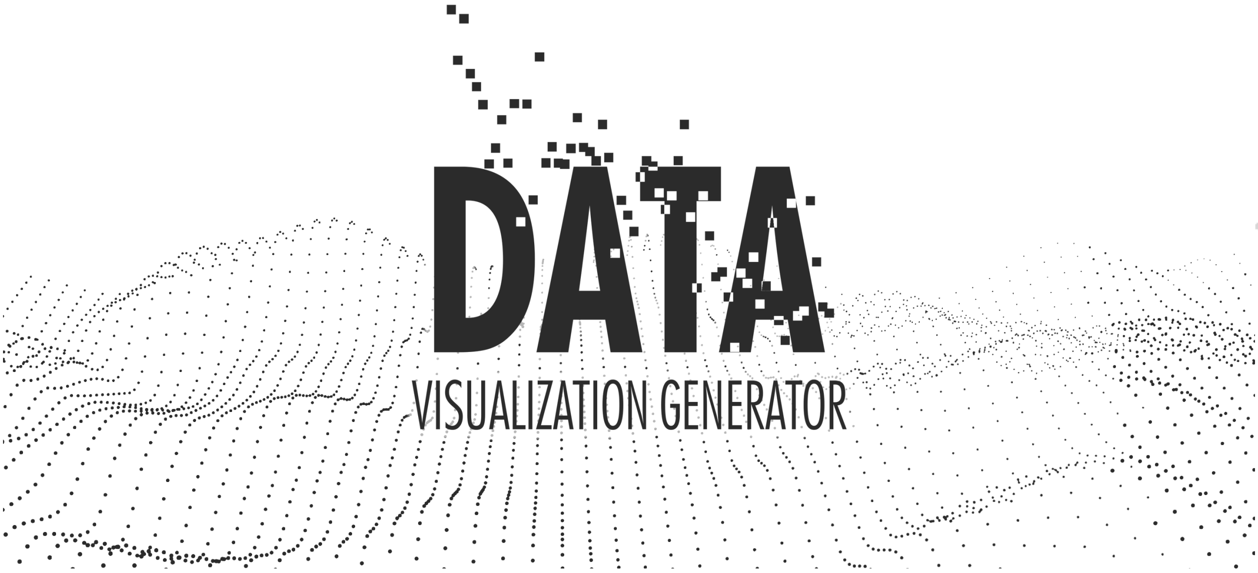
Data Visualization Generator

Technical Installation Manual

Doofenshmirtz Evil Inc

COS 301 - 2020

Marco Lombaard u18026975
Elna Pistorius u18010319
Phillip Schulze u18171185
Byron Tomkinson u18042717
Gian Uys u18052569



Contents

1 Introduction

The system consists of a front-end and a back-end. The front-end is a Web Application that is created using React.js (and various other node modules). This web application communicates with our back-end via HTTP-requests to specific REST endpoints. The back-end is a Node Web Server that is created using Express.js (and various other node modules). This server requests data from an external source, provided by the user, and then generates suggestions to visualise this data using an Interactive Genetic Algorithm.

2 Prerequisites

In this section we describe the necessary software and packages that are needed for our system to work. First we list the requirements and thereafter we specify instructions on how to install the prerequisites.

2.1 Requirements

1. **Node Package Manager (npm)** and **Node.js**
2. **Dependencies**
    - axios 0.19.2
    - bcryptjs 2.4.3
    - connect-pg-simple 6.1.0
    - cors 2.8.5
    - dom-parser 0.1.6
    - dotenv 8.2.0
    - error 10.4.0
    - events 3.1.0
    - express 4.17.1
    - express-session 1.17.1
    - jest 26.2.2
    - pg 8.2.1
    - pg-pool 3.2.1
    - rewire 5.0.0
    - save 2.4.0
    - url 0.11.0
    - xmldom 0.3.0
    - @material-ui/core latest
    - @material-ui/icons latest
    - @testing-library/jest-dom 4.2.4
    - @testing-library/react 9.5.0
    - @testing-library/user-event 7.2.1
    - antd 4.4.0
    - axios 0.19.2
    - echarts 4.8.0
    - echarts-for-react 2.0.16
    - node-sass 4.14.1
    - prop-types latest
    - react 16.13.1
    - react-addons-update 15.6.2
    - react-dom 16.13.1
    - react-grid-layout 0.18.3
    - react-scripts 3.4.1
    - react-test-renderer 16.13.1
    - react-undo 1.2.1
    - reqwest 2.0.5
    - styled-components 5.1.1
    - styled-icons 10.6.0
    - three 0.118.3
    - three-orbitcontrols 2.110.3
    - use-undo 1.0.3
3. **Development Dependencies**
    - eslint-plugin-flowtype 5.2.0
    - eslint-plugin-import 2.22.0
    - eslint-plugin-jsx-a11y 6.3.1
    - eslint-plugin-react 7.20.3
    - eslint-plugin-react-hooks 4.0.8
    - eslint-watch 7.0.0
    - tailwindcss 1.1.3

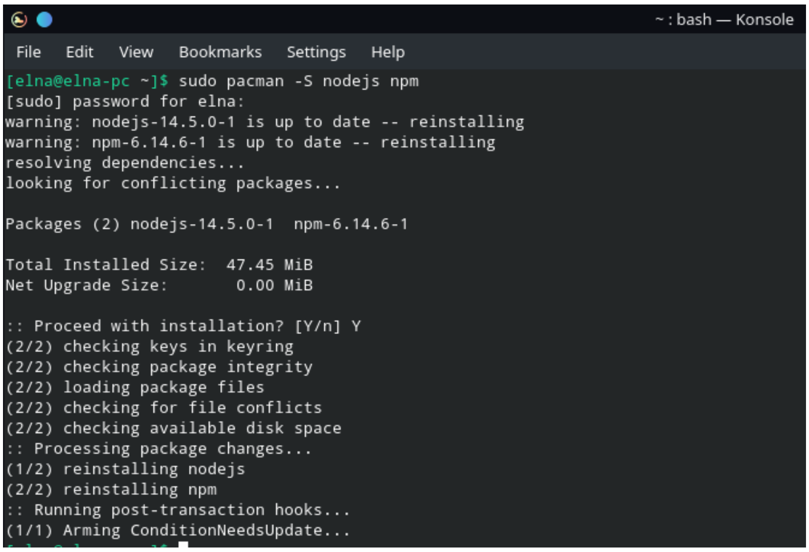
2.2 Instructions on how to install prerequisites

All these packages named above works through **Node Package Manager (npm)**. The process works as follows:

1. Install Node.js and npm packages
2. Install the **dependencies** and **development dependencies** using npm.

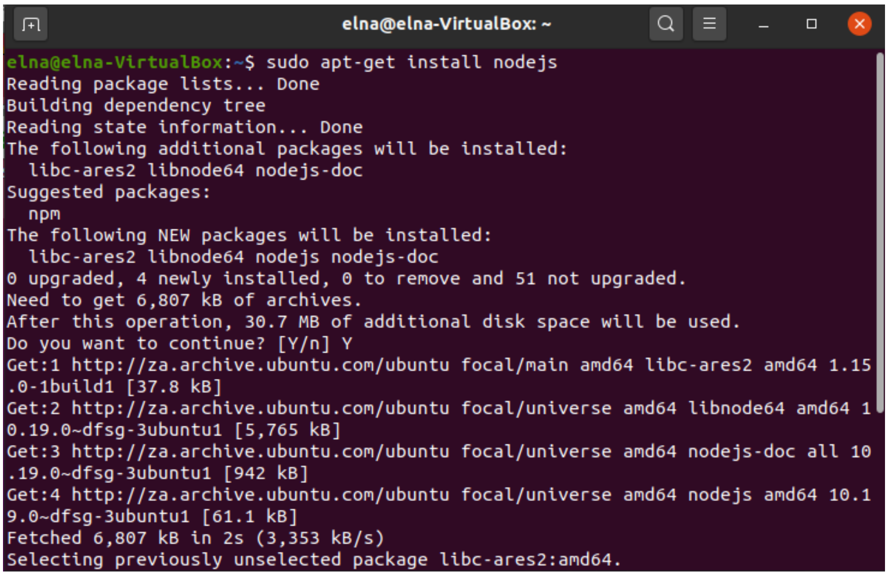
2.2.1 UNIX System

- To install Node.js and npm packages please use the system package manager or use the terminal. Beneath is the instructions to install via the terminal.
  - **For ArchLinux or Manjaro distribution**
    1. To install the Node.js and npm packages simultaneously please run **sudo pacman -S nodejs npm** in the terminal.



