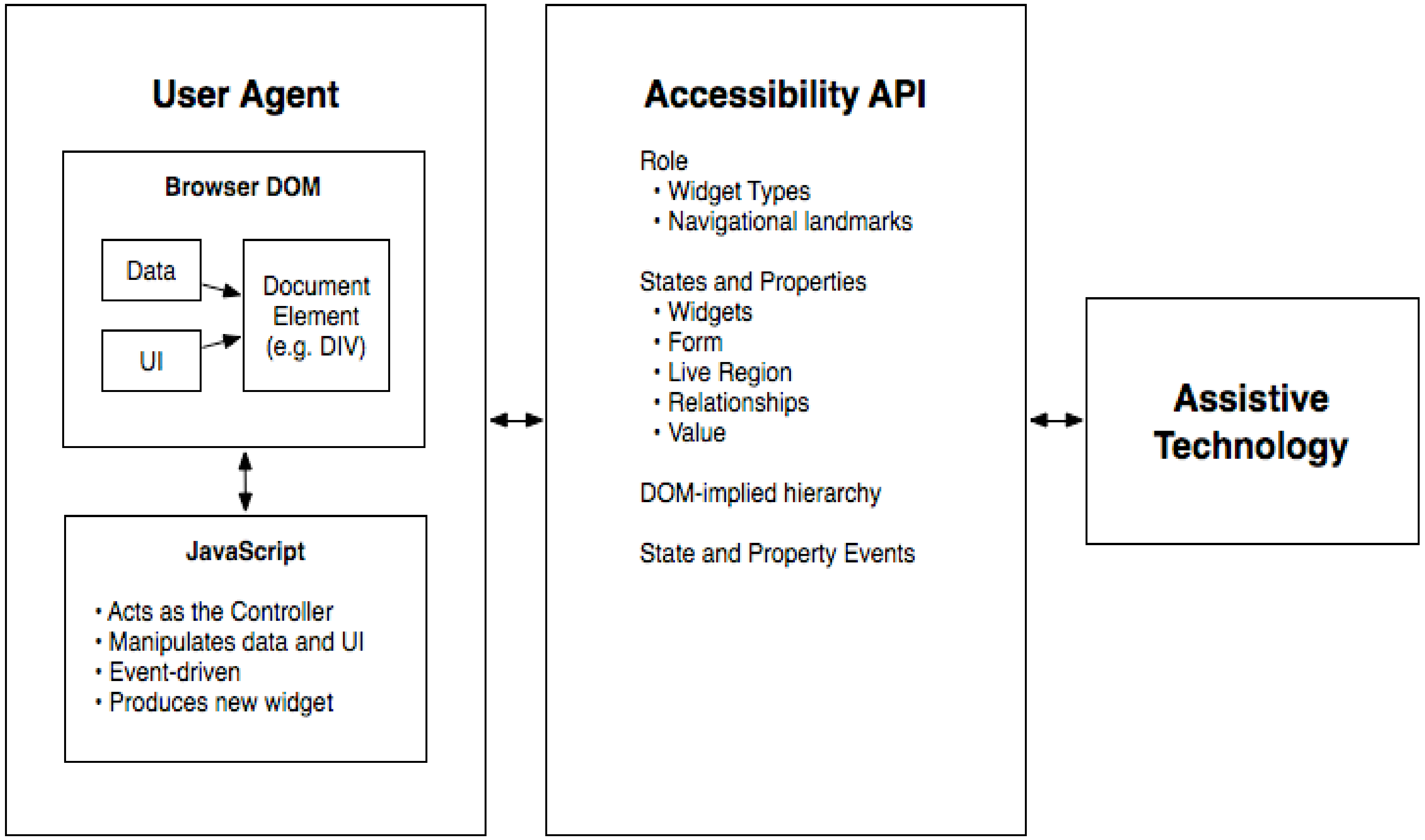
<!-- Indicates a successful or positive action -->
<button type="button" class="btn btn-success">Success</button>
```

https://getbootstrap.com/

Javascript

ARIA

The Accessible Rich Internet Applications (ARIA) standard provides an interface between Javascript DOM elements and assistive technologies.

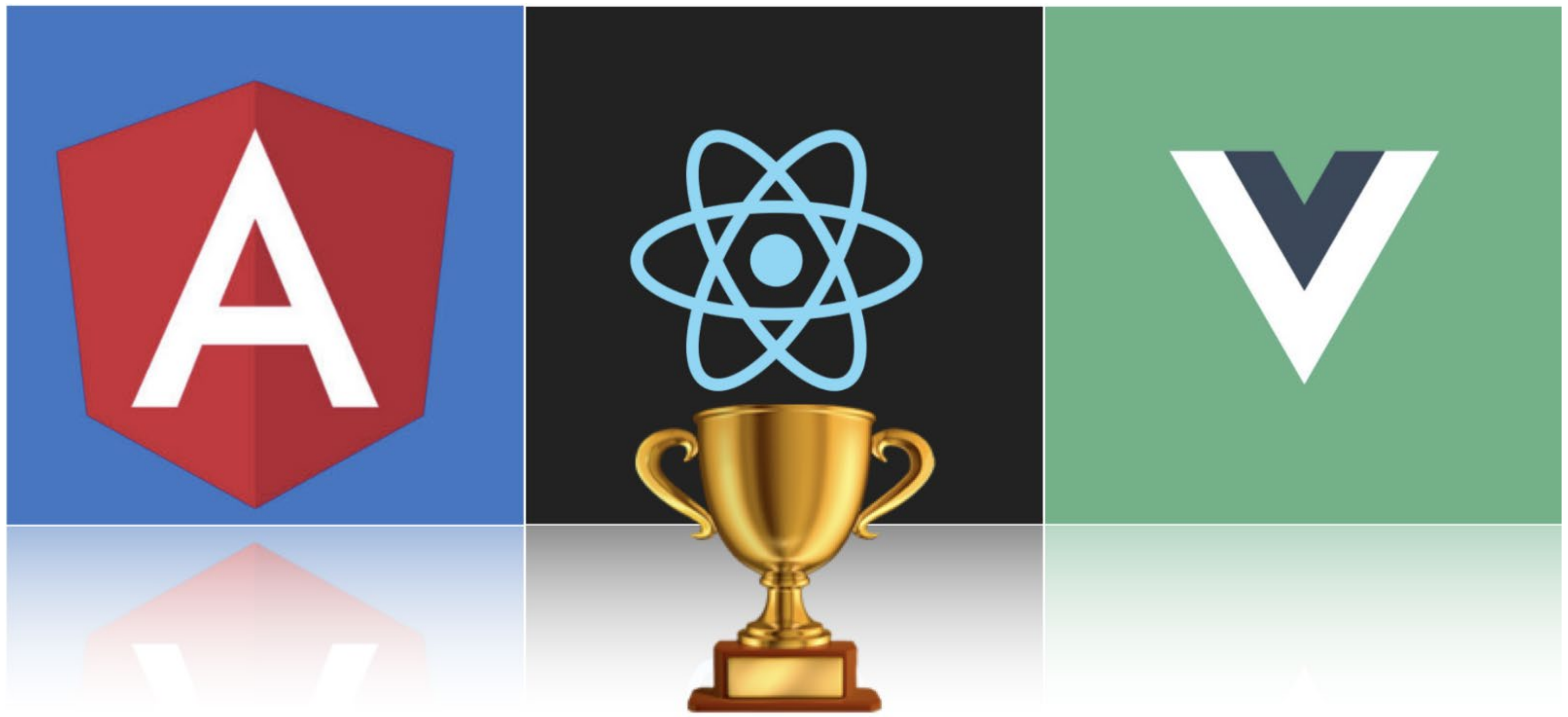


https://www.w3.org/TR/wai-aria/
https://developers.google.com/web/fundamentals/accessibility/semantics-aria/

Javascript

Frameworks

These are frontend libraries that manage interactions with backend services.



Angular: https://angular.io/
React: https://reactjs.org/
Vue: https://vuejs.org/

https://medium.com/zerotomastery/tech-trends-showdown-react-vs-angular-vs-vue-61ffaf1d8706
https://www.codeinwp.com/blog/angular-vs-vue-vs-react/

Node.js

Server

Node.js is a way of running Javascript on the server. In many ways, it *is* a web server. Node.js is run from the command line, and you can access it with a web browser.

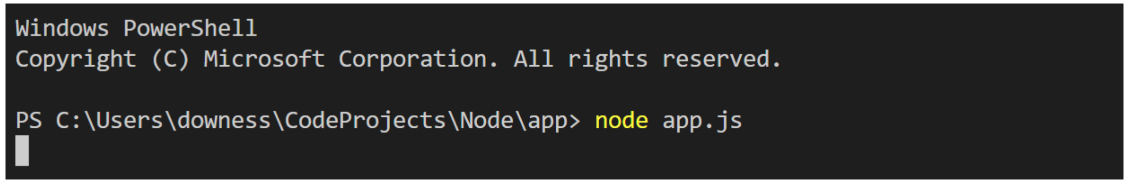
C:\Users\downess\CodeProjects\Node\app

http://localhost:8080

Script in text file: app.js (edit in the text editor)

```
var http = require('http');
http.createServer(function (req, res) {
  res.writeHead(200, {'Content-Type': 'text/plain'});
  res.end('Hello World!');
}).listen(8080);
```

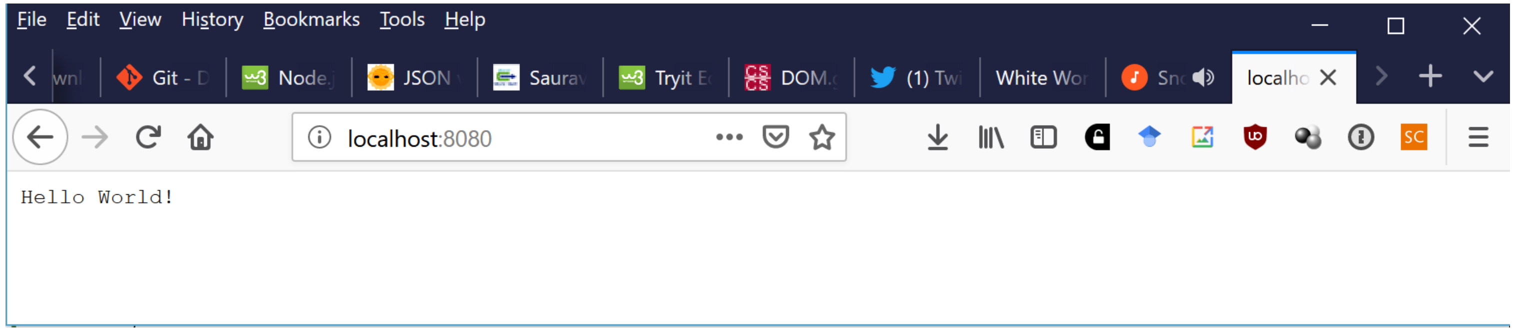
Run script (use the command line)



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\downess\CodeProjects\Node\app> node app.js
```

View in browser (http://localhost:8080)



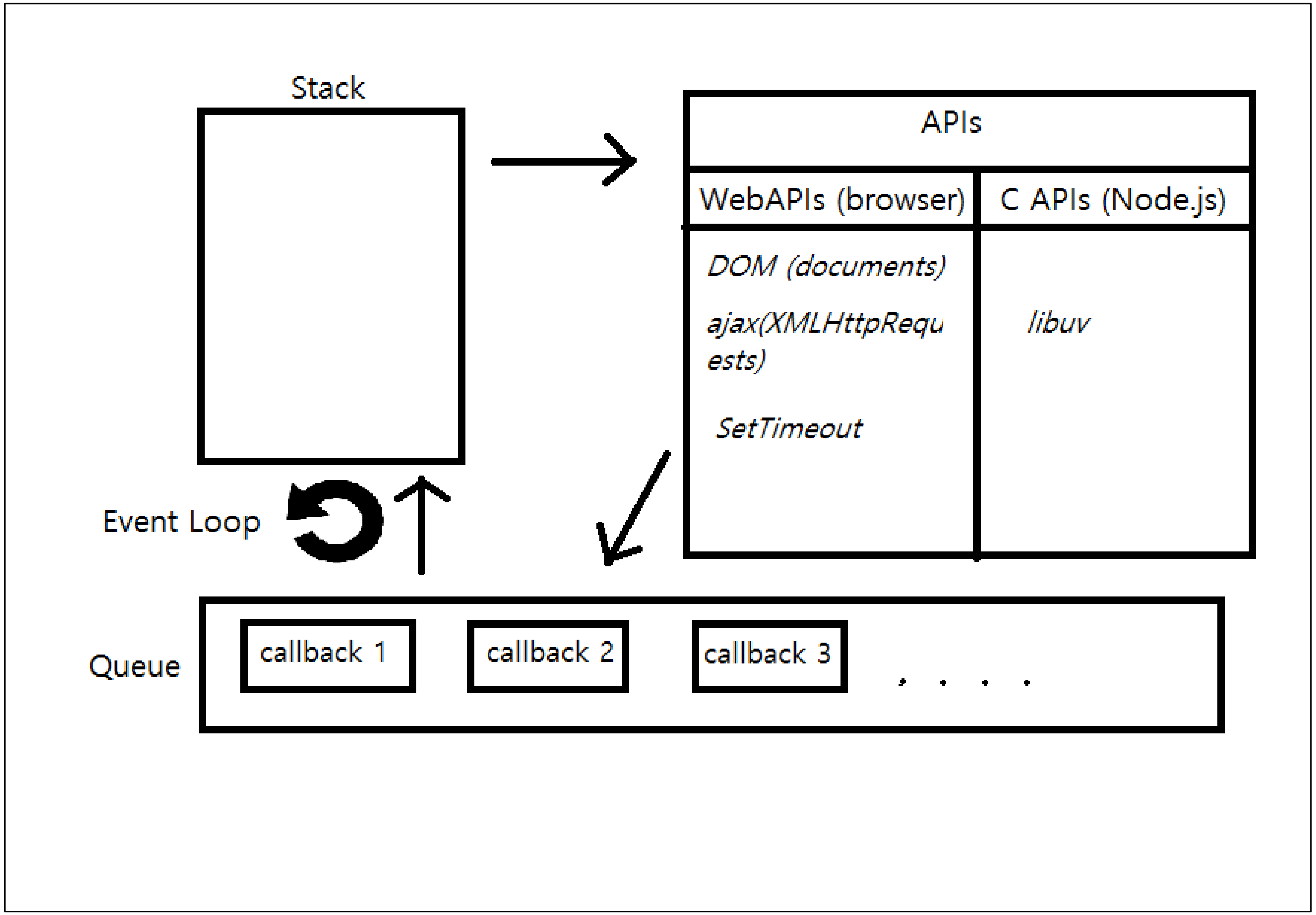
```
Hello World!
```

https://www.w3schools.com/nodejs/default.asp

Node.js

Event Loop

Node.js runs commands one-by-one in the stack, but puts API calls to one side instead of waiting for them. When the stack is completed, it executes the first response in the queue sent back from the APIs.



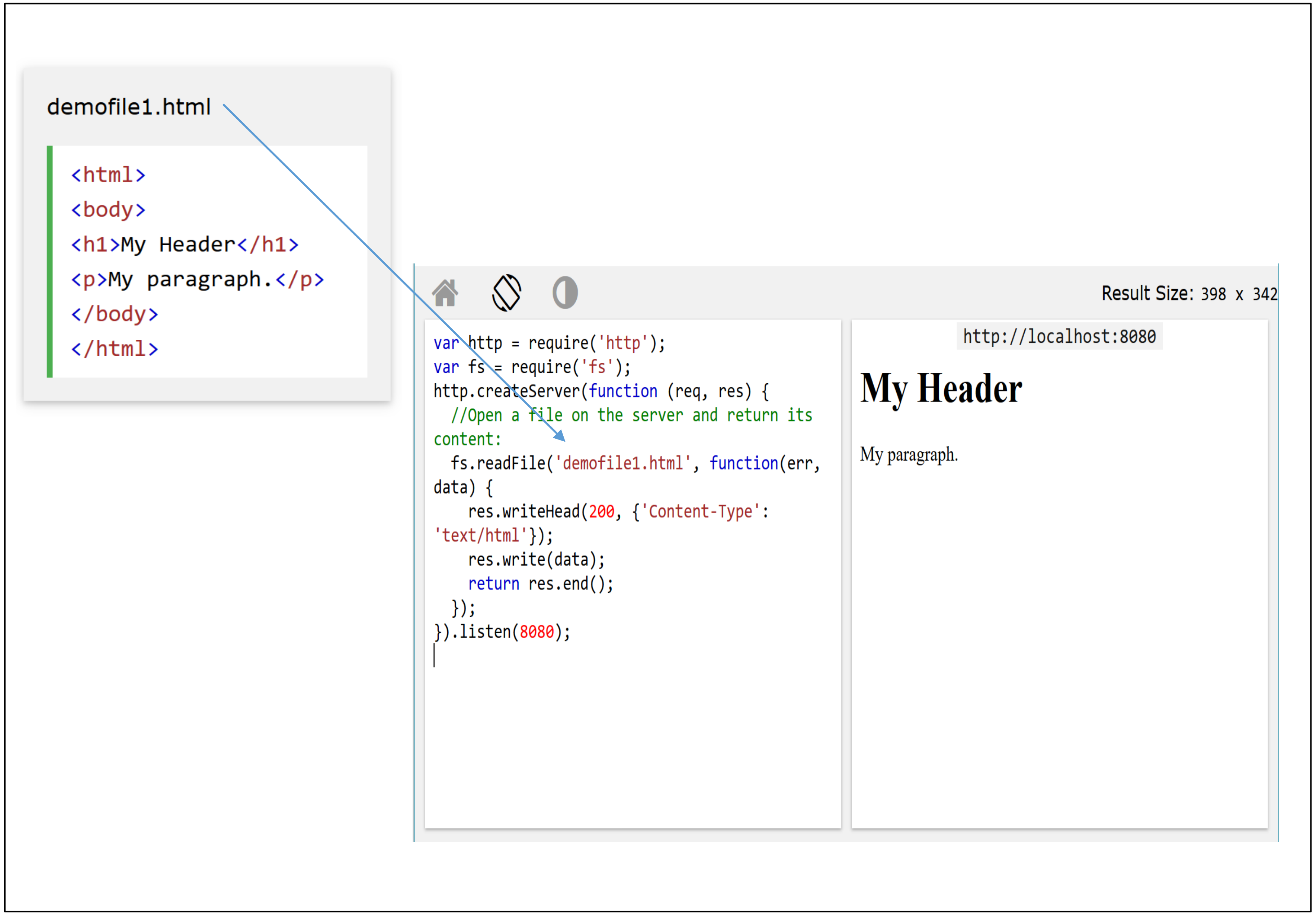
http://vucuong12.github.io/2015/11/02/Javascript%20Event%20Loop%20with%20Node.js%20for%20Beginners/

Node.js

Files

Node.js can read and write to files on the local machine.

