

# CS550 Advanced Operating Systems

## Programming Assignment 1

### Manual

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## 1 Introduction

This document will guide you through the installation and usage of our project. As detailed in the Design Document, this project contains two different software: **Index**, located in the `index` folder, and **Peer**, located in the `peer` folder. Please follow the following steps for each of the software.

## 2 Prerequisite

Both software are developed using Node.js (version 12.14.1). Therefore, you will need to have it installed on your computer to use them. If you don't have Node.js installed yet, follow the following steps:

### 2.1 Mac and Linux users

First, install `nvm` (Node Version Manager) by running the following command in a terminal:

```
curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.35.2/install.sh | bash
```

This command should install `nvm` on your machine. Now you need to install the right version of Node.js. Close and reopen your terminal and type this command:

```
nvm install 12
```

Now you should have Node.js installed. You can check that Node.js is running with the right version using this command:

```
node -v
```

```
florentin — florentin@dhcp168 — ~ — zsh
➤ ~ nvm install 12
Downloading and installing node v12.14.1...
Local cache found: ${NVM_DIR}/.cache/bin/node-v12.14.1-darwin-x64/node-v12.14.1-darwin-x64.tar.xz
Checksums match! Using existing downloaded archive ${NVM_DIR}/.cache/bin/node-v12.14.1-darwin-x64/node-v12.14.1-darwin-x64.tar.xz
Now using node v12.14.1 (npm v6.13.4)
➤ ~ node -v
v12.14.1
➤ ~
```

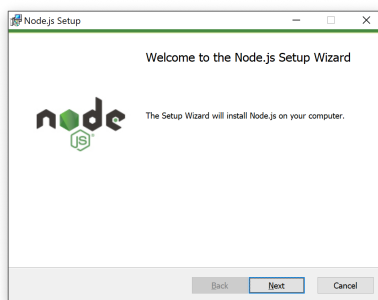
Figure 1: Node.js installation on macOS

## 2.2 Windows users

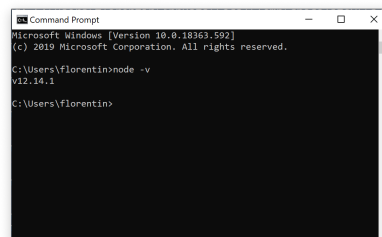
Download the Node.js Installer for [32 bits](#) or [64 bits](#) and execute it to install Node.js. **Make sure to check the box asking to install all the necessary tools.**

When the installation is finished, open a new Command Prompt window and run the following command to check that Node.js is running with the right version:

```
node -v
```



(a) Node.js Installer



(b) Command Prompt

Figure 2: Node.js installation on Windows

## 3 Installation


The installation process is identical for both the **Index** and **Peer** software. First, you should go to the software folder (**index** or **peer**) and open a terminal or a Command Prompt. Then, you will need to install the software dependencies by typing this command:

```
npm install
```

You will also need to set up the software by creating a config file. Duplicate the file `config.json.dist` and rename the duplicate `config.json`. You will need to edit the file to change the port number. Make sure to specify the same value for the `port` key of the index's `config.json` and the `indexPort` key of the peer's `config.json`.

You should now be ready to start the software! You can do it by using the following command:

```
npm start
```

A terminal window titled 'index — florentin@dhcp168 — ..-system/index — -zsh' showing the following commands and output:

```
+ p2p-file-sharing-system git:(master) * cd index
+ index git:(master) * npm install
npm WARN index@ No repository field.
npm WARN index@ No license field.

audited 186 packages in 1.165s

1 package is looking for funding
  run 'npm fund' for details

found 0 vulnerabilities

+ index git:(master) * cp config.json.dist config.json
+ index git:(master) * npm start
```

Figure 3: Example installation steps for Index

**Don't forget to follow this procedure for both softwares.**

## 4 Usage

### 4.1 Index

Once the **Index** software is configured and started, there is nothing more to do. Don't close the terminal window. You will be able to see the logs if you set `devMode` to `true` in `config.json`.

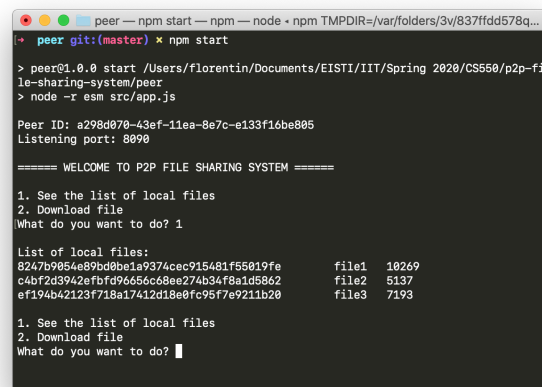
Press `cmd + C` to quit the software.

## 4.2 Peer

When you launch the **Peer** software, a CLI (command-line interface) will appear. You will be able to see the list of files shared or to download a file. Enter the command number to select your choice and press Enter to validate. Once an operation is finished, you will come back to the main menu.

If you get server errors when you start the software, make sure that the **Index** software is running and that you specified the right port in `config.json`.

Press `cmd + C` to quit the software.



```
peer — npm start — npm — node — npm TMPDIR=/var/folders/3v/837fdd578q...
peer git:(master) ✖ npm start
> peer@1.0.0 start /Users/florentin/Documents/EISTI/IIIT/Spring 2020/CS550/p2p-file-sharing-system/peer
> node -r esm src/app.js

Peer ID: a298d07b-43ef-11ea-8e7c-e133f16be805
Listening port: 8090

===== WELCOME TO P2P FILE SHARING SYSTEM =====

1. See the list of local files
2. Download file
What do you want to do? 1

List of local files:
8247b9054e89bd0be1a9374cec915481f55019fe    file1    10269
c4bf2d3942efbfd96656c68ee274b34f8a1d5862    file2    5137
ef194b42123f718a17412d18e0fc95f7e9211b20    file3    7193

1. See the list of local files
2. Download file
What do you want to do? █
```

Figure 4: Peer software

## 5 Test case