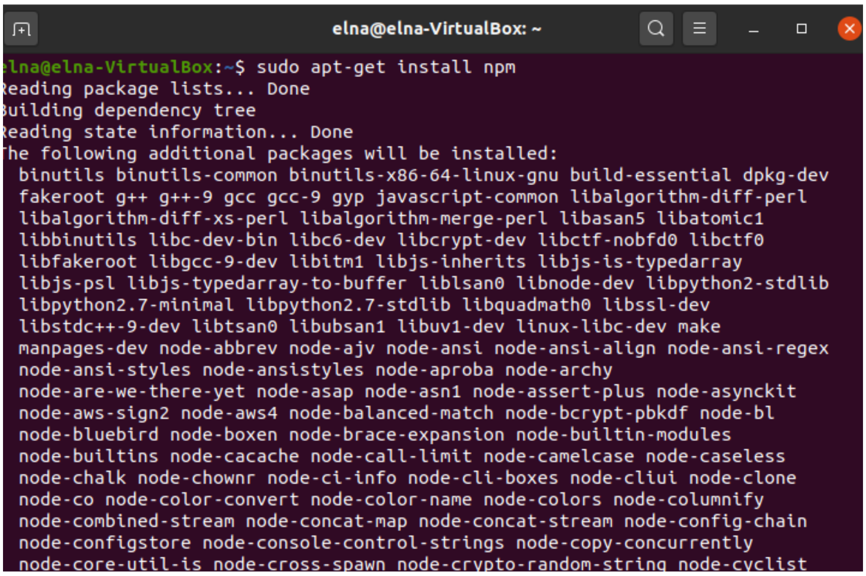
```
[elna@elna-pc ~]$ sudo pacman -S nodejs npm
[sudo] password for elna:
warning: nodejs-14.5.0-1 is up to date -- reinstalling
warning: npm-6.14.6-1 is up to date -- reinstalling
resolving dependencies...
looking for conflicting packages...

Packages (2) nodejs-14.5.0-1  npm-6.14.6-1

Total Installed Size:  47.45 MiB
Net Upgrade Size:       0.00 MiB

:: Proceed with installation? [Y/n] Y
(2/2) checking keys in keyring
(2/2) checking package integrity
(2/2) loading package files
(2/2) checking for file conflicts
(2/2) checking available disk space
:: Processing package changes...
(1/2) reinstalling nodejs
(2/2) reinstalling npm
:: Running post-transaction hooks...
(1/1) Arming ConditionNeedsUpdate...
```

  - **For Ubuntu distribution**
    1. To install the Node.js please run **sudo apt-get install nodejs** in the terminal.



```
elna@elna-VirtualBox:~$ sudo apt-get install nodejs
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libc-ares2 libnode64 nodejs-doc
Suggested packages:
  npm
The following NEW packages will be installed:
  libc-ares2 libnode64 nodejs nodejs-doc
0 upgraded, 4 newly installed, 0 to remove and 51 not upgraded.
Need to get 6,807 kB of archives.
After this operation, 30.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://za.archive.ubuntu.com/ubuntu focal/main amd64 libc-ares2 amd64 1.15
.0-1build1 [37.8 kB]
Get:2 http://za.archive.ubuntu.com/ubuntu focal/universe amd64 libnode64 amd64 1
0.19.0~dfsg-3ubuntu1 [5,765 kB]
Get:3 http://za.archive.ubuntu.com/ubuntu focal/universe amd64 nodejs-doc all 10
.19.0~dfsg-3ubuntu1 [942 kB]
Get:4 http://za.archive.ubuntu.com/ubuntu focal/universe amd64 nodejs amd64 10.1
9.0~dfsg-3ubuntu1 [61.1 kB]
Fetched 6,807 kB in 2s (3,353 kB/s)
Selecting previously unselected package libc-ares2:amd64.
```

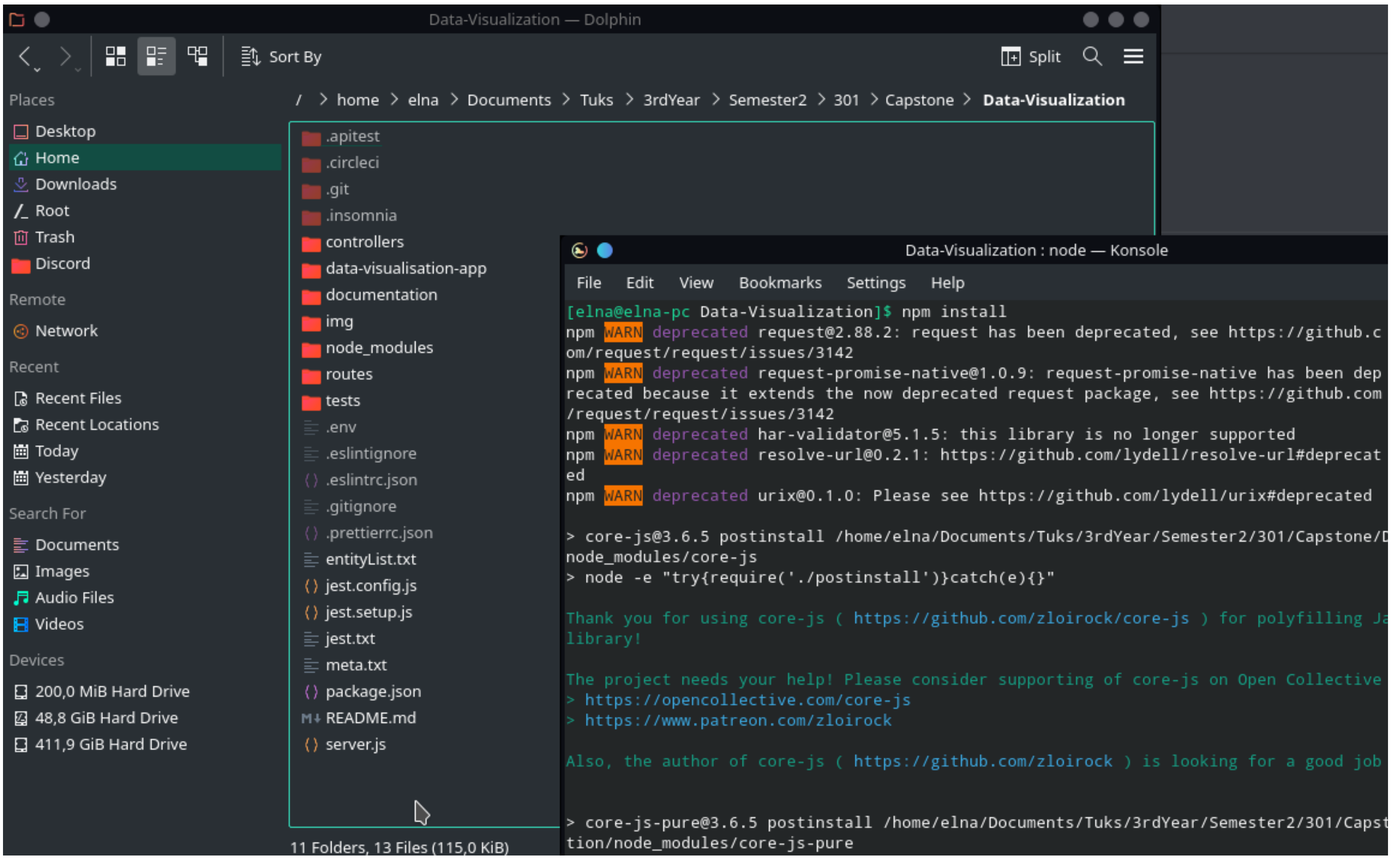
    2. To install the npm package please run **sudo apt-get install npm** in the terminal.



```
lna@elna-VirtualBox:~$ sudo apt-get install npm
eading package lists... Done
uilding dependency tree
eading state information... Done
he following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu build-essential dpkg-dev
  fakeroot g++ g++-9 gcc gcc-9 gyp javascript-common libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan5 libatomic1
  libbinutils libc-dev-bin libc6-dev libcrypt-dev libctf-nobfd0 libctf0
  libfakeroot libgcc-9-dev libitm1 libjs-inherits libjs-is-typedarray
  libjs-psl libjs-typedarray-to-buffer liblsan0 libnode-dev libpython2-stdlib
  libpython2.7-minimal libpython2.7-stdlib libquadmath0 libssl-dev
  libstdc++-9-dev libtsan0 libubsan1 libuv1-dev linux-libc-dev make
  manpages-dev node-abbrev node-ajv node-ansi node-ansi-align node-ansi-regex
  node-ansi-styles node-ansistyles node-aproba node-archy
  node-are-we-there-yet node-asap node-asn1 node-assert-plus node-asynckit
  node-aws-sign2 node-aws4 node-balanced-match node-bcrypt-pbkdf node-bl
  node-bluebird node-boxen node-brace-expansion node-builtin-modules
  node-builtins node-cacache node-call-limit node-camelcase node-caseless
  node-chalk node-chownr node-ci-info node-cli-boxes node-cliui node-clone
  node-co node-color-convert node-color-name node-colors node-columnify
  node-combined-stream node-concat-map node-concat-stream node-config-chain
  node-configstore node-console-control-strings node-copy-concurrently
  node-core-util-is node-cross-spawn node-crypto-random-string node-cyclist
```