Thus it can read files and make them available to a web browser.



demofile1.html

```html
<html>
<body>
<h1>My Header</h1>
<p>My paragraph.</p>
</body>
</html>
```

Result Size: 398 x 342

```javascript
var http = require('http');
var fs = require('fs');
http.createServer(function (req, res) {
  //Open a file on the server and return its
content:
  fs.readFile('demofile1.html', function(err,
data) {
    res.writeHead(200, {'Content-Type':
'text/html'});
    res.write(data);
    return res.end();
  });
}).listen(8080);
```

http://localhost:8080

My Header

My paragraph.

C:\Users\downess\CodeProjects\Node\w3schools

http://localhost:8080

https://www.w3schools.com/js/js_json_intro.asp

https://www.json.org/

Node.js

Modules

Other built-in Node.js modules include URL (for web requests), Events (for listeners), Upload Files, and Email.

```
var nodemailer = require('nodemailer');

var transporter = nodemailer.createTransport({
  service: 'gmail',
  auth: {
    user: 'youremail@gmail.com',
    pass: 'yourpassword'
  }
});

var mailOptions = {
  from: 'youremail@gmail.com',
  to: 'myfriend@yahoo.com',
  subject: 'Sending Email using Node.js',
  text: 'That was easy!'
};

transporter.sendMail(mailOptions, function(error, info){
  if (error) {
    console.log(error);
  } else {
    console.log('Email sent: ' + info.response);
  }
});
```

C:\Users\downess\CodeProjects\Node\w3schools

http://localhost:8080

https://www.w3schools.com/nodejs/nodejs_email.asp

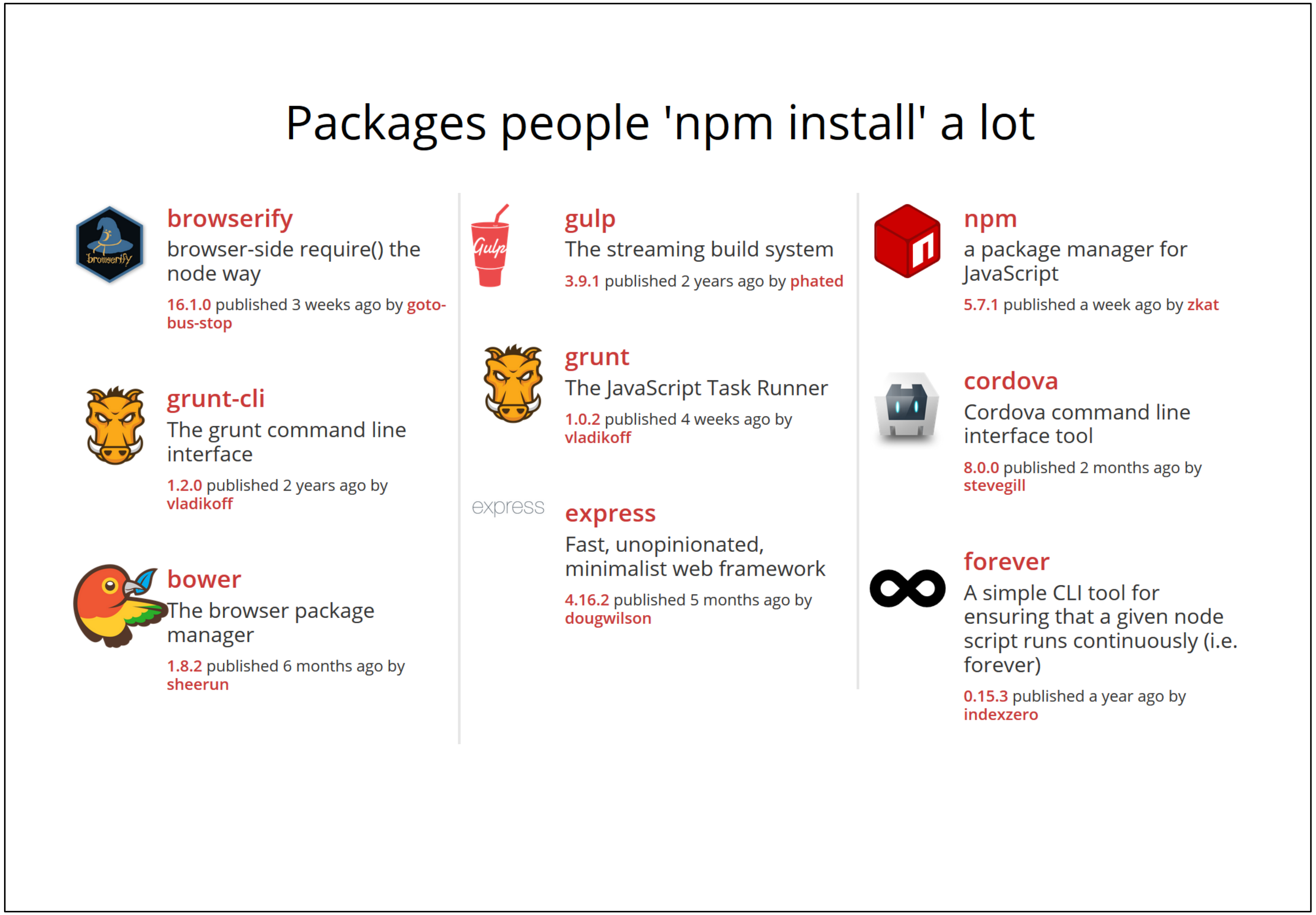
Node.js

NPM

NPM is the *Node Package Manager*. It comes with Node. It provides a way to obtain and install Node packages written by other developers.

NPM runs from the command line.

An alternative to NPM is Facebook's YARN.



Packages people 'npm install' a lot

browserify
browser-side require() the node way
16.1.0 published 3 weeks ago by goto-bus-stop

grunt-cli
The grunt command line interface
1.2.0 published 2 years ago by vladikoff

bower
The browser package manager
1.8.2 published 6 months ago by sheerun

gulp
The streaming build system
3.9.1 published 2 years ago by phated

grunt
The JavaScript Task Runner
1.0.2 published 4 weeks ago by vladikoff

express
Fast, unopinionated, minimalist web framework
4.16.2 published 5 months ago by dougwilson

npm
a package manager for JavaScript
5.7.1 published a week ago by zkat

cordova
Cordova command line interface tool
8.0.0 published 2 months ago by stevegill

forever
A simple CLI tool for ensuring that a given node script runs continuously (i.e. forever)
0.15.3 published a year ago by indexzero

https://www.npmjs.com/

https://yarnpkg.com/en/

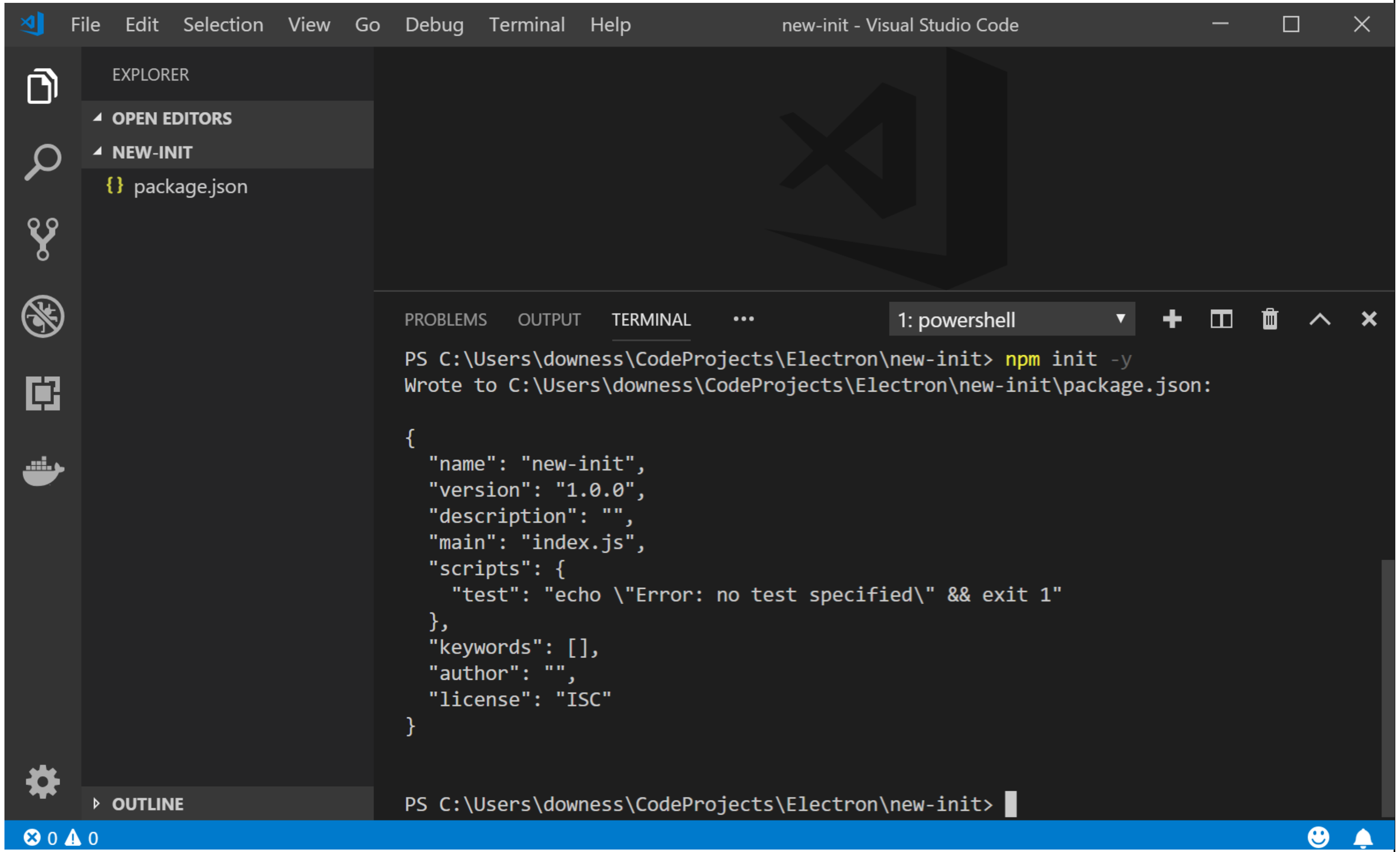
NPM

Init

NPM relies on a file called package.json to tell it what to do.

Create a new package.json file using the command npm init.

(You could also use a text editor but this is easier)



```
PS C:\Users\downess\CodeProjects\Electron\new-init> npm init -y
Wrote to C:\Users\downess\CodeProjects\Electron\new-init\package.json:

{
  "name": "new-init",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}


PS C:\Users\downess\CodeProjects\Electron\new-init>
```

https://docs.npmjs.com/creating-a-package-json-file

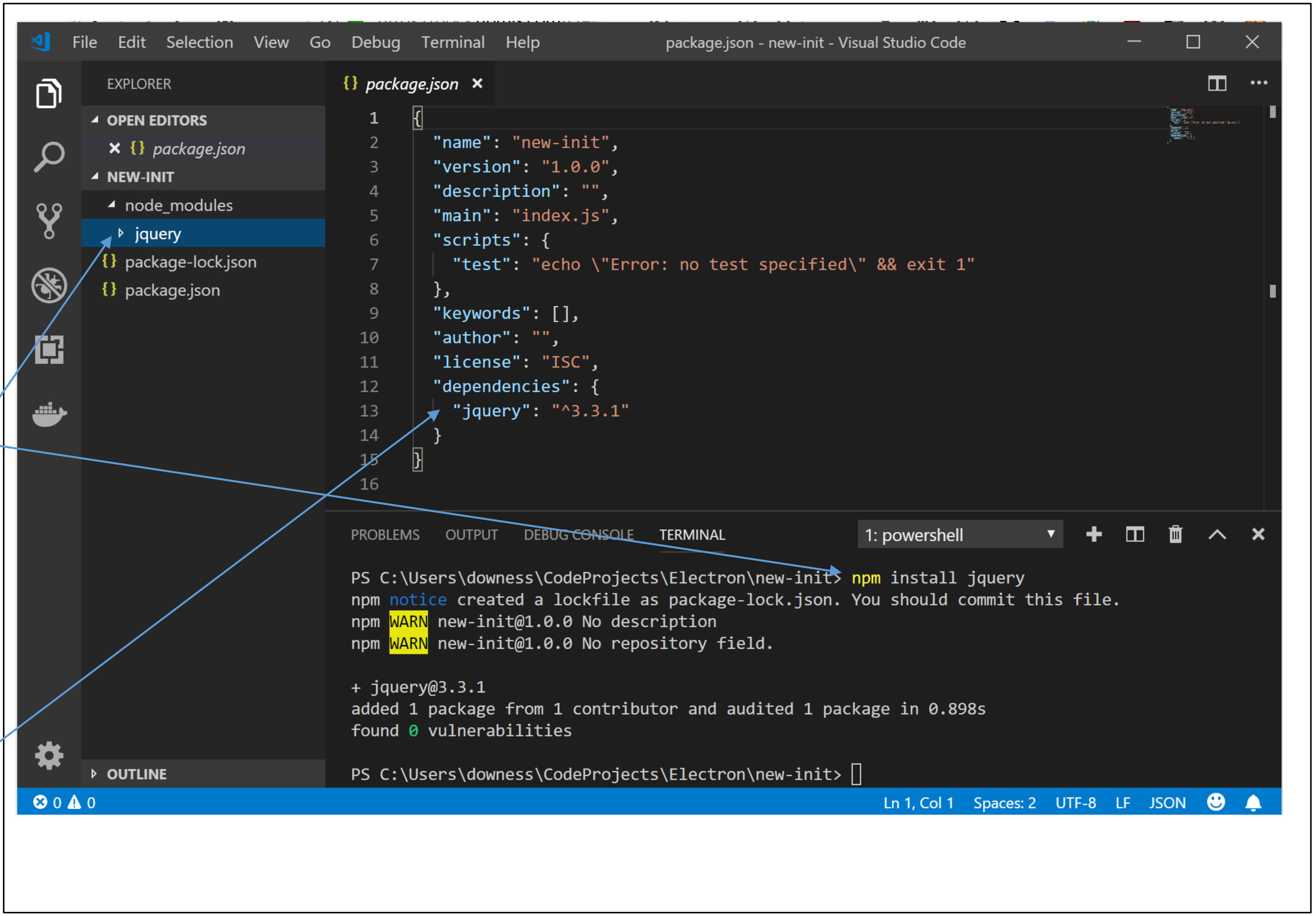
NPM

Install

Install a new Node package using the npm install command.

For example, to install jQuery: npm install jQuery

This downloads files, and also adds a line in package.json, as shown.


File Edit Selection View Go Debug Terminal Help
package.json - new-init - Visual Studio Code
EXPLORER
OPEN EDITORS
package.json
NEW-INIT
node_modules
jquery
package-lock.json
package.json
OUTLINE
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
1: powershell
Ln 1, Col 1 Spaces: 2 UTF-8 LF JSON

```json
{
  "name": "new-init",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC",
  "dependencies": {
    "jquery": "^3.3.1"
  }
}
```

```
PS C:\Users\downess\CodeProjects\Electron\new-init> npm install jquery
npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN new-init@1.0.0 No description
npm WARN new-init@1.0.0 No repository field.

+ jquery@3.3.1
added 1 package from 1 contributor and audited 1 package in 0.898s
found 0 vulnerabilities

PS C:\Users\downess\CodeProjects\Electron\new-init>
```

https://docs.npmjs.com/cli/install

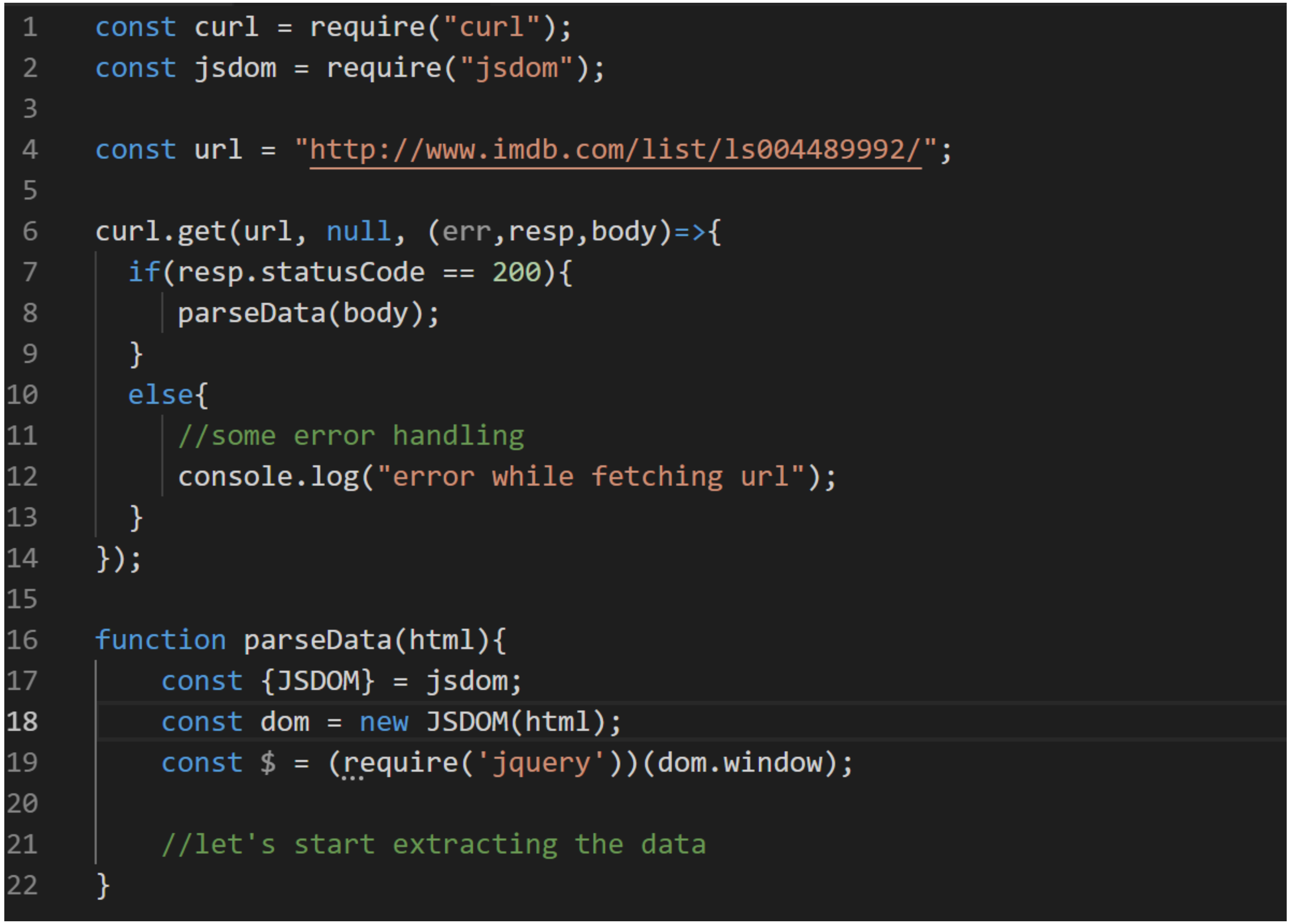
NPM

Const

Use a package by declaring a ‘const’ in a script. This makes objects and functions available to the script.