- To install all the **Dependencies and Development Dependencies**

  1. Run **npm install** in the terminal of the root directory of the Data-Visualization project (please refer to the **Installation Section** for more information of where the command should be excecuted)

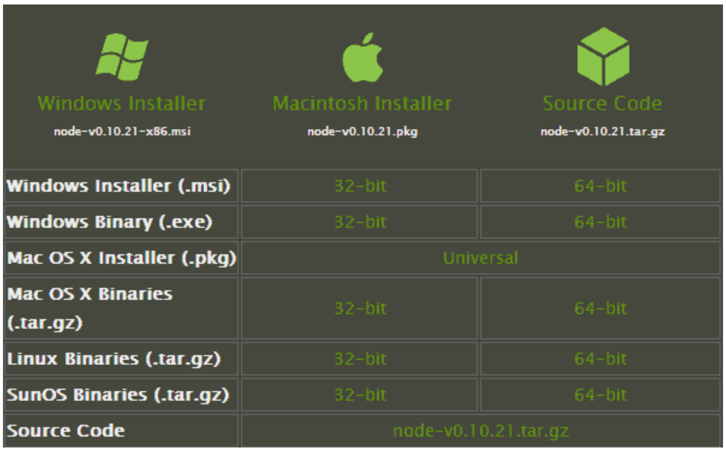


```
[elna@elna-pc Data-Visualization]$ npm install
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.c
om/request/request/issues/3142
npm WARN deprecated request-promise-native@1.0.9: request-promise-native has been dep
recated because it extends the now deprecated request package, see https://github.com
/request/request/issues/3142
npm WARN deprecated har-validator@5.1.5: this library is no longer supported
npm WARN deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecat
ed
npm WARN deprecated urix@0.1.0: Please see https://github.com/lydell/urix#deprecated

> core-js@3.6.5 postinstall /home/elna/Documents/Tuks/3rdYear/Semester2/301/Capstone/D
node_modules/core-js
> node -e "try{require('./postinstall')}catch(e){}"

Thank you for using core-js ( https://github.com/zloirock/core-js ) for polyfilling Ja
library!

The project needs your help! Please consider supporting of core-js on Open Collective
> https://opencollective.com/core-js
> https://www.patreon.com/zloirock

Also, the author of core-js ( https://github.com/zloirock ) is looking for a good job


> core-js-pure@3.6.5 postinstall /home/elna/Documents/Tuks/3rdYear/Semester2/301/Capst
tion/node_modules/core-js-pure
```

2.2.2 Windows

- To install Nodejs and npm

  1. **Go to this site** to download the Windows Installer (.msi).



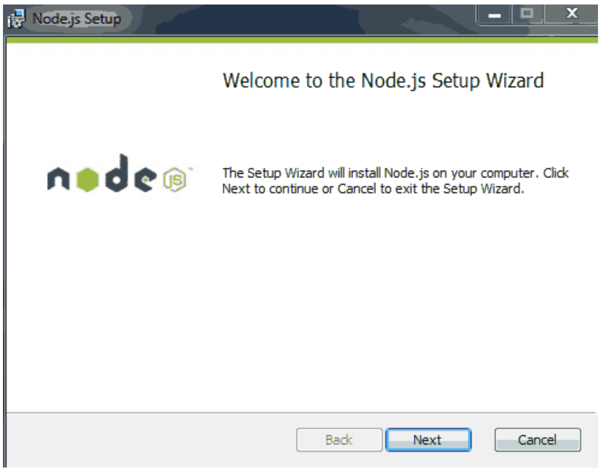
Windows Installer
node-v0.10.21-x86.msi

Macintosh Installer
node-v0.10.21.pkg

Source Code
node-v0.10.21.tar.gz

Windows Installer (.msi)	32-bit	64-bit
Windows Binary (.exe)	32-bit	64-bit
Mac OS X Installer (.pkg)	Universal	
Mac OS X Binaries (.tar.gz)	32-bit	64-bit
Linux Binaries (.tar.gz)	32-bit	64-bit
SunOS Binaries (.tar.gz)	32-bit	64-bit
Source Code	node-v0.10.21.tar.gz	

2. Once it is installed, go to your downloads and double click on the downloaded folder to launch the executable. The system will ask if you want to run the software – click **Run**.
3. The Node.js setup wizard will pop up - click **Next**.

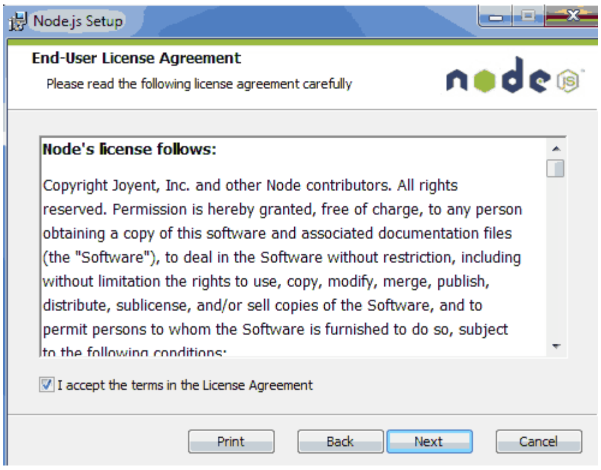


Node.js Setup

Welcome to the Node.js Setup Wizard

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

4. If you accept the End-User License Agreement- check **the box** that says “I accept the terms in the License Agreement”.



Node.js Setup

End-User License Agreement

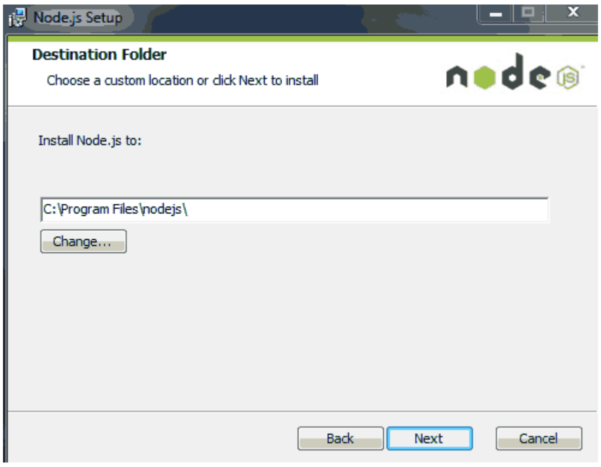
Please read the following license agreement carefully

Node's license follows:

Copyright Joyent, Inc. and other Node contributors. All rights reserved. Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

☑ I accept the terms in the License Agreement

5. The installer will prompt you for the installation location. Leave the default location, unless you have a specific need to install it somewhere else – click **Next**.



Node.js Setup

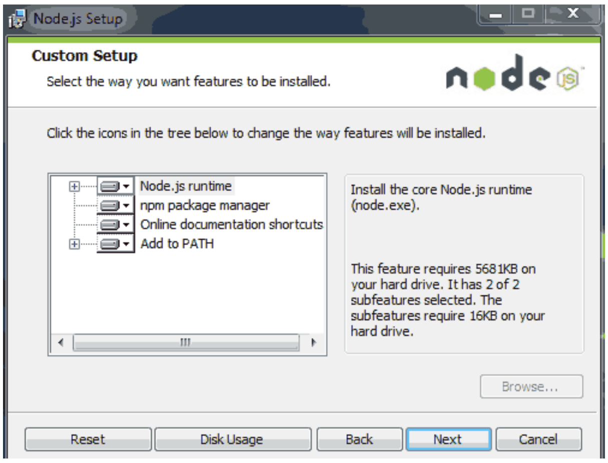
Destination Folder

Choose a custom location or click Next to install

Install Node.js to:

C:\Program Files\nodejs\

6. You are then prompted to select components to include or remove from the installation. Unless you have a specific need, to accept the defaults - click **Next**.



Node.js Setup

Custom Setup

Select the way you want features to be installed.

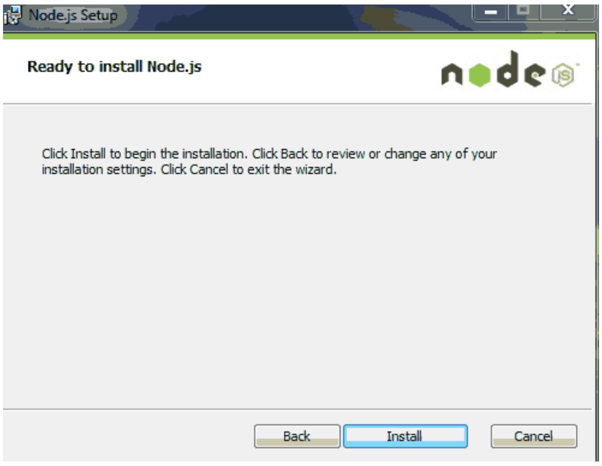
Click the icons in the tree below to change the way features will be installed.

Node.js runtime
npm package manager
Online documentation shortcuts
Add to PATH

Install the core Node.js runtime (node.exe).

This feature requires 5681KB on your hard drive. It has 2 of 2 subfeatures selected. The subfeatures require 16KB on your hard drive.

7. Finally, to run the installer - click **Install**.

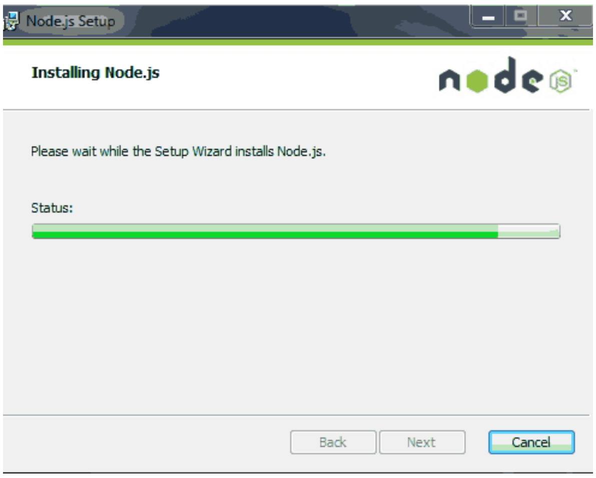


Node.js Setup

Ready to install Node.js

Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.

8. You will see the installation progresses as shown below.

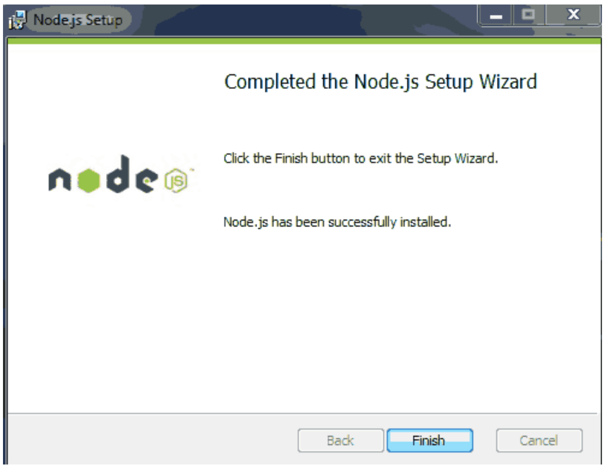


Installing Node.js

Please wait while the Setup Wizard installs Node.js.

Status:

9. Node.js has been successfully installed to exit the Node.js Setup Wizard - click **Finish**.



Completed the Node.js Setup Wizard

Click the Finish button to exit the Setup Wizard.

Node.js has been successfully installed.

10. Restart your computer. (This is required)

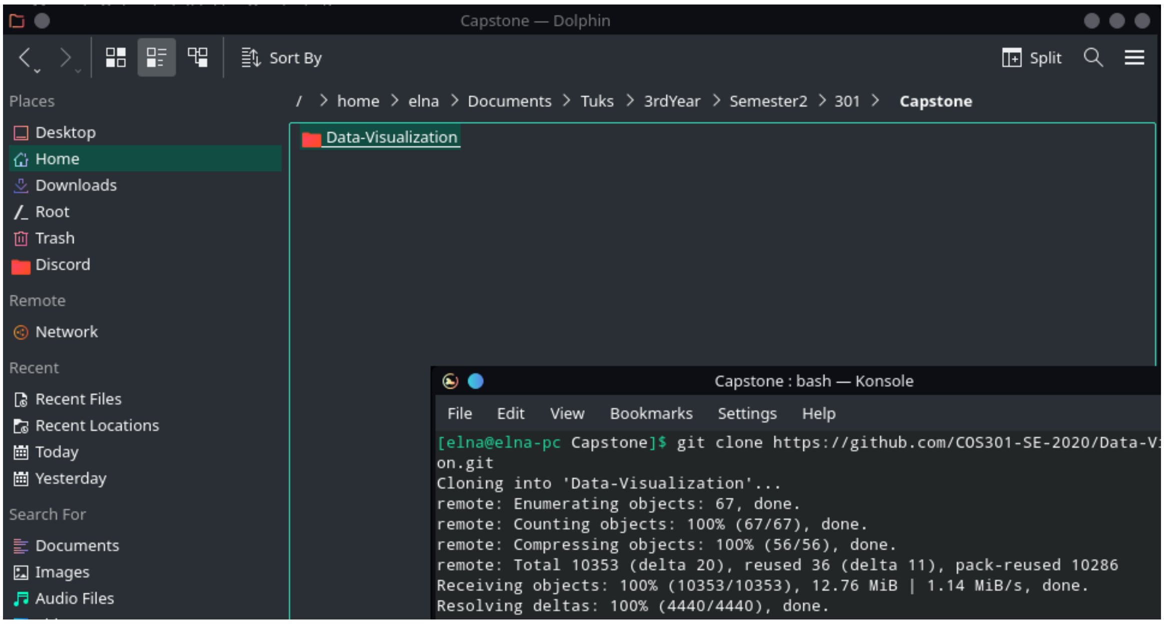
- To install all the **Dependencies and Development Dependencies** run **npm install** in the terminal of the root directory of the Data-Visualization project (please refer to the **Installation Section** for more information of where the command should be excecuted)