Node won’t run the if-then in curl.get() until it gets a response from the web server.

The example uses jQuery to scrape the IMDB website for James Bond films.



```
const curl = require("curl");
const jsdom = require("jsdom");

const url = "http://www.imdb.com/list/ls004489992/";

curl.get(url, null, (err,resp,body)=>{
  if(resp.statusCode == 200){
     parseData(body);
  }
  else{
     //some error handling
     console.log("error while fetching url");
  }
});

function parseData(html){
    const {JSDOM} = jsdom;
    const dom = new JSDOM(html);
    const $ = (require('jquery'))(dom.window);

    //let's start extracting the data
}
```

https://medium.com/@asimmittal/using-jquery-nodejs-to-scrape-the-web-9bb5d439413b

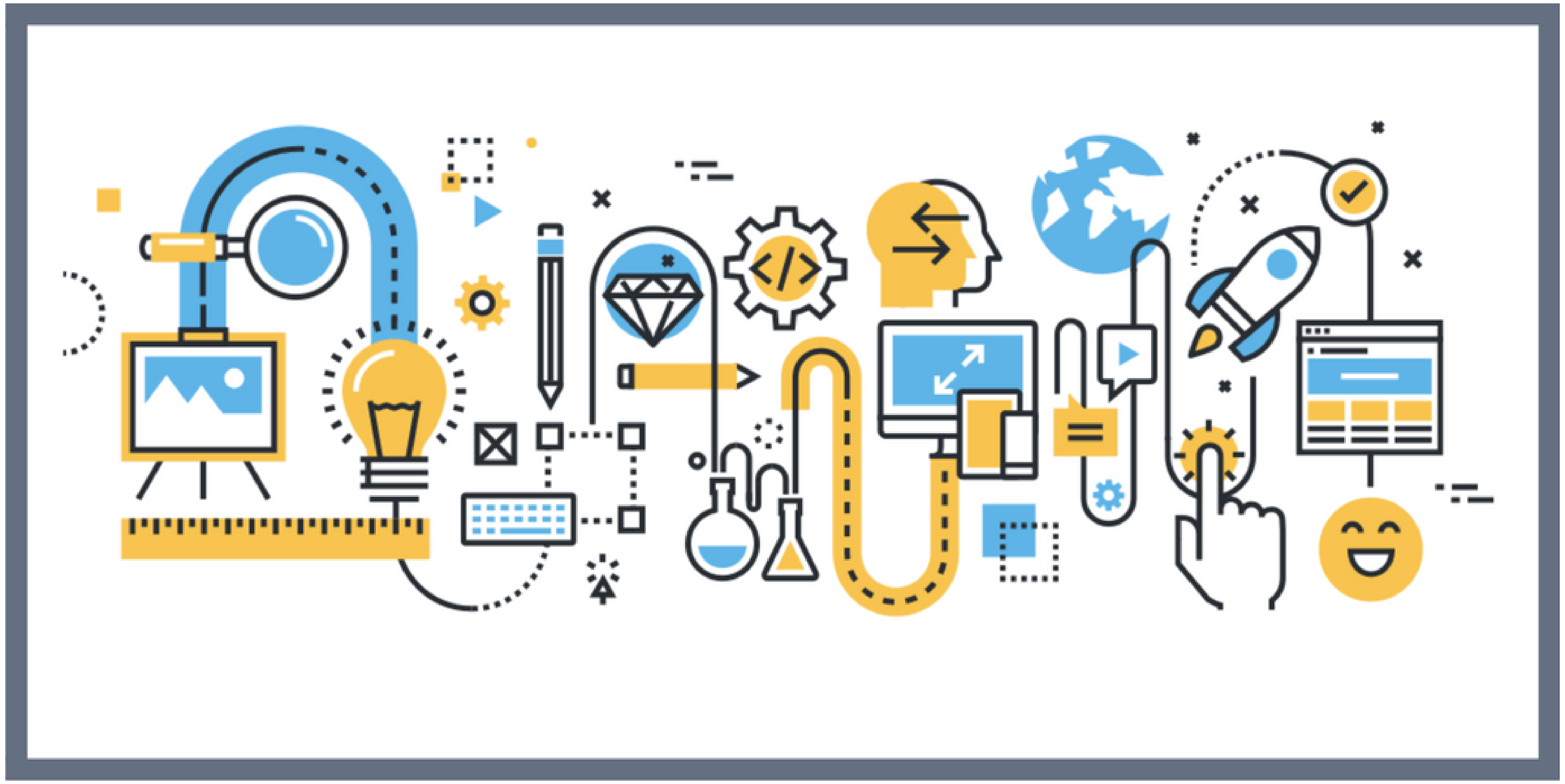
Updated script for example: https://gist.github.com/Downes/630c639ca77e01a21782ce2e22b20ad8

NPM

Windows

Save some heartache and run this. It installs Windows dev tools globally (-g) including Visual Studio Build and Python 2.7 (needed for some Node.js modules).

```
npm install --global --production windows-build-tools
```

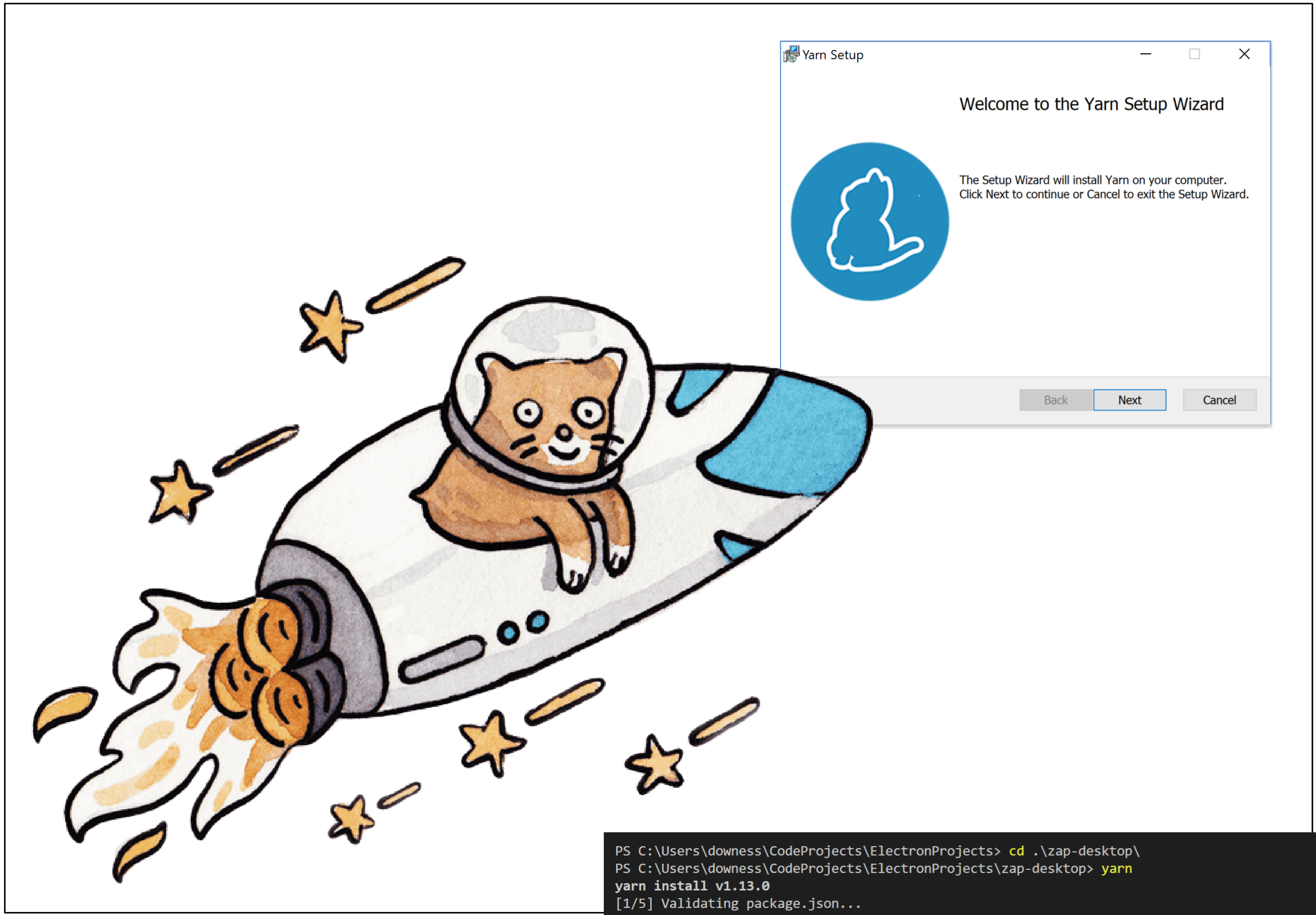


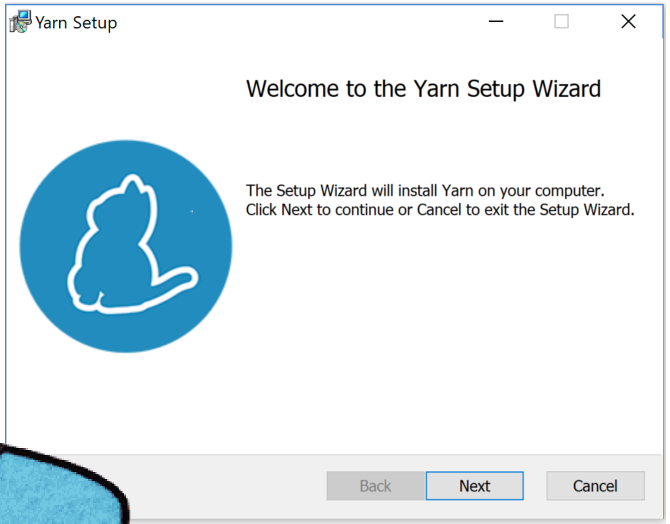
https://github.com/tensorflow/tfjs/issues/741

Yarn

Install

Yarn is an alternative to NPM.
- builds package.json



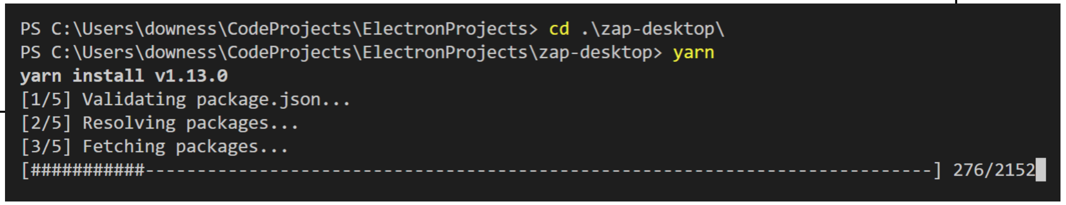


Yarn Setup

Welcome to the Yarn Setup Wizard

The Setup Wizard will install Yarn on your computer.
Click Next to continue or Cancel to exit the Setup Wizard.

https://yarnpkg.com/



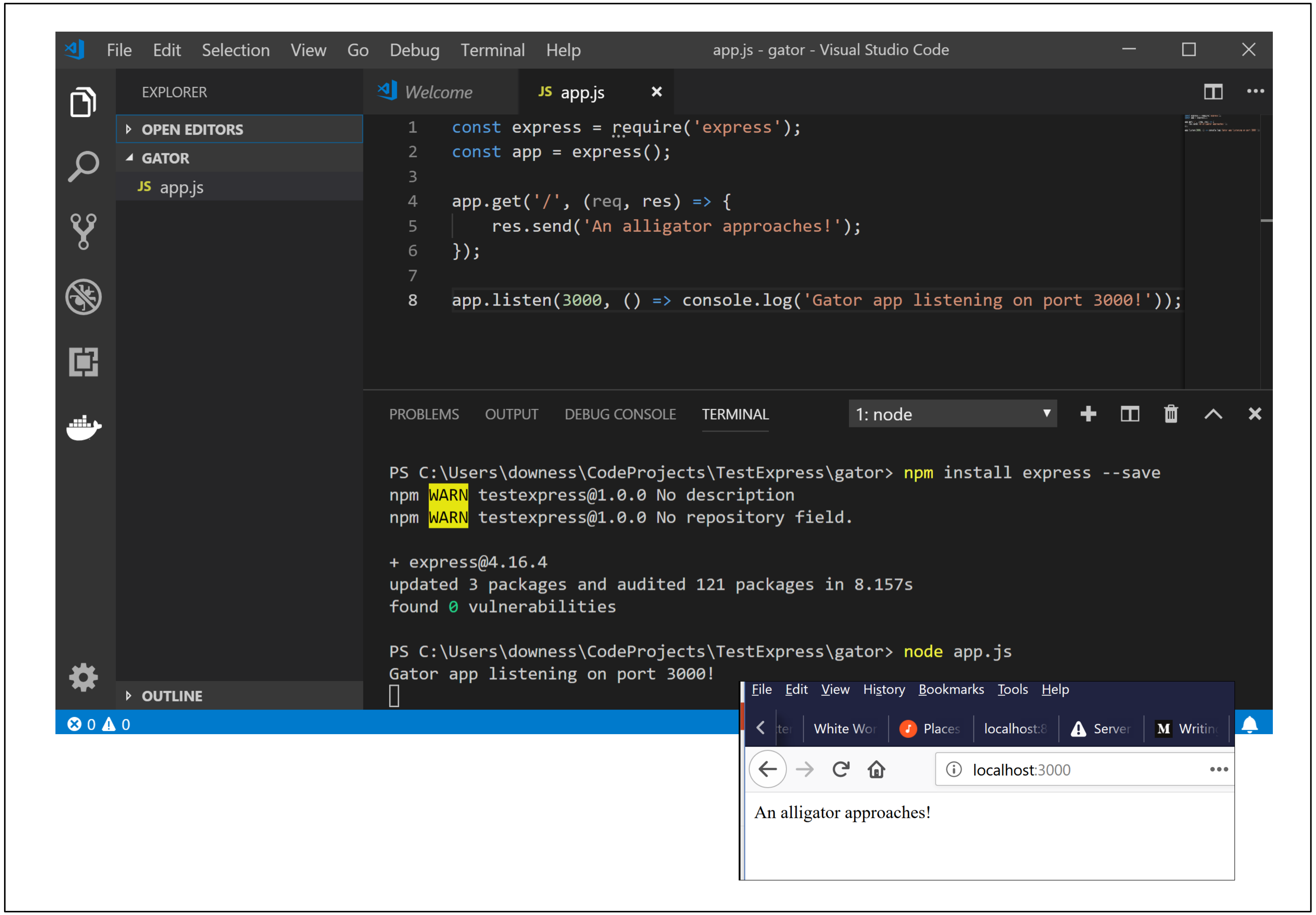
```
PS C:\Users\downess\CodeProjects\ElectronProjects> cd .\zap-desktop\
PS C:\Users\downess\CodeProjects\ElectronProjects\zap-desktop> yarn
yarn install v1.13.0
[1/5] Validating package.json...
[2/5] Resolving packages...
[3/5] Fetching packages...
[###########----------------------------------------------------------------------------] 276/2152
```

Express

Install

The Express Node framework is a set of features for web and mobile applications. It is installed using npm.

It is launched and used like any other Node module using a pair of const declarations.



```javascript
const express = require('express');
const app = express();

app.get('/', (req, res) => {
    res.send('An alligator approaches!');
});

app.listen(3000, () => console.log('Gator app listening on port 3000!'));
```

```
PS C:\Users\downess\CodeProjects\TestExpress\gator> npm install express --save
npm WARN testexpress@1.0.0 No description
npm WARN testexpress@1.0.0 No repository field.

+ express@4.16.4
updated 3 packages and audited 121 packages in 8.157s
found 0 vulnerabilities

PS C:\Users\downess\CodeProjects\TestExpress\gator> node app.js
Gator app listening on port 3000!
```

An alligator approaches!

https://expressjs.com/

Other frameworks: Koa, Hapi
https://www.airpair.com/node.js/posts/nodejs-framework-comparison-express-koa-hapi

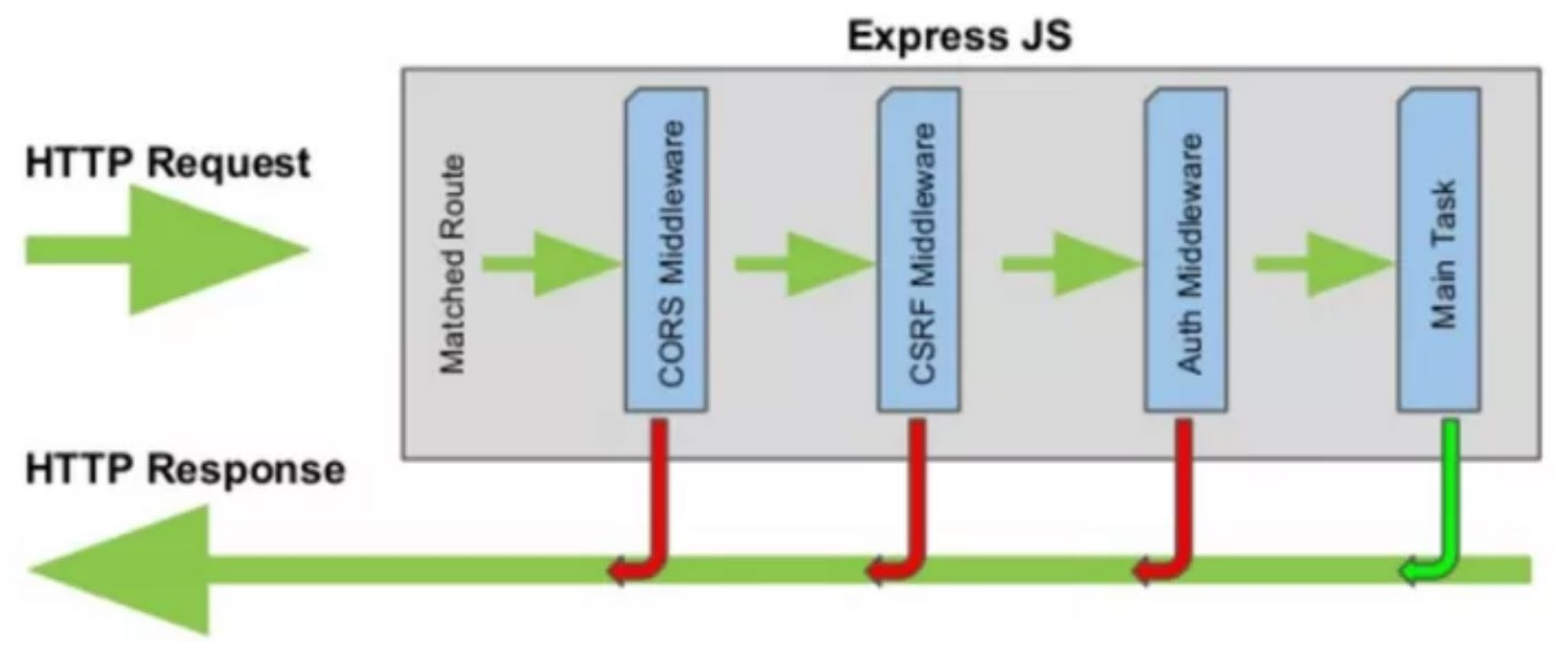
Express

Middleware

Express receives requests and returns a response.

Middleware is used to process the request before sending a response.

Eg. Is the user authorized to receive a response.



CORS – Cross Origin Resource Sharing
https://expressjs.com/en/resources/middleware/cors.html

CSRF – Cross Site Request Forgery

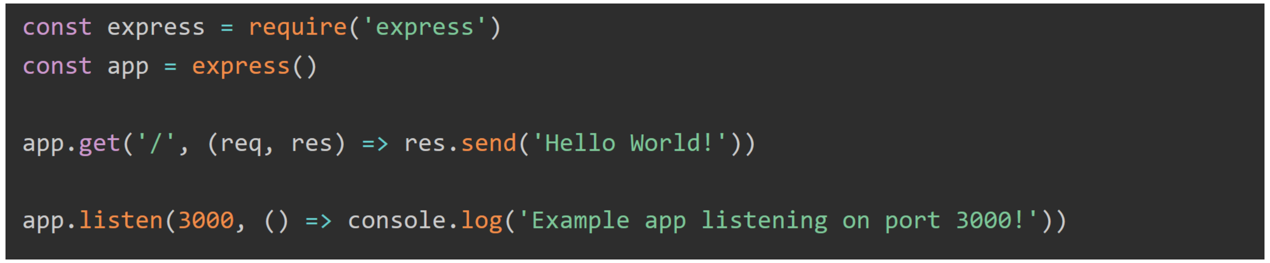
Auth – Passwords / OAuth

https://blog.codeanalogies.com/2017/11/03/understanding-the-basics-of-express-js/

Express

Routes

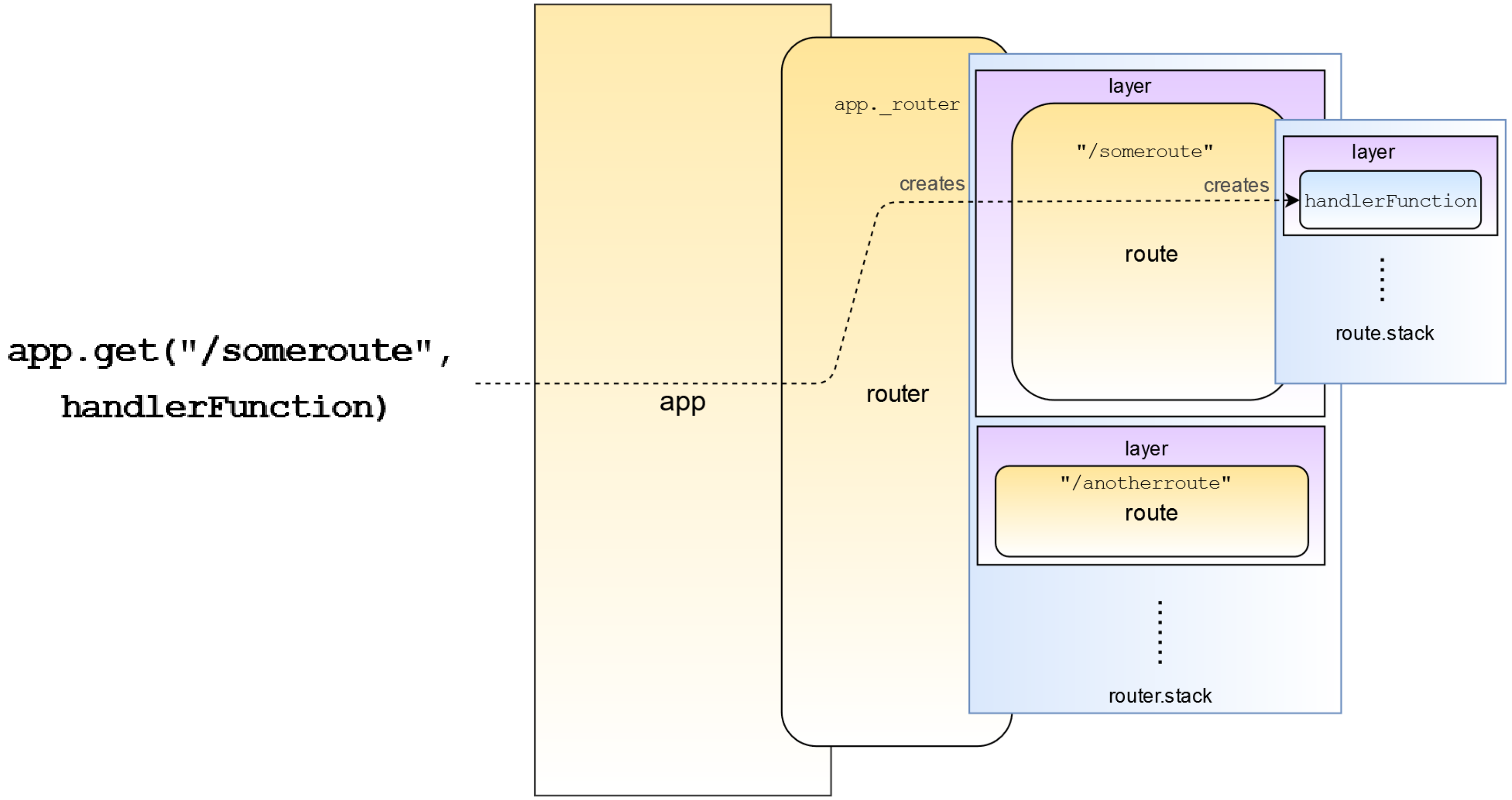
Express requests are handled by various *routes* corresponding to a request type (GET, POST, PUT, etc) and an optional path.



```
const express = require('express')
const app = express()

app.get('/', (req, res) => res.send('Hello World!'))

app.listen(3000, () => console.log('Example app listening on port 3000!'))
```



https://developer.mozilla.org/en-US/docs/Learn/Server-side/Express_Nodejs/routes

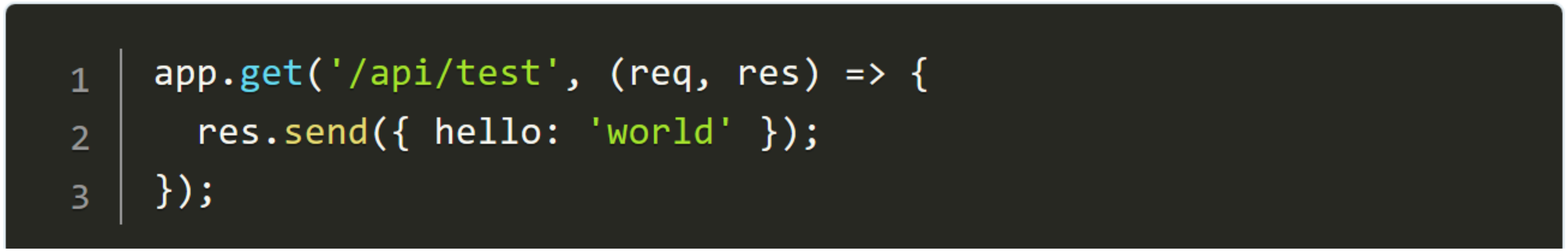
Express

Response

Express responses are handled by the response object (res). For example, res.send() or res.json()

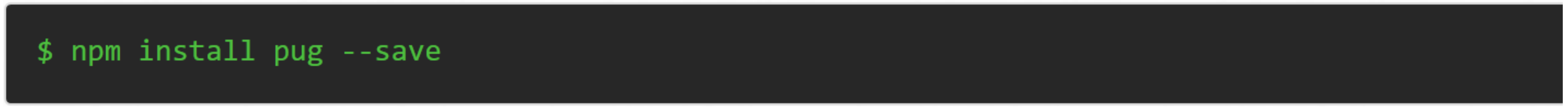
The response can also be formatted by template engines, eg. Pug

The response object

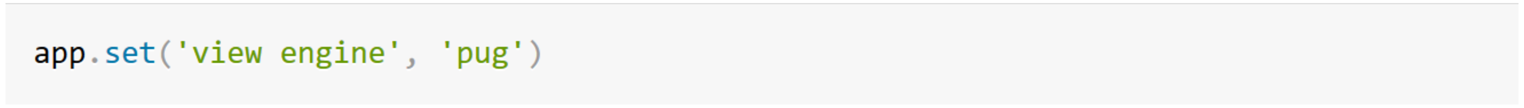


```
app.get('/api/test', (req, res) => {
  res.send({ hello: 'world' });
});
```

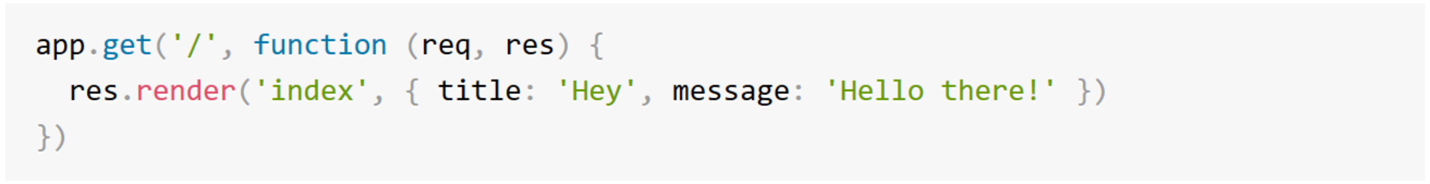
Using a template engine



```
$ npm install pug --save
```



```
app.set('view engine', 'pug')
```



```
app.get('/', function (req, res) {
  res.render('index', { title: 'Hey', message: 'Hello there!' })
})
```

https://expressjs.com/en/guide/using-template-engines.html

https://github.com/expressjs/express/wiki#template-engines

https://fullstack-developer.academy/res-json-vs-res-send-vs-res-end-in-express/

Express

Generator

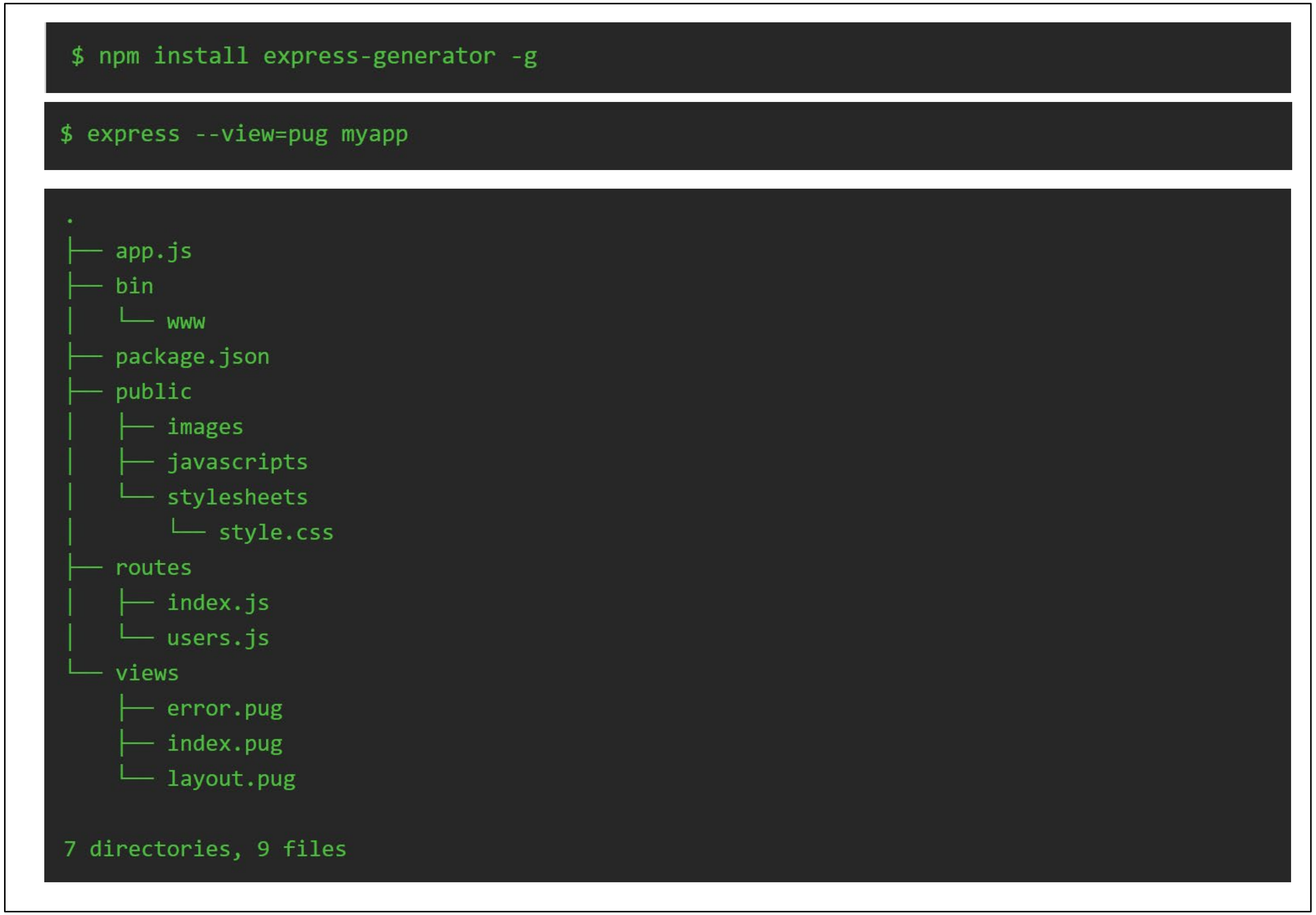
This is a single-command installer for a full Express application.

To run:
$ npm start

Then browse to:
localhost:3000

C:\Users\downess\CodeProjects\ExpressProjects\Generate

http://localhost:3000



```
$ npm install express-generator -g
```

```
$ express --view=pug myapp
```

```
.
├── app.js
├── bin
│   └── www
├── package.json
├── public
│   ├── images
│   ├── javascripts
│   └── stylesheets
│       └── style.css
├── routes
│   ├── index.js
│   └── users.js
└── views
    ├── error.pug
    ├── index.pug
    └── layout.pug

7 directories, 9 files
```

https://expressjs.com/en/starter/generator.html

Express

REST/MySQL

DB Connection uses a MySQL module (and installed DB) and Express routes for Create, Read, Update and Delete (CRUD) operations.