3 Installation

This section describes the steps to follow to install the Data-Visualization system on the different operating system distributions.

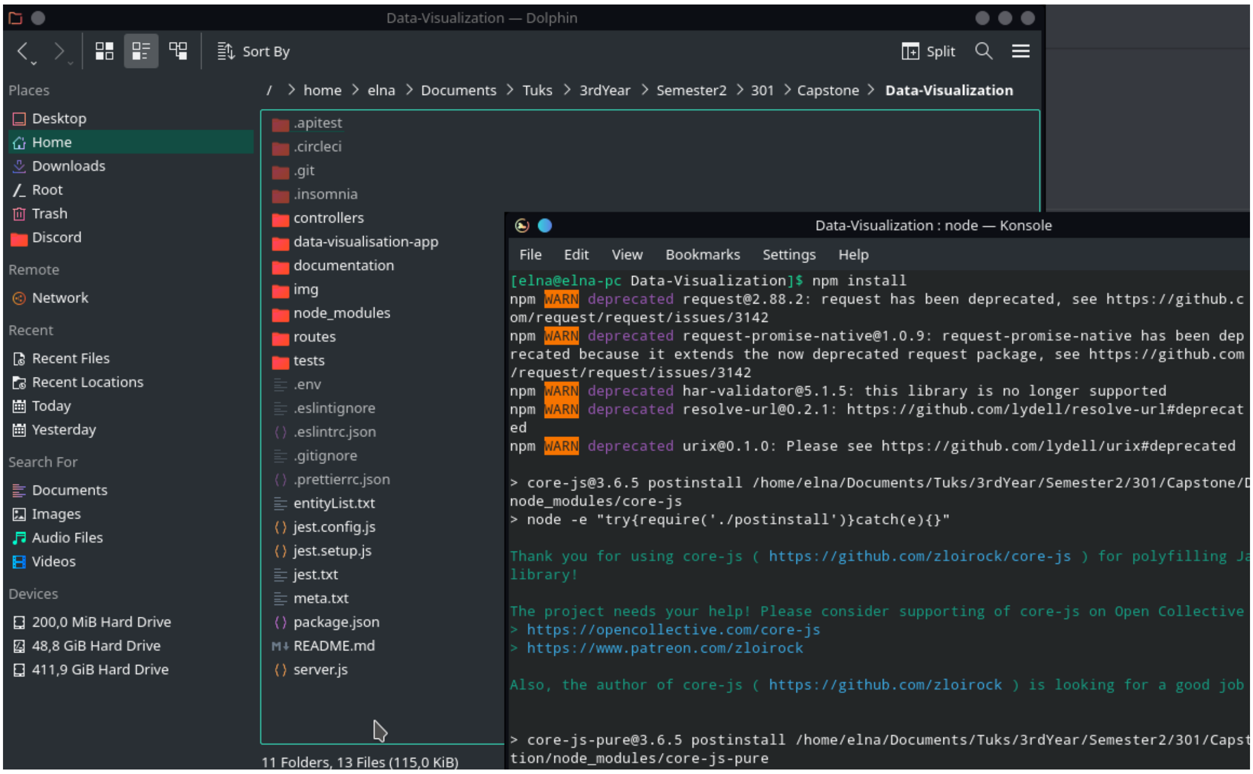
3.1 UNIX System

1. Clone the repo by creating a new folder calling it any name preferred, in this folder open the terminal and type **git clone** ***https://github.com/COS301-SE-2020/Data-Visualization.git***



```
[elna@elna-pc Capstone]$ git clone https://github.com/COS301-SE-2020/Data-V
on.git
Cloning into 'Data-Visualization'...
remote: Enumerating objects: 67, done.
remote: Counting objects: 100% (67/67), done.
remote: Compressing objects: 100% (56/56), done.
remote: Total 10353 (delta 20), reused 36 (delta 11), pack-reused 10286
Receiving objects: 100% (10353/10353), 12.76 MiB | 1.14 MiB/s, done.
Resolving deltas: 100% (4440/4440), done.
```

2. Inside the root directory of Data Visualization type in the terminal **npm install** (This will install all the Dependencies and Development Dependencies packages as stated in the Prerequisites Section.

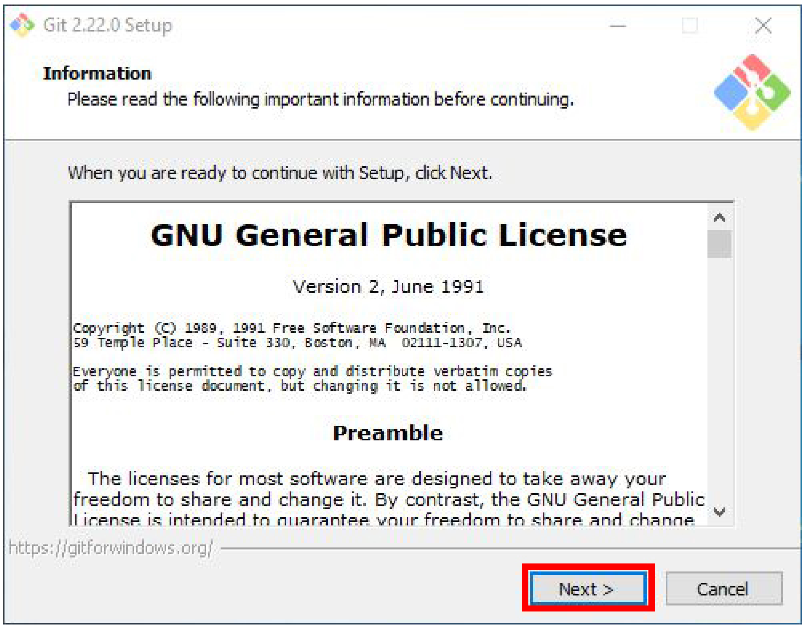


```
[elna@elna-pc Data-Visualization]$ npm install
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.c
om/request/request/issues/3142
npm WARN deprecated request-promise-native@1.0.9: request-promise-native has been dep
recated because it extends the now deprecated request package, see https://github.com
/request/request/issues/3142
npm WARN deprecated har-validator@5.1.5: this library is no longer supported
npm WARN deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecat
ed
npm WARN deprecated urix@0.1.0: Please see https://github.com/lydell/urix#deprecated

> core-js@3.6.5 postinstall /home/elna/Documents/Tuks/3rdYear/Semester2/301/Capstone/D
node_modules/core-js
> node -e "try{require('./postinstall')}catch(e){}"

Thank you for using core-js ( https://github.com/zloirock/core-js ) for polyfilling Ja
library!

The project needs your help! Please consider supporting of core-js on Open Collective
> https://opencollective.com/core-js
> https://www.patreon.com/zloirock

Also, the author of core-js ( https://github.com/zloirock ) is looking for a good job


> core-js-pure@3.6.5 postinstall /home/elna/Documents/Tuks/3rdYear/Semester2/301/Capst
tion/node_modules/core-js-pure
```

3.2 Windows

- **Click Here To Install Git for Windows.**

1. Once it is installed, go to your downloads and double click on the downloaded folder to launch the executable. The system will ask if you want to run the software – click **Run**.
2. After you have read the license - click **Next**



Git 2.22.0 Setup

Information

Please read the following important information before continuing.