[C:\Users\downess\CodeProjects\ExpressProjects\MySQLAPI](C:\Users\downess\CodeProjects\ExpressProjects\MySQLAPI)

http://localhost:3000/tasks

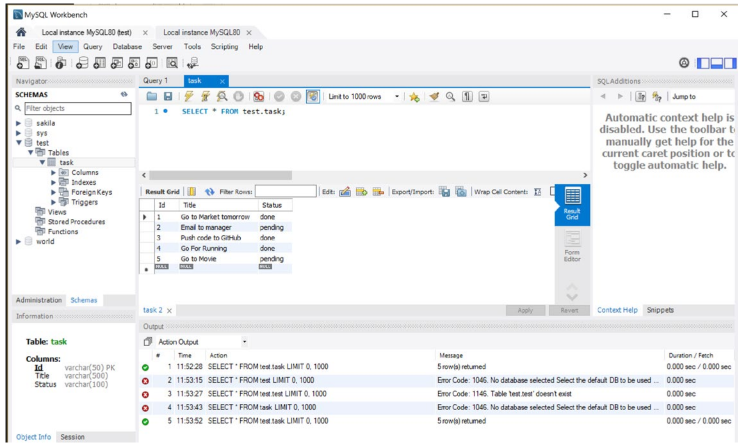
create **dbconnection.js**

```
var mysql=require('mysql');
 var connection=mysql.createPool({

host:'localhost',
 user:'root',
 password:'',
 database:'demo'

});
 module.exports=connection;
```

Path	Request Type
http://localhost:3000/Tasks	GET
http://localhost:3000/Tasks/1	GET
http://localhost:3000/Tasks/1	DELETE
http://localhost:3000/Tasks	POST (pass data in body)
http://localhost:3000/Tasks/1	PUT (pass data in body)



```
1 ● SELECT * FROM test.task;
```

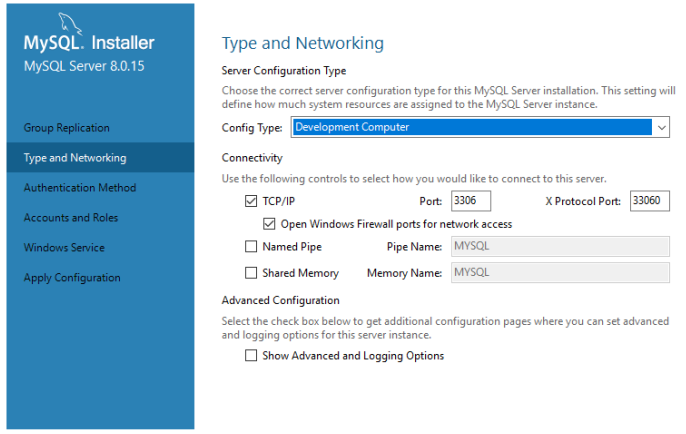
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

Id	Title	Status
1	Go to Market tomorrow	done
2	Email to manager	pending
3	Push code to GitHub	done
4	Go For Running	done
5	Go to Movie	pending
NULL	NULL	NULL

Table: task

Columns:
Id varchar(50) PK
Title varchar(500)
Status varchar(100)

```
#  Time      Action                                  Message                                                              Duration / Fetch
1  11:52:28  SELECT * FROM test.task LIMIT 0, 1000   5 row(s) returned                                                    0.000 sec / 0.000 sec
2  11:53:15  SELECT * FROM test LIMIT 0, 1000        Error Code: 1046. No database selected Select the default DB to be used ...  0.000 sec
3  11:53:27  SELECT * FROM test.test LIMIT 0, 1000   Error Code: 1146. Table 'test.test' doesn't exist                    0.000 sec
4  11:53:43  SELECT * FROM task LIMIT 0, 1000        Error Code: 1046. No database selected Select the default DB to be used ...  0.000 sec
5  11:53:52  SELECT * FROM test.task LIMIT 0, 1000   5 row(s) returned                                                    0.000 sec / 0.000 sec
```



Type and Networking

Server Configuration Type

Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance.

Config Type: Development Computer

Connectivity

Use the following controls to select how you would like to connect to this server.

☑ TCP/IP Port: 3306 X Protocol Port: 33060

☑ Open Windows Firewall ports for network access

☐ Named Pipe Pipe Name: MYSQL

☐ Shared Memory Memory Name: MYSQL

Advanced Configuration

Select the check box below to get additional configuration pages where you can set advanced and logging options for this server instance.

☐ Show Advanced and Logging Options

https://jinalshahblog.wordpress.com/2016/10/06/rest-api-using-node-js-and-mysql/

Feathers

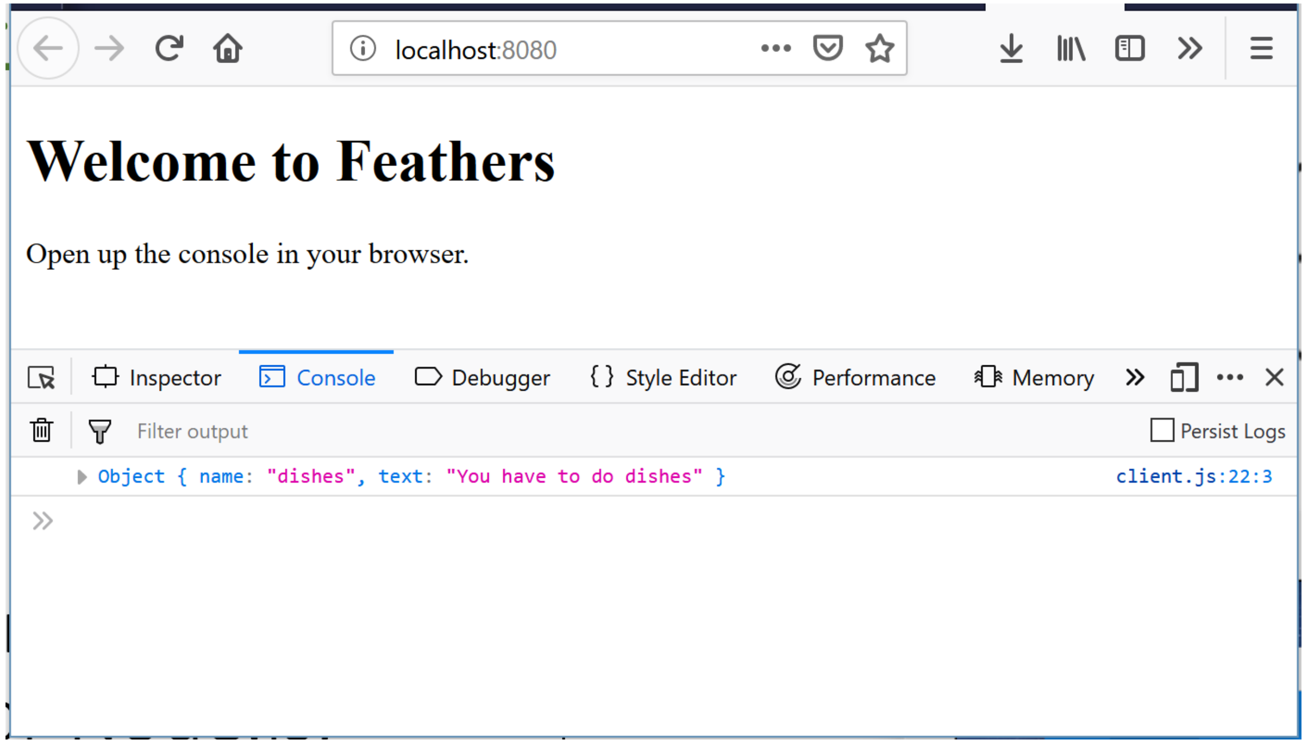
Express

A REST and real-time API layer for Node.js, React Native and the browser that can be built on Express.

This example uses http

[C:\Users\downess\CodeProjects\ExpressProjects\Feathers](C:\Users\downess\CodeProjects\ExpressProjects\Feathers)

http://localhost:8080



Welcome to Feathers

Open up the console in your browser.

```
▸ Object { name: "dishes", text: "You have to do dishes" }    client.js:22:3
```

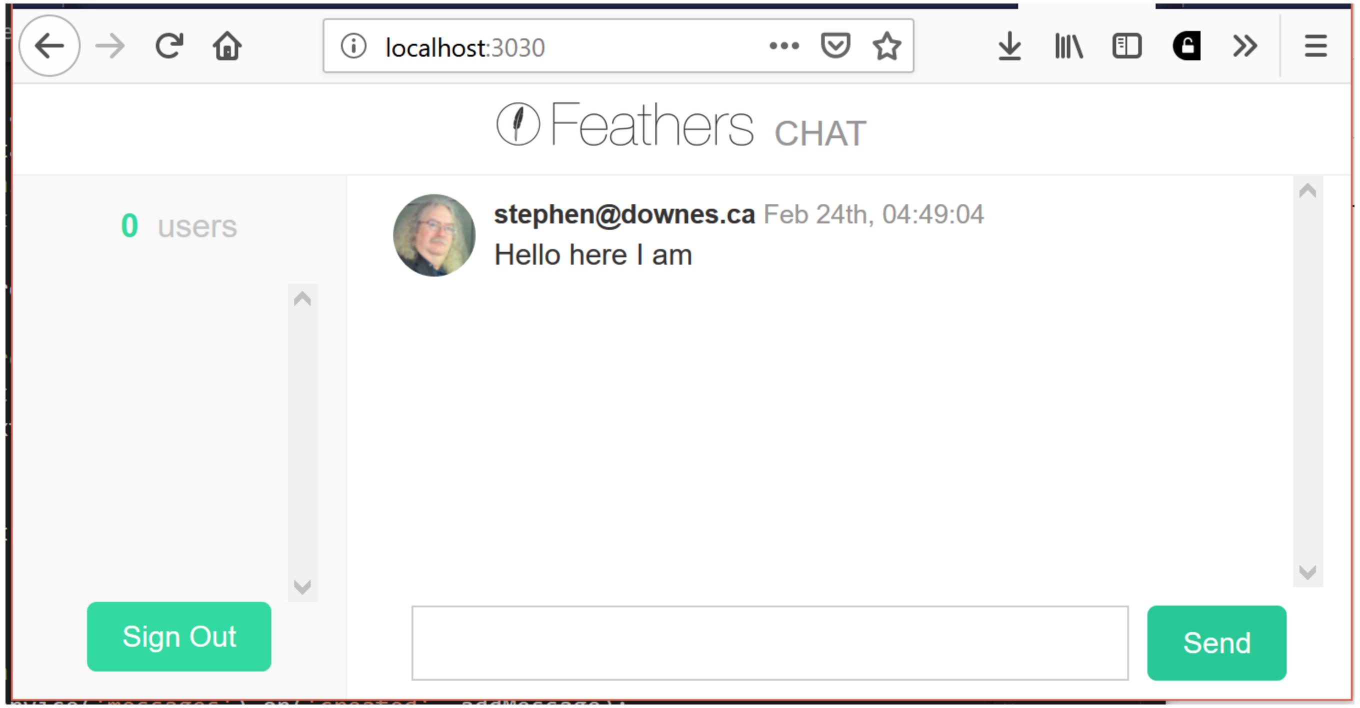
https://feathersjs.com/

https://docs.feathersjs.com/api/express

Feathers

Chat

This chat demonstrates the use of Feathers to create an app, services and hooks. The front-end is a longish Javascript (but could be a framework)



stephen@downes.ca Feb 24th, 04:49:04
Hello here I am

```
$ npm install @feathersjs/cli –g
$ mkdir feathers-app
$ cd feathers-app
$ feathers generate app   (REST)  (Postman: https://app.getpostman.com/ )
$ feathers generate service  (NeDB)  (https://github.com/louischatriot/nedb )
$ feathers generate authentication (JWT ) (https://auth0.com/docs/jwt )
$ feathers generate hook (x3)
```

C:\Users\downess\CodeProjects\ExpressProjects\Chat

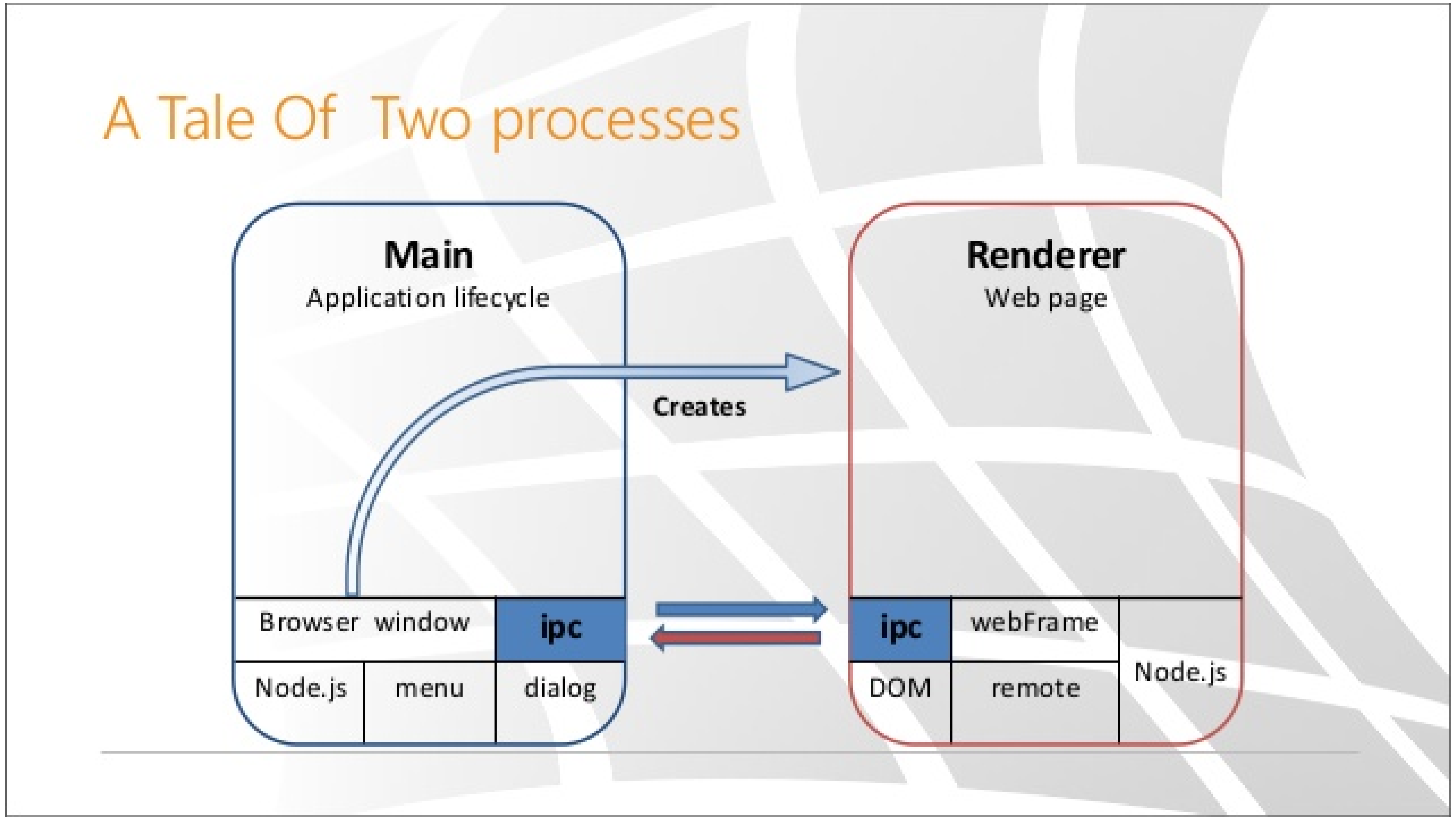
http://localhost:3030/

https://docs.feathersjs.com/guides/chat/creating.html

Electron

Processes

Electron is based on a combination of two processes – the main Node.js application, and a Chromium engine as a display renderer. They communicate through Inter-Process Communication (IPC).



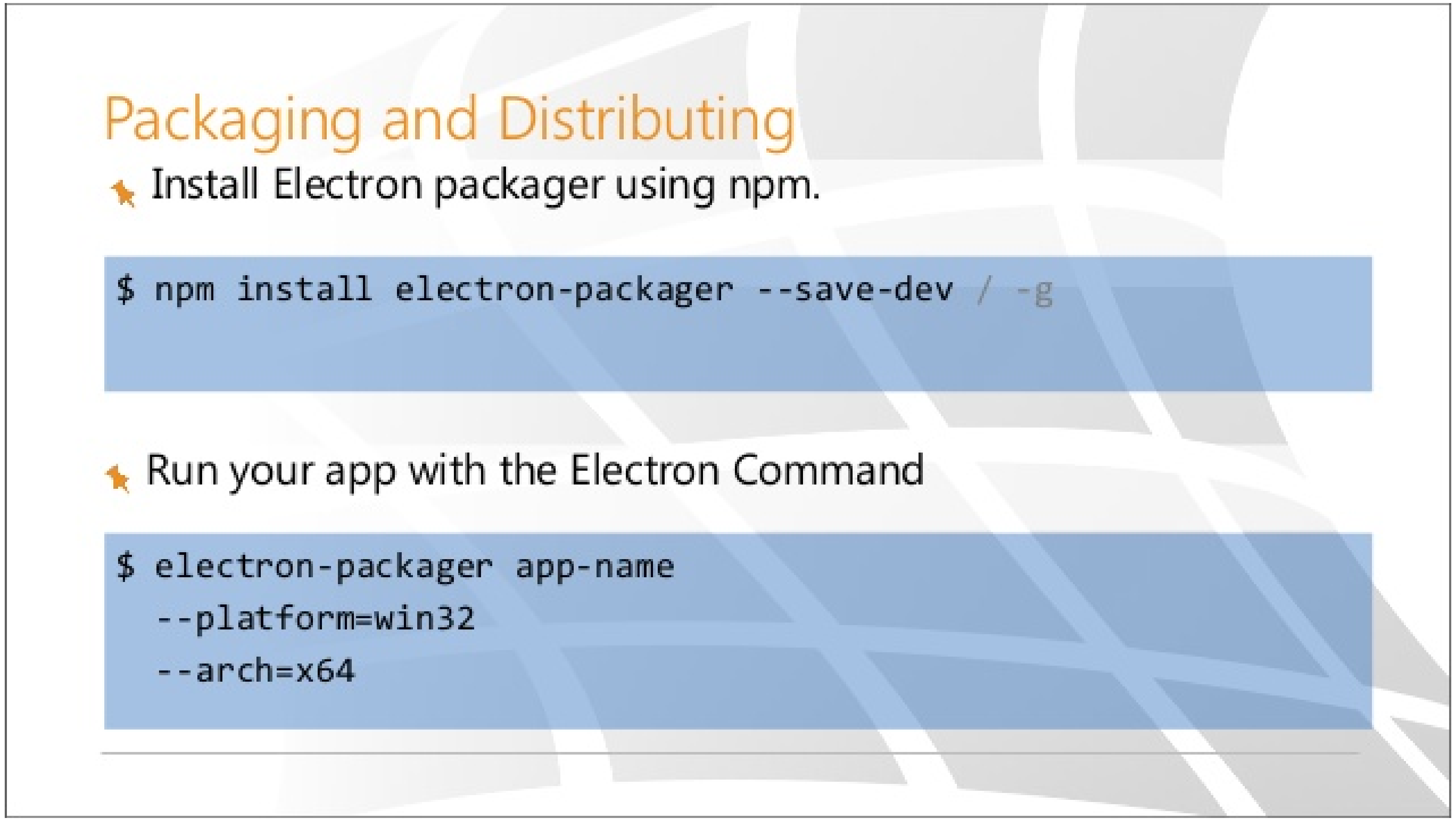
https://www.slideshare.net/nirnoy9/bringing-javascript-to-the-desktop-with-electron

https://electronjs.org/

Electron

Packaging

The Electron application is converted from a Node.js app to a free-standing Mac, Windows or Linux app using an electron-packager.



Packaging and Distributing

- Install Electron packager using npm.

```
$ npm install electron-packager --save-dev / -g
```

- Run your app with the Electron Command

```
$ electron-packager app-name
  --platform=win32
  --arch=x64
```

https://www.slideshare.net/nirnoy9/bringing-javascript-to-the-desktop-with-electron

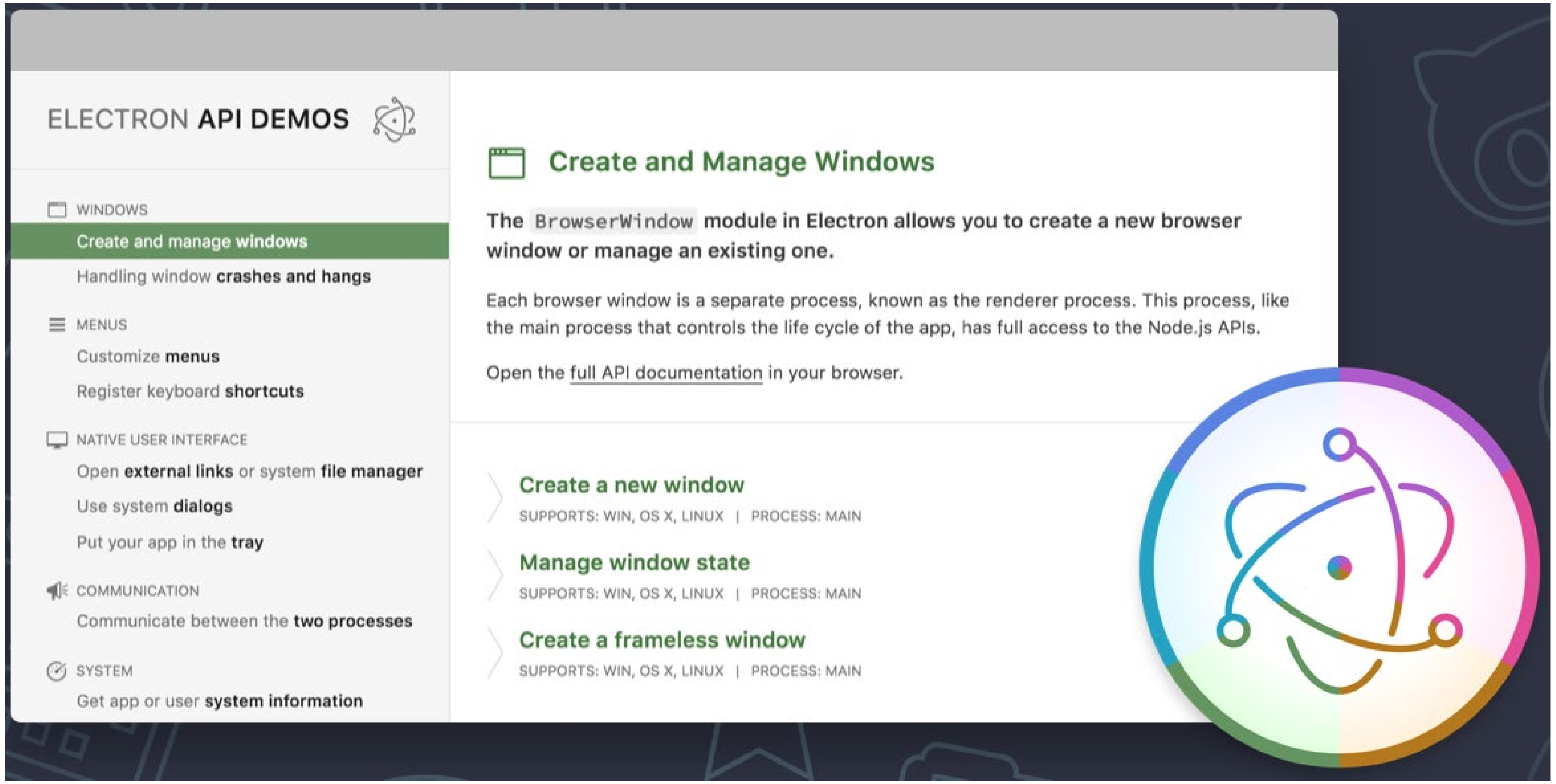
https://electronjs.org/

Electron

APIs

As an application (as opposed to a website) Electron has access to computer files and processes. The Electron API Demo shows these at work.

[C:\Users\downess\CodeProjects\Electron\electron-apis\electron-api-demos](C:\Users\downess\CodeProjects\Electron\electron-apis\electron-api-demos)


ELECTRON API DEMOS
WINDOWS
Create and manage windows
Handling window crashes and hangs
MENUS
Customize menus
Register keyboard shortcuts
NATIVE USER INTERFACE
Open external links or system file manager
Use system dialogs
Put your app in the tray
COMMUNICATION
Communicate between the two processes
SYSTEM
Get app or user system information

Create and Manage Windows

The `BrowserWindow` module in Electron allows you to create a new browser window or manage an existing one.

Each browser window is a separate process, known as the renderer process. This process, like the main process that controls the life cycle of the app, has full access to the Node.js APIs.

Open the full API documentation in your browser.

Create a new window
SUPPORTS: WIN, OS X, LINUX | PROCESS: MAIN

Manage window state
SUPPORTS: WIN, OS X, LINUX | PROCESS: MAIN

Create a frameless window
SUPPORTS: WIN, OS X, LINUX | PROCESS: MAIN

```
$ git clone https://github.com/electron/electron-api-demos
$ cd electron-api-demos
$ npm install
$ npm start
```

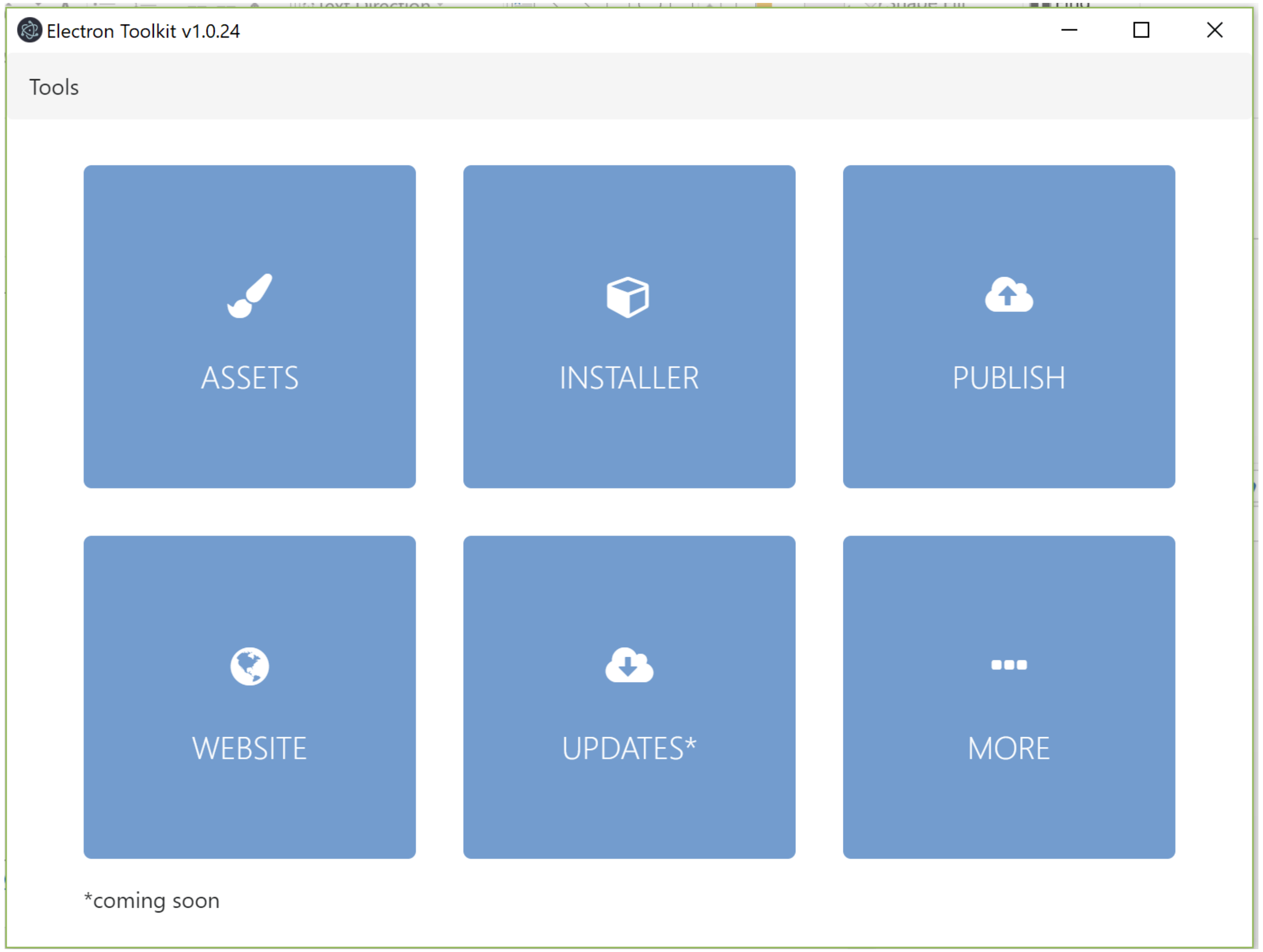
https://github.com/electron/electron-api-demos

Electron

Toolkit

The Electron Toolkit automates a number of the tasks involved in building Electron applications, including asset management, website, and publishing to GitHub.

[C:\Users\downess\CodeProjects\ElectronProjects\Toolkit](C:\Users\downess\CodeProjects\ElectronProjects\Toolkit)



*coming soon

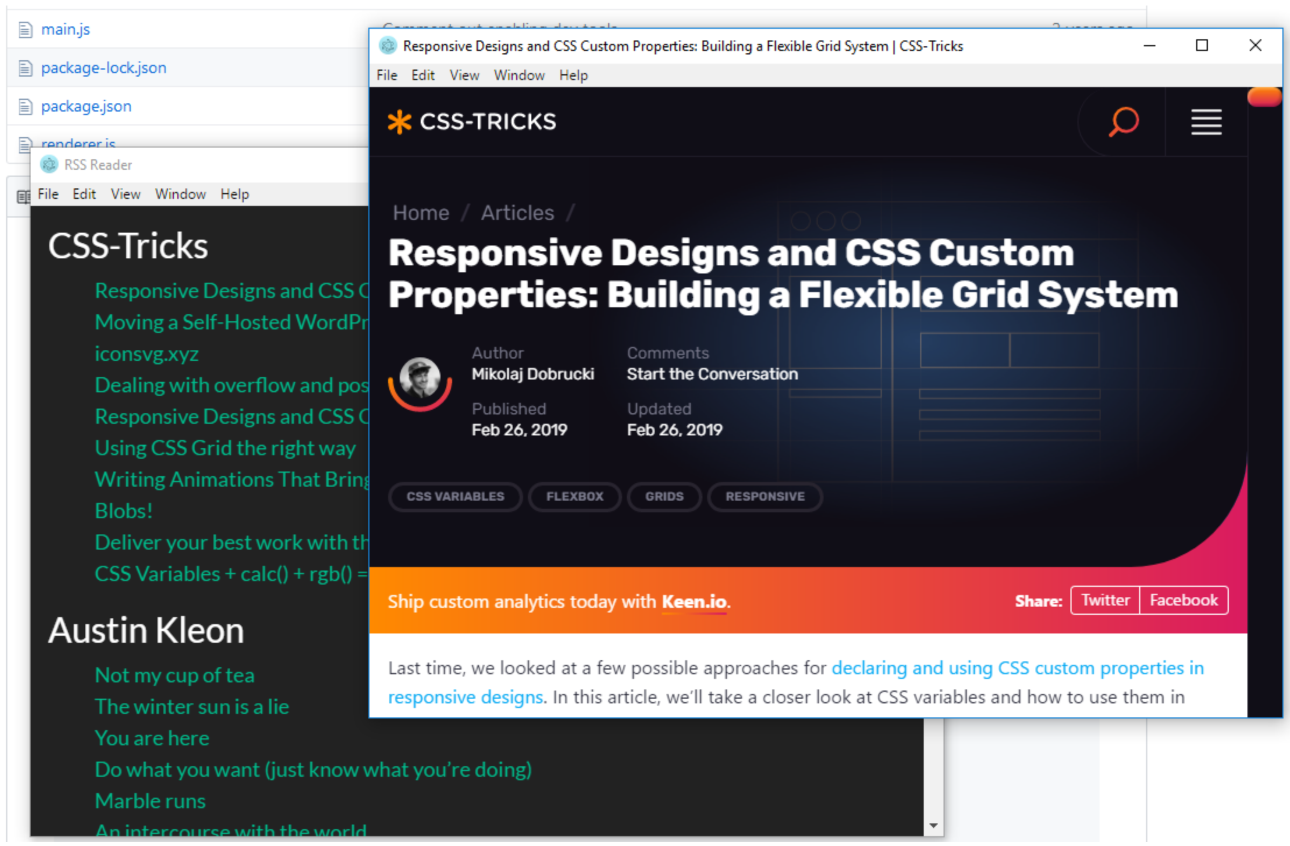
https://www.npmjs.com/package/electron-toolkit

Electron

RSS Reader

This demo harvests some predefined RSS feeds and allows you to read the articles. Note that because Chromium is a browser there's no problem loading external sites.

[C:\Users\downess\CodeProjects\Electron\rss-reader-electron](C:\Users\downess\CodeProjects\Electron\rss-reader-electron)


main.js
package-lock.json
package.json
renderer.js

RSS Reader
File Edit View Window Help

CSS-Tricks
- Responsive Designs and CSS C
- Moving a Self-Hosted WordPr
- iconsvg.xyz
- Dealing with overflow and pos
- Responsive Designs and CSS C
- Using CSS Grid the right way
- Writing Animations That Bring
- Blobs!
- Deliver your best work with th
- CSS Variables + calc() + rgb() =

Austin Kleon
- Not my cup of tea
- The winter sun is a lie
- You are here
- Do what you want (just know what you're doing)
- Marble runs
- An intercourse with the world

Responsive Designs and CSS Custom Properties: Building a Flexible Grid System | CSS-Tricks
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CSS-TRICKS

Home / Articles /

Responsive Designs and CSS Custom Properties: Building a Flexible Grid System

Author: Mikolaj Dobrucki
Comments: Start the Conversation
Published: Feb 26, 2019
Updated: Feb 26, 2019

CSS VARIABLES · FLEXBOX · GRIDS · RESPONSIVE

Ship custom analytics today with Keen.io. Share: Twitter Facebook

Last time, we looked at a few possible approaches for declaring and using CSS custom properties in responsive designs. In this article, we'll take a closer look at CSS variables and how to use them in

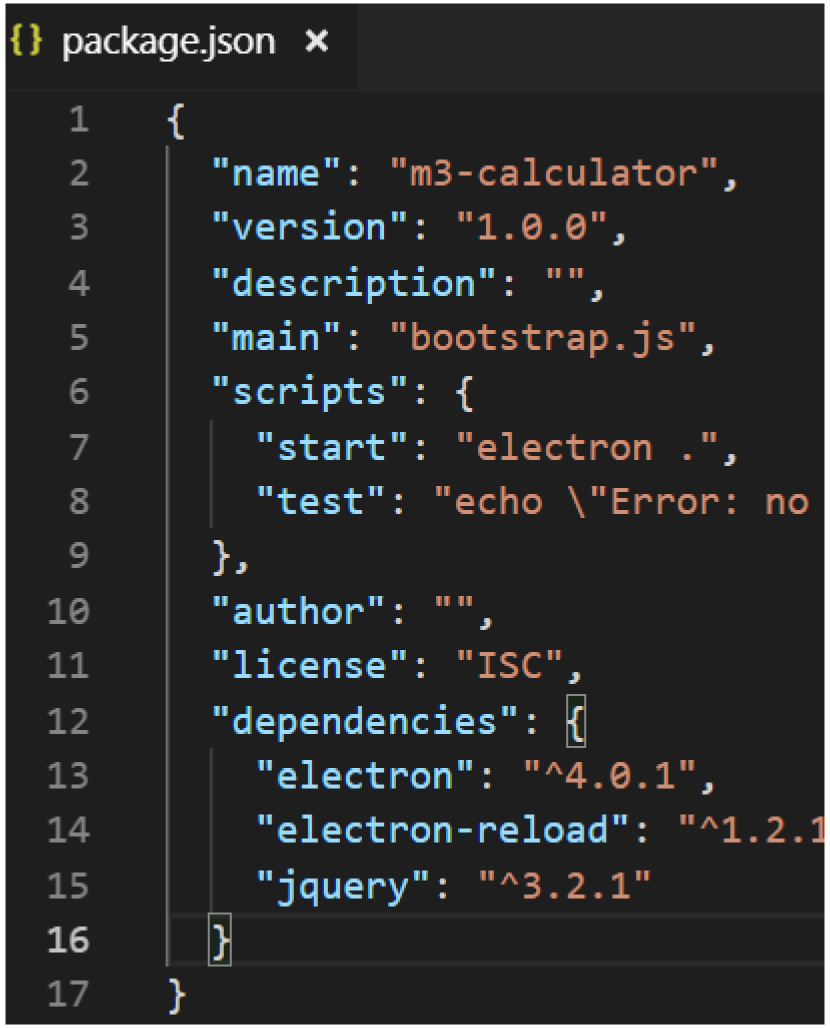
```
$ git clone https://github.com/timothyjellison/rss-reader-electron
$ cd rss-reader-electron
$ npm install
$ npm start
```

https://github.com/timothyjellison/rss-reader-electron

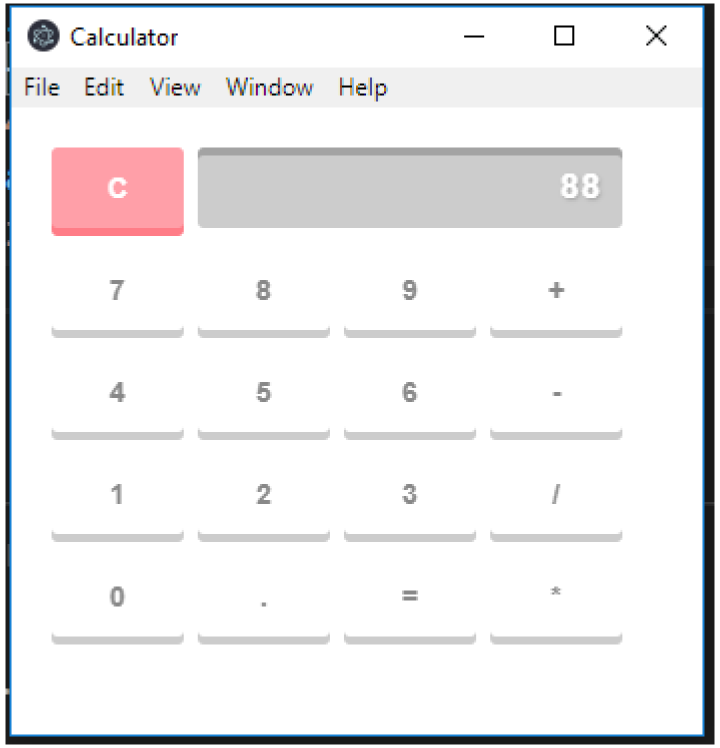
Electron

jQuery

This simple demo shows Electron using jQuery for formatting.



```
{} package.json ×
{
  "name": "m3-calculator",
  "version": "1.0.0",
  "description": "",
  "main": "bootstrap.js",
  "scripts": {
    "start": "electron .",
    "test": "echo \"Error: no
  },
  "author": "",
  "license": "ISC",
  "dependencies": {
    "electron": "^4.0.1",
    "electron-reload": "^1.2.1
    "jquery": "^3.2.1"
  }
}
```