When you are ready to continue with Setup, click Next.

GNU General Public License

Version 2, June 1991

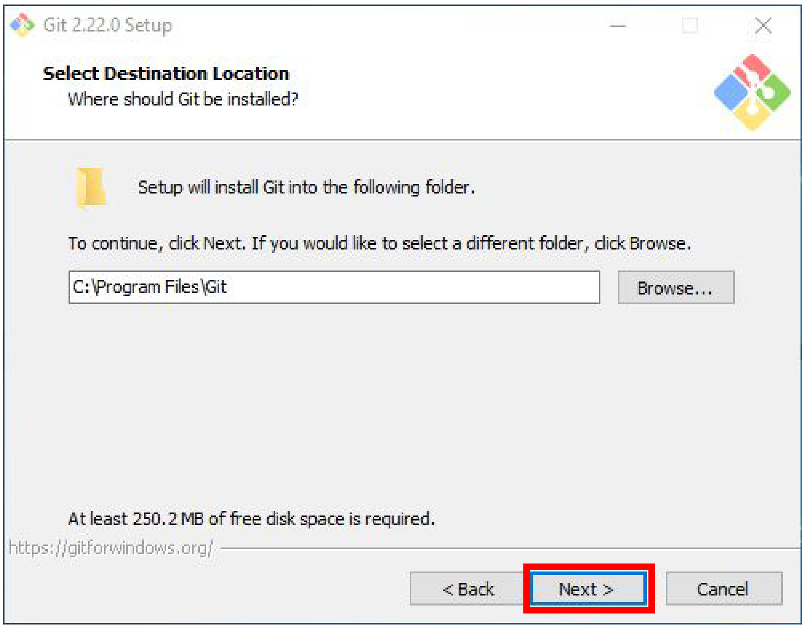
Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place - Suite 330, Boston, MA 02111-1307, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change

3. The installer will prompt you for the installation location. Leave the default location, unless you have a specific need to install it somewhere else – click **Next**



Git 2.22.0 Setup

Select Destination Location

Where should Git be installed?

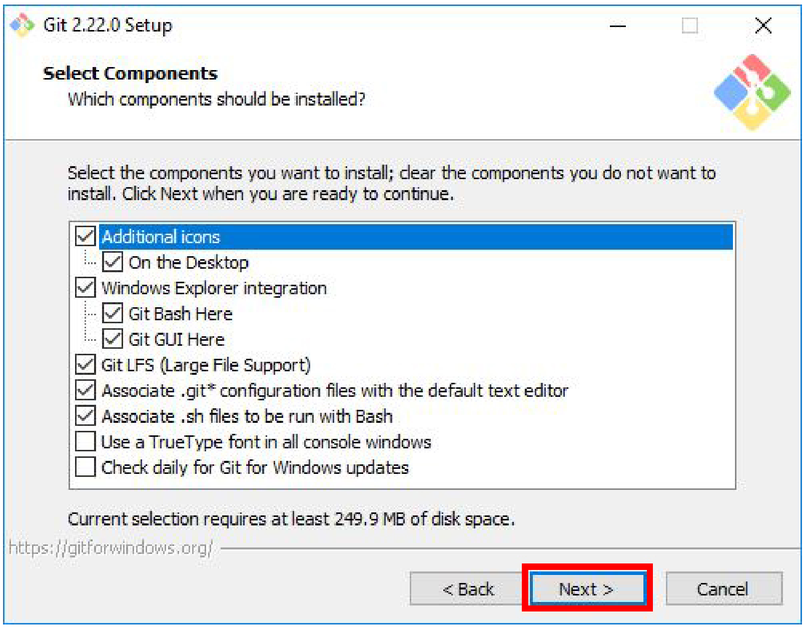
Setup will install Git into the following folder.

To continue, click Next. If you would like to select a different folder, click Browse.

C:\Program Files\Git

At least 250.2 MB of free disk space is required.

4. Select the components you want to install, or proceed with the default options- click **Next**



Git 2.22.0 Setup

Select Components

Which components should be installed?

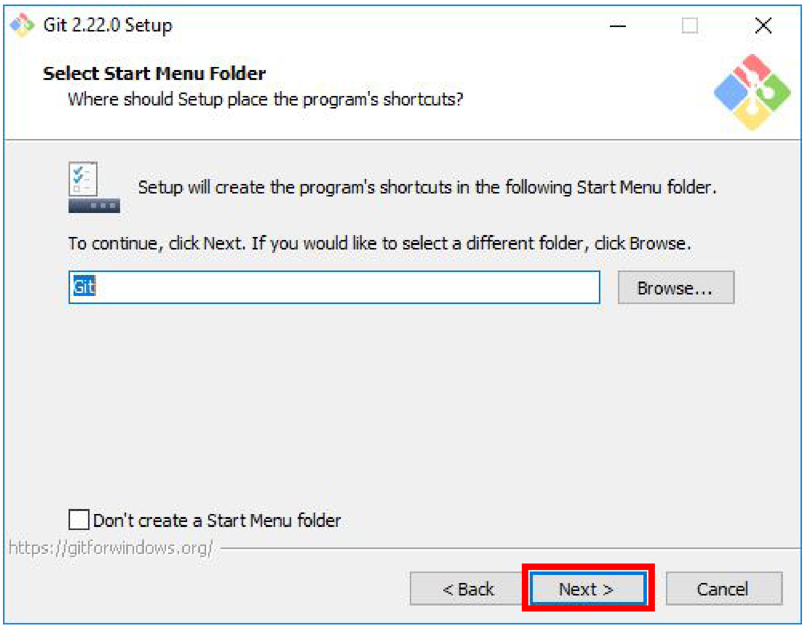
Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.

- ☑ Additional icons
  - ☑ On the Desktop
- ☑ Windows Explorer integration
  - ☑ Git Bash Here
  - ☑ Git GUI Here
- ☑ Git LFS (Large File Support)
- ☑ Associate .git* configuration files with the default text editor
- ☑ Associate .sh files to be run with Bash
- □ Use a TrueType font in all console windows
- □ Check daily for Git for Windows updates

Current selection requires at least 249.9 MB of disk space.

https://gitforwindows.org/

5. You can change the name of start menu folder here if you want, or just leave the default name and - click Next.



Git 2.22.0 Setup

Select Start Menu Folder

Where should Setup place the program's shortcuts?

Setup will create the program's shortcuts in the following Start Menu folder.