C:\Users\downess\CodeProjects\Electron\m3-calculator-original

https://halfanhour.blogspot.com/2019/01/learning-electron-part-2.html

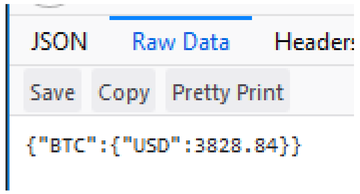
Electron

Web APIs

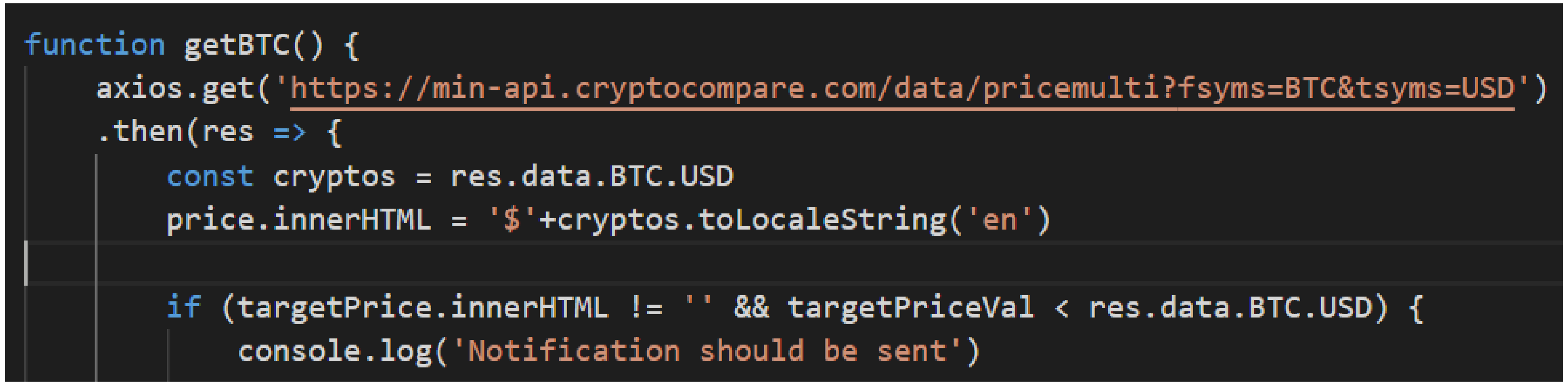
This demo accesses an external web service (in JSON, top) and displays a notification when it exceeds a set price.

Good course from Coursetro

C:\Users\downess\CodeProjects\Electron\crypto-app

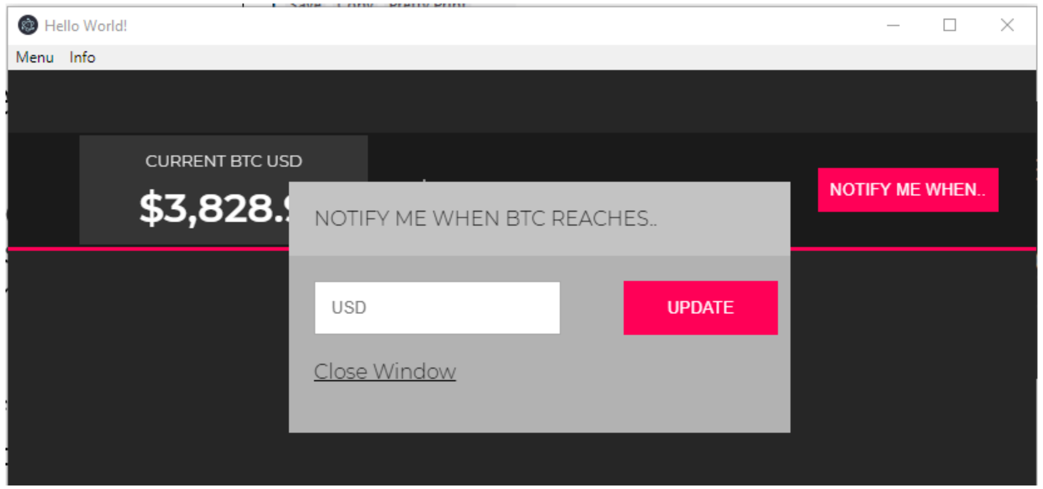


{"BTC":{"USD":3828.84}}



```
function getBTC() {
    axios.get('https://min-api.cryptocompare.com/data/pricemulti?fsyms=BTC&tsyms=USD')
    .then(res => {
        const cryptos = res.data.BTC.USD
        price.innerHTML = '$'+cryptos.toLocaleString('en')

        if (targetPrice.innerHTML != '' && targetPriceVal < res.data.BTC.USD) {
            console.log('Notification should be sent')
```



https://coursetro.com/courses/22/Creating-Desktop-Apps-with-Electron-Tutorial

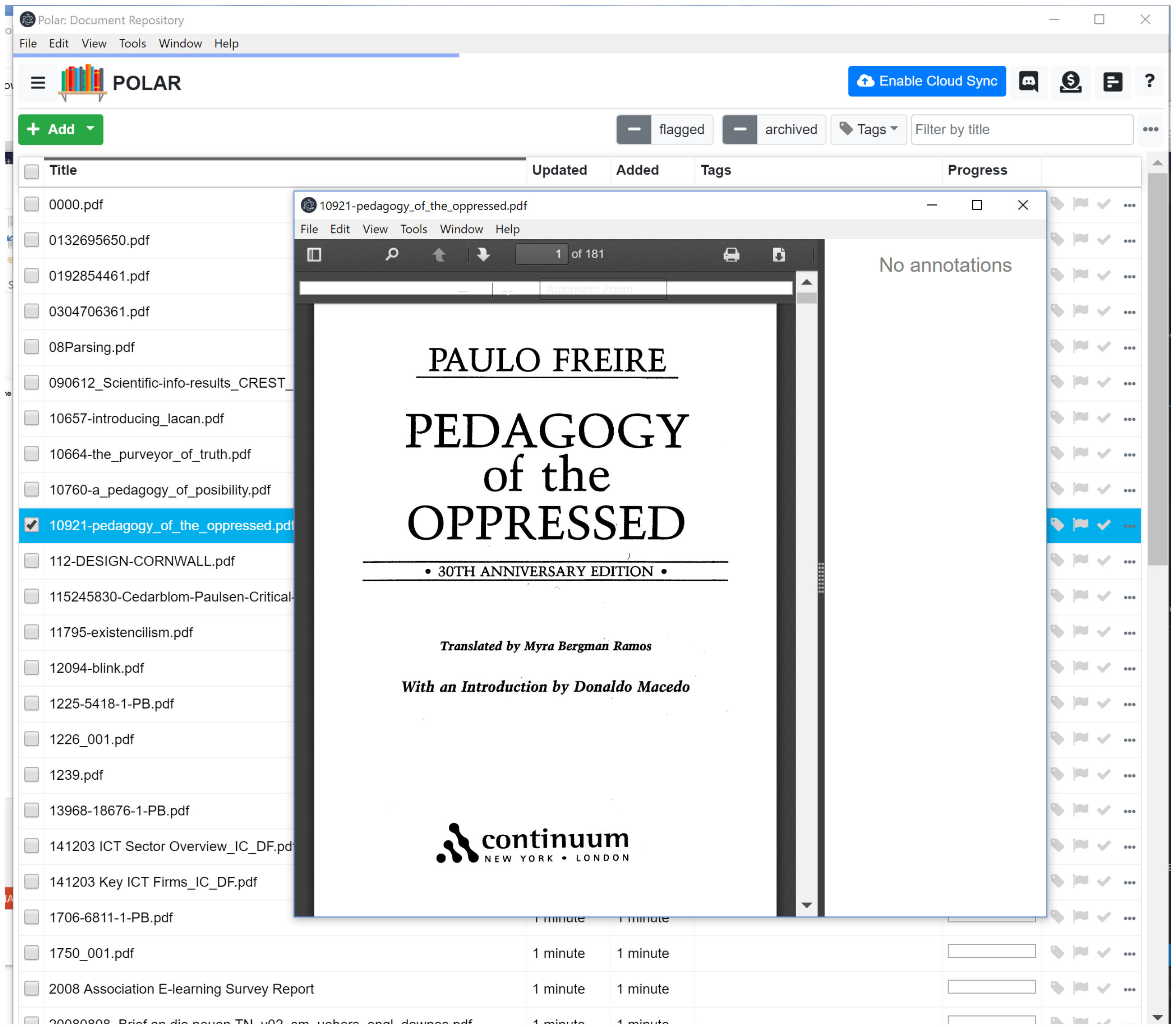
Electron

Bookshelf

Access and view PDF and other documents from a repository. Also has cloud sync, chat, annotations.

Frontend uses a Vue framework.

[C:\Users\downess\CodeProjects\ElectronProjects\polar-bookshelf](C:\Users\downess\CodeProjects\ElectronProjects\polar-bookshelf)


Polar: Document Repository
File Edit View Tools Window Help
POLAR
Enable Cloud Sync
Add
flagged
archived
Tags
Filter by title
10921-pedagogy_of_the_oppressed.pdf
File Edit View Tools Window Help
1 of 181
No annotations

Title	Updated	Added	Tags	Progress
0000.pdf				
0132695650.pdf				
0192854461.pdf				
0304706361.pdf				
08Parsing.pdf				
090612_Scientific-info-results_CREST_				
10657-introducing_lacan.pdf				
10664-the_purveyor_of_truth.pdf				
10760-a_pedagogy_of_posibility.pdf				
10921-pedagogy_of_the_oppressed.pdf				
112-DESIGN-CORNWALL.pdf				
115245830-Cedarblom-Paulsen-Critical-				
11795-existencilism.pdf				
12094-blink.pdf				
1225-5418-1-PB.pdf				
1226_001.pdf				
1239.pdf				
13968-18676-1-PB.pdf				
141203 ICT Sector Overview_IC_DF.pd				
141203 Key ICT Firms_IC_DF.pdf				
1706-6811-1-PB.pdf	1 minute	1 minute		
1750_001.pdf	1 minute	1 minute		
2008 Association E-learning Survey Report	1 minute	1 minute		

PAULO FREIRE

PEDAGOGY of the OPPRESSED

• 30TH ANNIVERSARY EDITION •

Translated by Myra Bergman Ramos

With an Introduction by Donaldo Macedo

continuum
NEW YORK • LONDON

https://github.com/burtonator/polar-bookshelf

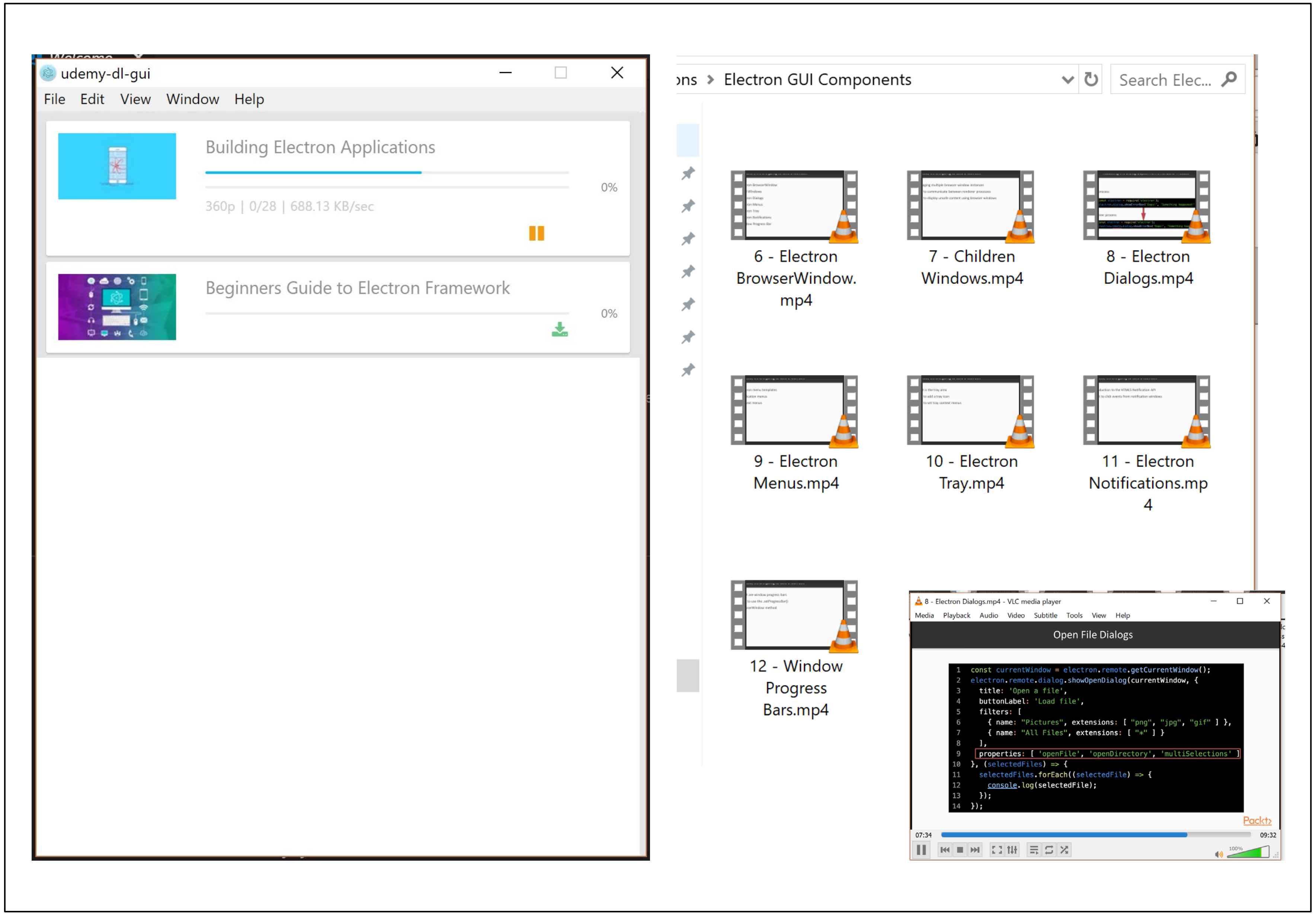
Electron

Udemy DL

Downloads Udemy courses for offline viewing on one's own computer.

Uses Udemy login credentials to access purchased courses.