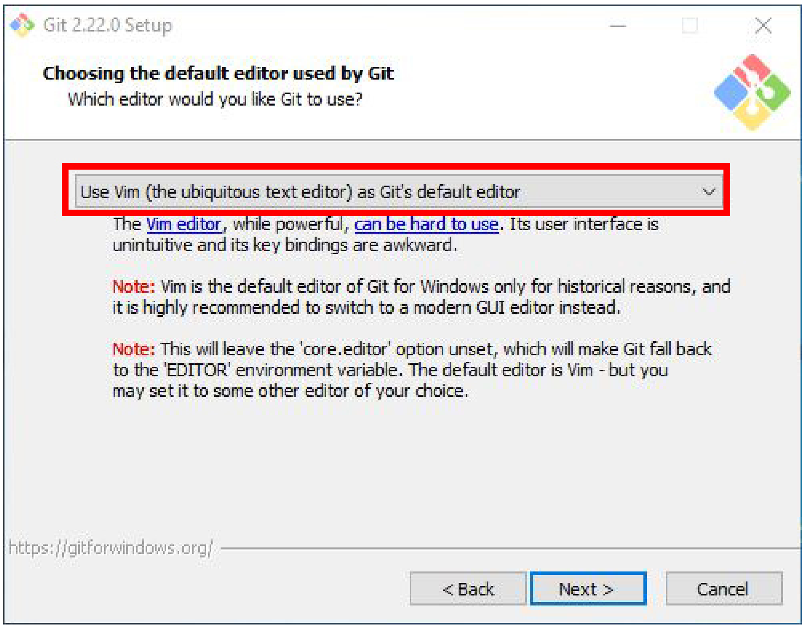
To continue, click Next. If you would like to select a different folder, click Browse.

Git

□ Don't create a Start Menu folder

https://gitforwindows.org/

6. Next, select the default editor for Git to use. Choose the one you like and - click **Next**



Choosing the default editor used by Git

Which editor would you like Git to use?

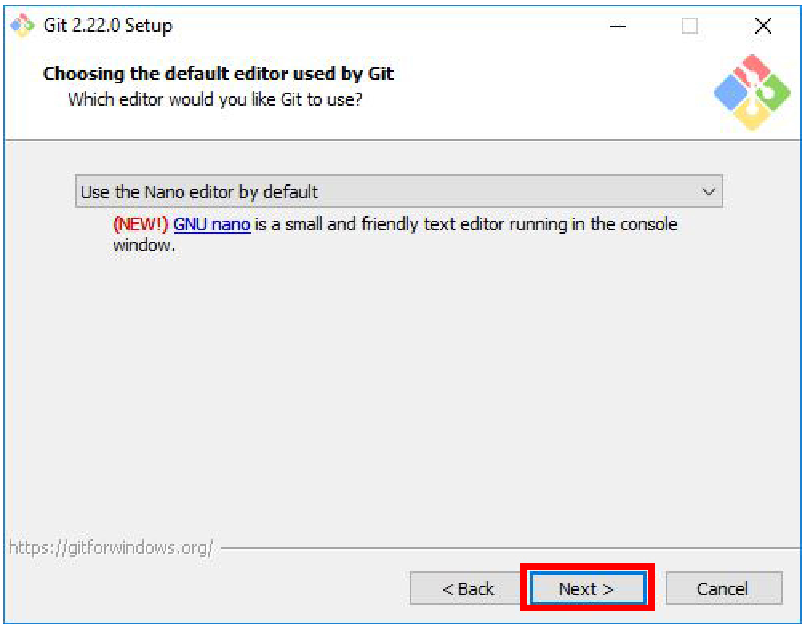
Use Vim (the ubiquitous text editor) as Git's default editor

The Vim editor, while powerful, can be hard to use. Its user interface is unintuitive and its key bindings are awkward.

Note: Vim is the default editor of Git for Windows only for historical reasons, and it is highly recommended to switch to a modern GUI editor instead.

Note: This will leave the 'core.editor' option unset, which will make Git fall back to the 'EDITOR' environment variable. The default editor is Vim - but you may set it to some other editor of your choice.

https://gitforwindows.org/



Choosing the default editor used by Git

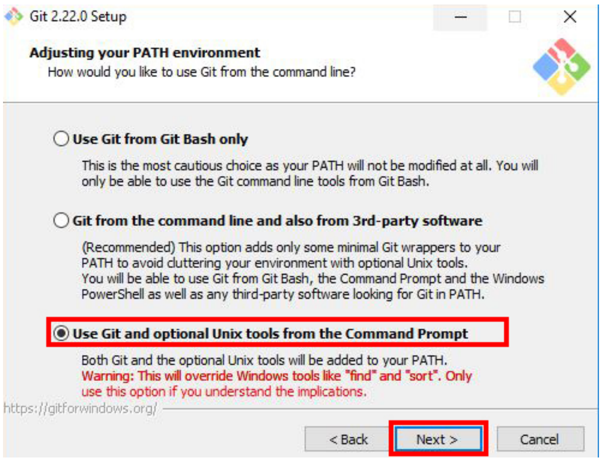
Which editor would you like Git to use?

Use the Nano editor by default

(NEW!) GNU nano is a small and friendly text editor running in the console window.

https://gitforwindows.org/

7. To adjust the PATH environment as preferred and - click **Next**



Adjusting your PATH environment

How would you like to use Git from the command line?

○ **Use Git from Git Bash only**

This is the most cautious choice as your PATH will not be modified at all. You will only be able to use the Git command line tools from Git Bash.

○ **Git from the command line and also from 3rd-party software**

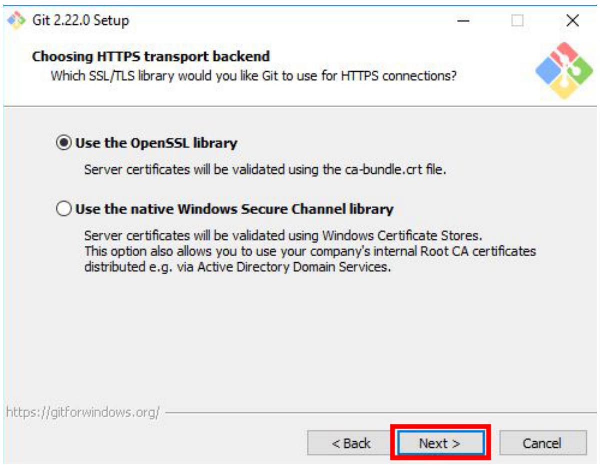
(Recommended) This option adds only some minimal Git wrappers to your PATH to avoid cluttering your environment with optional Unix tools. You will be able to use Git from Git Bash, the Command Prompt and the Windows PowerShell as well as any third-party software looking for Git in PATH.

● **Use Git and optional Unix tools from the Command Prompt**

Both Git and the optional Unix tools will be added to your PATH. Warning: This will override Windows tools like "find" and "sort". Only use this option if you understand the implications.

https://gitforwindows.org/

8. Choose the preferred HTTPS Transport Backend and - click **Next**



Git 2.22.0 Setup

Choosing HTTPS transport backend

Which SSL/TLS library would you like Git to use for HTTPS connections?

● **Use the OpenSSL library**

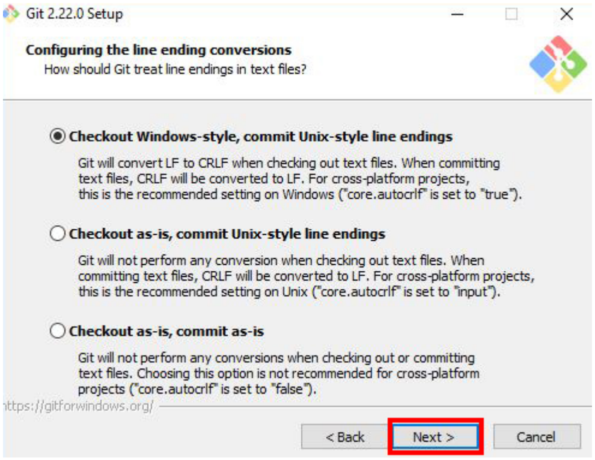
Server certificates will be validated using the ca-bundle.crt file.

○ **Use the native Windows Secure Channel library**

Server certificates will be validated using Windows Certificate Stores.
This option also allows you to use your company's internal Root CA certificates
distributed e.g. via Active Directory Domain Services.

https://gitforwindows.org/

9. Configure the Line Ending Conversions to your preference and - click **Next**



Git 2.22.0 Setup

Configuring the line ending conversions

How should Git treat line endings in text files?