[C:\Users\downess\CodeProjects\ElectronProjects\udemy-dl-gui]()


udemy-dl-gui
File Edit View Window Help
Building Electron Applications
0%
360p | 0/28 | 688.13 KB/sec
Beginners Guide to Electron Framework
0%
Electron GUI Components
Search Elec...
6 - Electron BrowserWindow.mp4
7 - Children Windows.mp4
8 - Electron Dialogs.mp4
9 - Electron Menus.mp4
10 - Electron Tray.mp4
11 - Electron Notifications.mp4
12 - Window Progress Bars.mp4
8 - Electron Dialogs.mp4 - VLC media player
Media Playback Audio Video Subtitle Tools View Help
Open File Dialogs
Packt
07:34
09:32
100%

```
const currentWindow = electron.remote.getCurrentWindow();
electron.remote.dialog.showOpenDialog(currentWindow, {
  title: 'Open a file',
  buttonLabel: 'Load file',
  filters: [
    { name: "Pictures", extensions: [ "png", "jpg", "gif" ] },
    { name: "All Files", extensions: [ "*" ] }
  ],
  properties: [ 'openFile', 'openDirectory', 'multiSelections' ]
}, (selectedFiles) => {
  selectedFiles.forEach((selectedFile) => {
    console.log(selectedFile);
  });
});
```

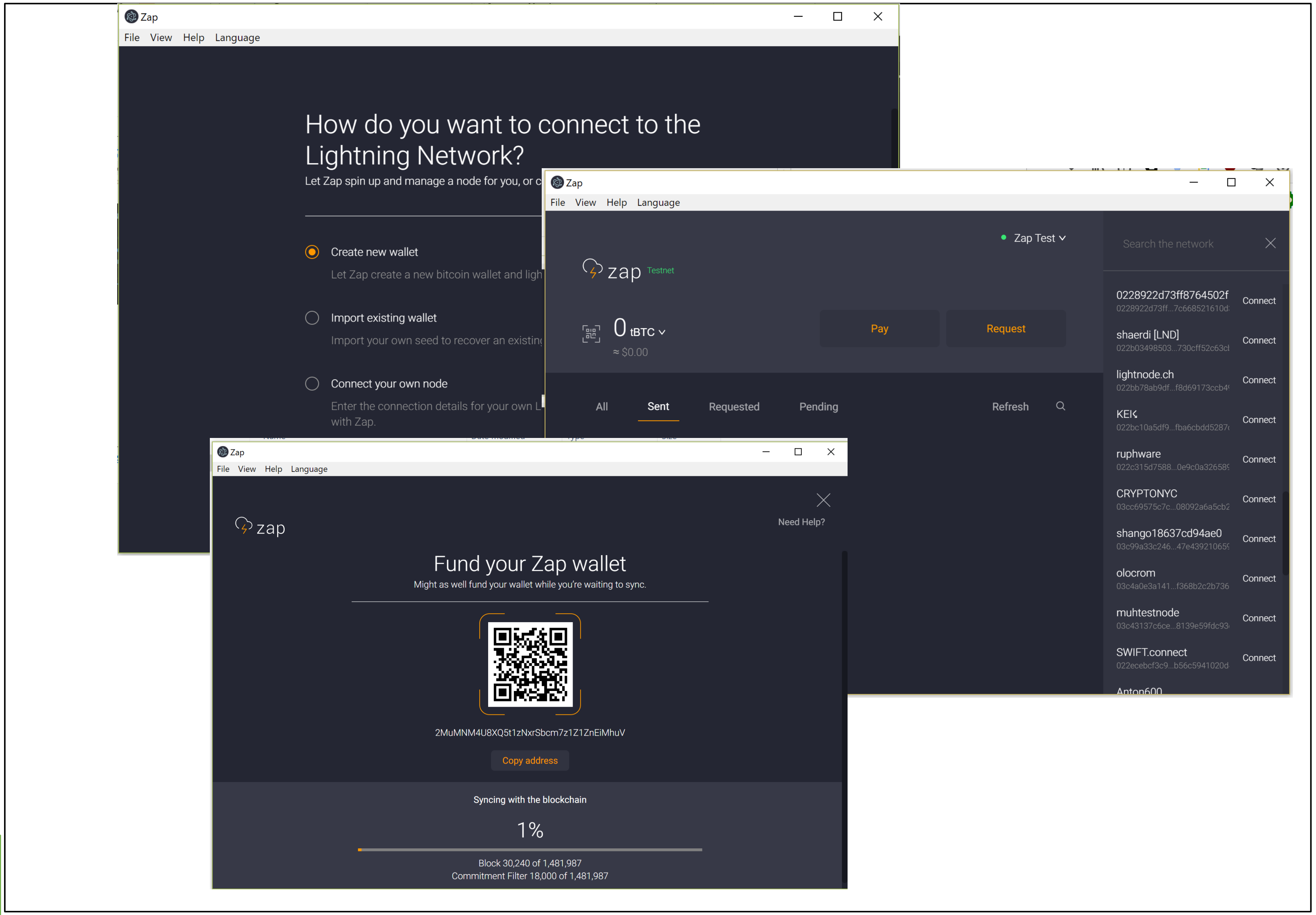
https://github.com/riazXrazor/udemy-dl-gui

Electron

Zap

Client that connects to the Bitcoin Lightning Network (BLN) or the testnet version of the bitcoin network (tBTC). Runs on top of Lightning Network Daemon (LDN) and uses Autopilot.

C:\Users\downess\CodeProjects\ElectronProjects\zap-desktop



How do you want to connect to the Lightning Network?

Let Zap spin up and manage a node for you, or c

[✓ Create new wallet]

Let Zap create a new bitcoin wallet and ligh

Import existing wallet

Import your own seed to recover an existing

Connect your own node

Enter the connection details for your own L with Zap.

0228922d73ff8764502f 0228922d73ff...7c668521610d	Connect
shaerdi [LND] 022b03498503...730cff52c63c	Connect
lightnode.ch 022bb78ab9df...f8d69173ccb4	Connect
KEK 022bc10a5df9...fba6cbdd5287	Connect
ruphware 022c315d7588...0e9c0a32658	Connect
CRYPTONYC 03cc69575c7c...08092a6a5cb2	Connect
shango18637cd94ae0 03c99a33c246...47e43921065	Connect
olocrom 03c4a0e3a141...f368b2c2b736	Connect
muhtestnode 03c43137c6ce...8139e59fdc93	Connect
SWIFT.connect 022ecebcf3c9...b56c5941020d	Connect
Anton600	

Fund your Zap wallet

Might as well fund your wallet while you're waiting to sync.

2MuMNM4U8XQ5t1zNxrSbcm7z1Z1ZnEiMhuV

Syncing with the blockchain

1%

Block 30,240 of 1,481,987

Commitment Filter 18,000 of 1,481,987

https://github.com/LN-Zap/zap-desktop

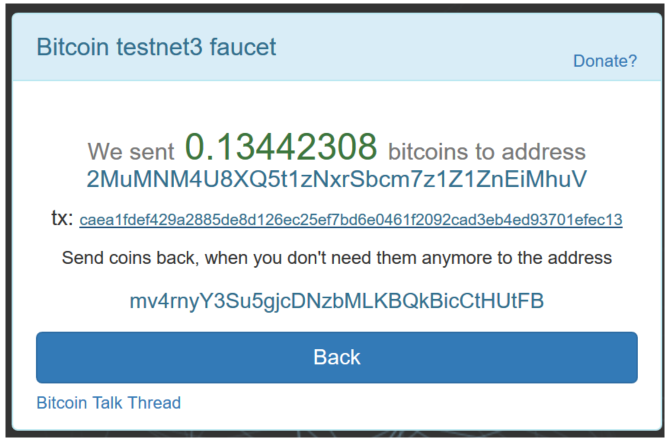
https://ln-zap.github.io/zap-tutorials/zap-desktop-getting-started

Electron

Testing Zap

I put tBTC into my wallet using a ‘faucet’ and then monitored the transaction.

Then connect with peers on the network, create a ‘channel’ with tBTC, then ‘pay’ to (eg) read article.


Bitcoin testnet3 faucet
Donate?

We sent 0.13442308 bitcoins to address
2MuMNM4U8XQ5t1zNxrSbcm7z1Z1ZnEiMhuV

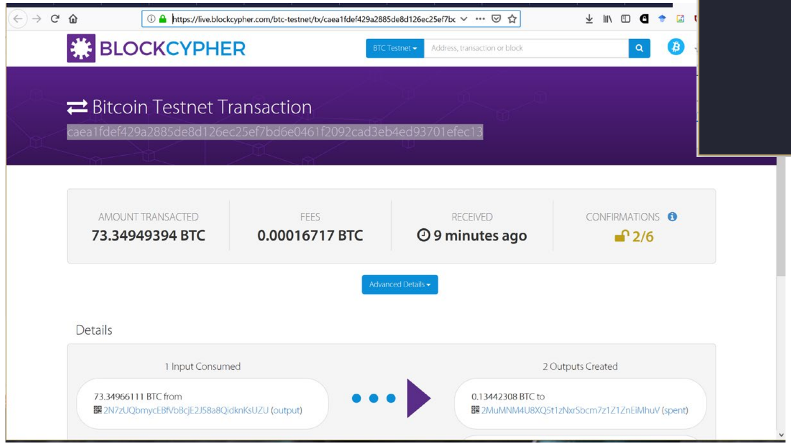
tx: caea1fdef429a2885de8d126ec25ef7bd6e0461f2092cad3eb4ed93701efec13

Send coins back, when you don't need them anymore to the address

mv4rnyY3Su5gjcDNzbMLKBQkBicCtHUtFB

Back

Bitcoin Talk Thread


https://live.blockcypher.com/btc-testnet/tx/caea1fdef429a2885de8d126ec25ef7bc

BLOCKCYPHER
BTC Testnet
Address, transaction or block

Bitcoin Testnet Transaction
caea1fdef429a2885de8d126ec25ef7bd6e0461f2092cad3eb4ed93701efec13

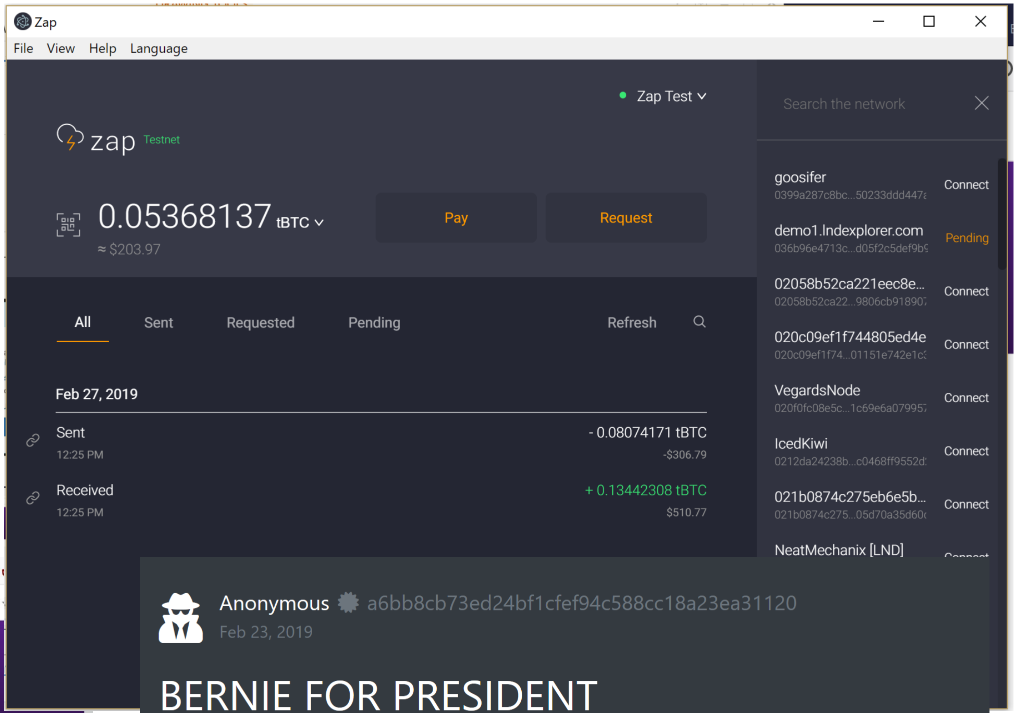
AMOUNT TRANSACTED	FEES	RECEIVED	CONFIRMATIONS
73.34949394 BTC	0.00016717 BTC	9 minutes ago	2/6

Advanced Details

Details

1 Input Consumed
73.34966111 BTC from
2N7zUQbmycEBfVbBcjE2J58a8QidknKsUZU (output)

2 Outputs Created
0.13442308 BTC to
2MuMNM4U8XQ5t1zNxrSbcm7z1Z1ZnEiMhuV (spent)


Zap
File View Help Language

Zap Test
zap Testnet
0.05368137 tBTC
≈ $203.97
Pay Request

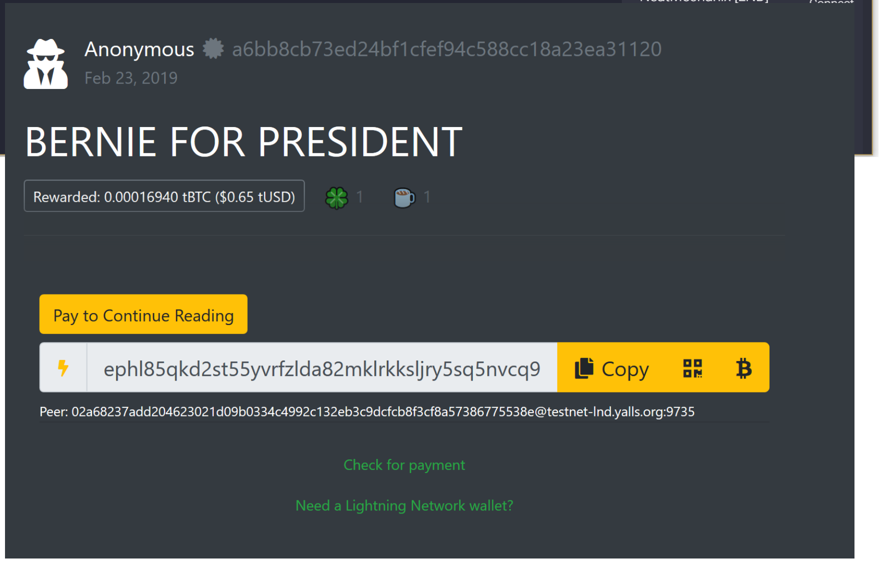
All Sent Requested Pending Refresh

Feb 27, 2019

Sent 12:25 PM	- 0.08074171 tBTC -$306.79
Received 12:25 PM	+ 0.13442308 tBTC $510.77

Search the network

goosifer 0399a287c8bc...50233ddd447a	Connect
demo1.lndexplorer.com 036b96e4713c...d05f2c5def9b9	Pending
02058b52ca221eec8e... 02058b52ca22...9806cb918907	Connect
020c09ef1f744805ed4e 020c09ef1f74...01151e742e1c3	Connect
VegardsNode 020f0fc08e5c...1c69e6a079957	Connect
IcedKiwi 0212da24238b...c0468ff9552d	Connect
021b0874c275eb6e5b... 021b0874c275...05d70a35d60c	Connect
NeatMechanix [LND]	Connect


Anonymous a6bb8cb73ed24bf1cfef94c588cc18a23ea31120
Feb 23, 2019

BERNIE FOR PRESIDENT

Rewarded: 0.00016940 tBTC ($0.65 tUSD) 1 1

Pay to Continue Reading

ephl85qkd2st55yvrfzlda82mklrkksljry5sq5nvcq9 Copy

Peer: 02a68237add204623021d09b0334c4992c132eb3c9dcfcb8f3cf8a57386775538e@testnet-lnd.yalls.org:9735

Check for payment

Need a Lightning Network wallet?

C:\Users\downess\CodeProjects\ElectronProjects\zap-desktop

https://www.youtube.com/playlist?list=PLMj6UA3-f3cRfKmG1xRm3j0KBRCvbX4vW
https://testnet.yalls.org/

Future

Directions

Future directions range from social networks (Eg. Hyperspace for Mastodon), privacy (Particl), cloud (eg. Docker),

docker hub

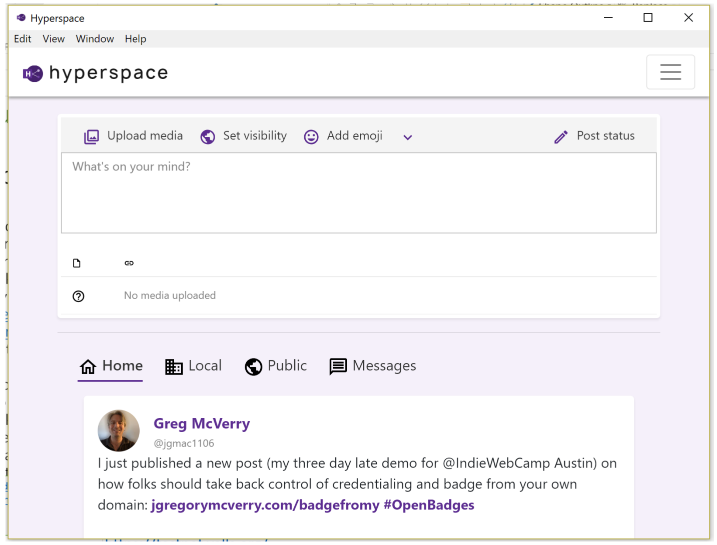
Search for great con

node ☆

Docker Official Images

Node.js is a JavaScript-base

https://nodejs.org/en/docs/guides/nodejs-docker-webapp/


Hyperspace

Edit View Window Help

hyperspace

Upload media Set visibility Add emoji Post status

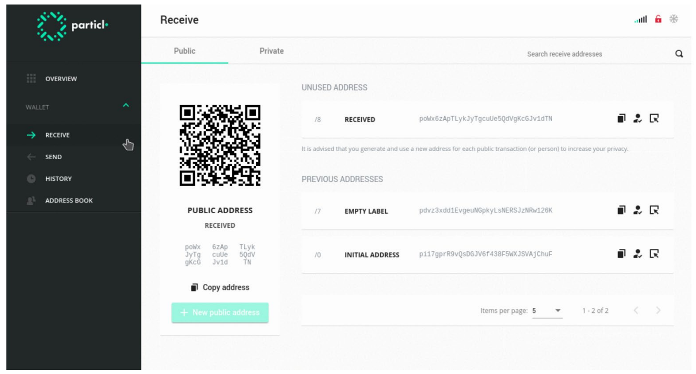
What's on your mind?

No media uploaded

Home Local Public Messages

Greg McVerry
@jgmac1106
I just published a new post (my three day late demo for @IndieWebCamp Austin) on how folks should take back control of credentialing and badge from your own domain: jgregorymcverry.com/badgefromy #OpenBadges

https://electronjs.org/apps/hyperspace


particl

OVERVIEW
WALLET
RECEIVE
SEND
HISTORY
ADDRESS BOOK

Receive

Public Private Search receive addresses

PUBLIC ADDRESS
RECEIVED
poWx 6zAp TLyk
JyTg cuUe 5QdV
gKcG Jv1d TN

Copy address

+ New public address

UNUSED ADDRESS

/8	RECEIVED	poWx6zApTLykJyTgcuUe5QdVgKcGJv1dTN

It is advised that you generate and use a new address for each public transaction (or person) to increase your privacy.

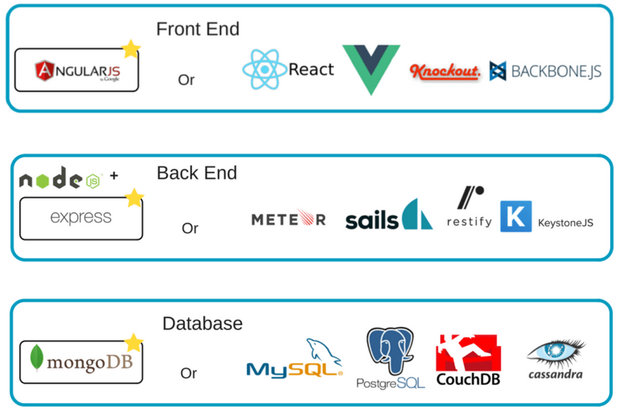
PREVIOUS ADDRESSES

/7	EMPTY LABEL	pdvz3xdd1EvgeuNGpkyLsNERSJzNRw126K
/0	INITIAL ADDRESS	pi17gprR9vQsDGJV6f438F5WXJSVAjChuF

Items per page: 5 1 - 2 of 2

https://electronjs.org/apps/particl

Full Stack JavaScript Tools and Technologies



[C:\Users\downess\CodeProjects\ElectronProjects\zap-desktop](C:\Users\downess\CodeProjects\ElectronProjects\zap-desktop)

https://www.youtube.com/playlist?list=PLMj6UA3-f3cRfKmG1xRm3j0KBRCvbX4vW
https://testnet.yalls.org/