● **Checkout Windows-style, commit Unix-style line endings**

Git will convert LF to CRLF when checking out text files. When committing
text files, CRLF will be converted to LF. For cross-platform projects,
this is the recommended setting on Windows ("core.autocrlf" is set to "true").

○ **Checkout as-is, commit Unix-style line endings**

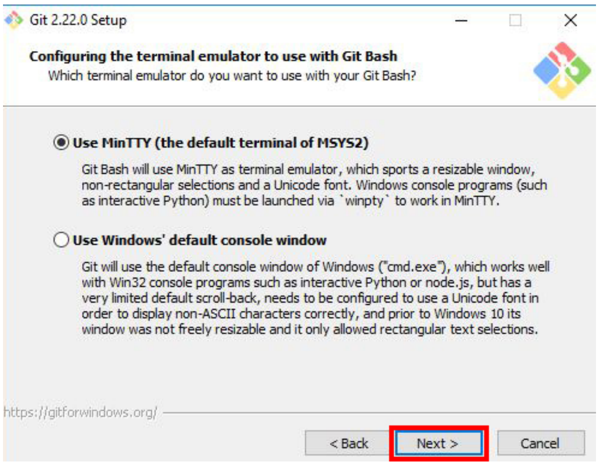
Git will not perform any conversion when checking out text files. When
committing text files, CRLF will be converted to LF. For cross-platform projects,
this is the recommended setting on Unix ("core.autocrlf" is set to "input").

○ **Checkout as-is, commit as-is**

Git will not perform any conversions when checking out or committing
text files. Choosing this option is not recommended for cross-platform
projects ("core.autocrlf" is set to "false").

ttps://gitforwindows.org/

10. Configure the Terminal Emulator to use with Git Bash as preferred and - click **Next**



Git 2.22.0 Setup

Configuring the terminal emulator to use with Git Bash

Which terminal emulator do you want to use with your Git Bash?

● **Use MinTTY (the default terminal of MSYS2)**

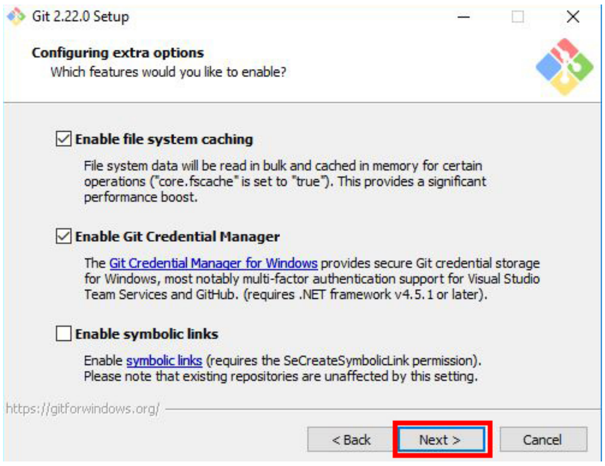
Git Bash will use MinTTY as terminal emulator, which sports a resizable window,
non-rectangular selections and a Unicode font. Windows console programs (such
as interactive Python) must be launched via `winpty` to work in MinTTY.

○ **Use Windows' default console window**

Git will use the default console window of Windows ("cmd.exe"), which works well
with Win32 console programs such as interactive Python or node.js, but has a
very limited default scroll-back, needs to be configured to use a Unicode font in
order to display non-ASCII characters correctly, and prior to Windows 10 its
window was not freely resizable and it only allowed rectangular text selections.

https://gitforwindows.org/

11. Configuring Extra Options as preferred and - click **Next**



Git 2.22.0 Setup

Configuring extra options

Which features would you like to enable?

☑ **Enable file system caching**

File system data will be read in bulk and cached in memory for certain operations ("core.fscache" is set to "true"). This provides a significant performance boost.

☑ **Enable Git Credential Manager**

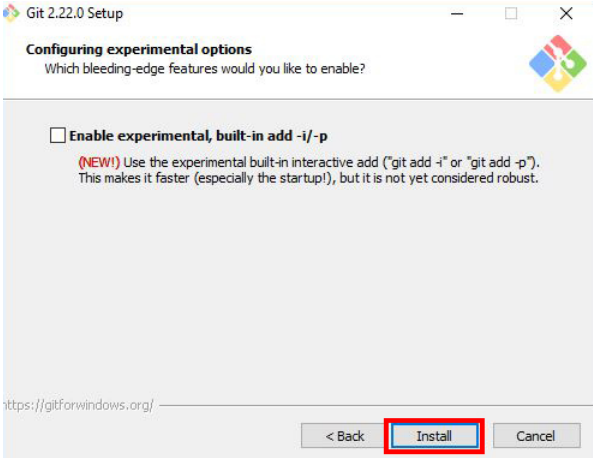
The Git Credential Manager for Windows provides secure Git credential storage for Windows, most notably multi-factor authentication support for Visual Studio Team Services and GitHub. (requires .NET framework v4.5.1 or later).

□ **Enable symbolic links**

Enable symbolic links (requires the SeCreateSymbolicLink permission). Please note that existing repositories are unaffected by this setting.

https://gitforwindows.org/

12. Configuring Extra Options as preferred and - click **Next**



Git 2.22.0 Setup

Configuring experimental options

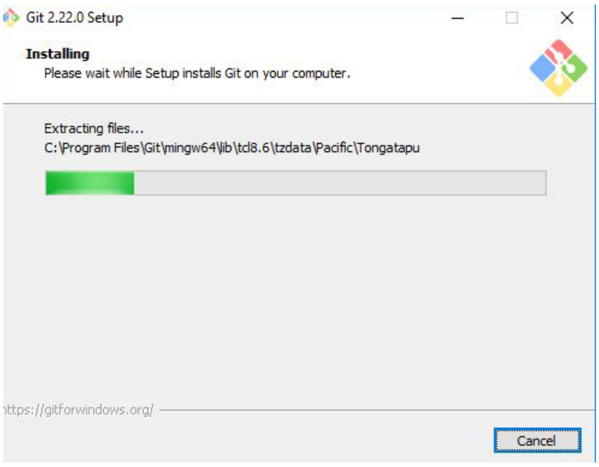
Which bleeding-edge features would you like to enable?

□ **Enable experimental, built-in add -i/-p**

(NEW!) Use the experimental built-in interactive add ("git add -i" or "git add -p"). This makes it faster (especially the startup!), but it is not yet considered robust.

https://gitforwindows.org/

13. Wait for Installation to happen.



Git 2.22.0 Setup

Installing

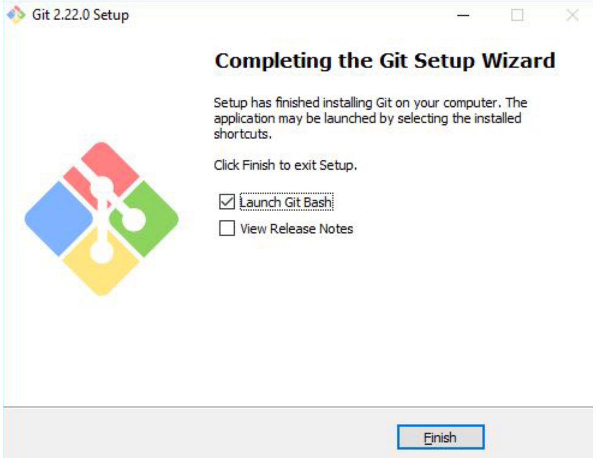
Please wait while Setup installs Git on your computer.

Extracting files...

C:\Program Files\Git\mingw64\lib\tcl8.6\tzdata\Pacific\Tongatapu

https://gitforwindows.org/

14. To complete the Git Setup Wizard - click **Next**



Completing the Git Setup Wizard

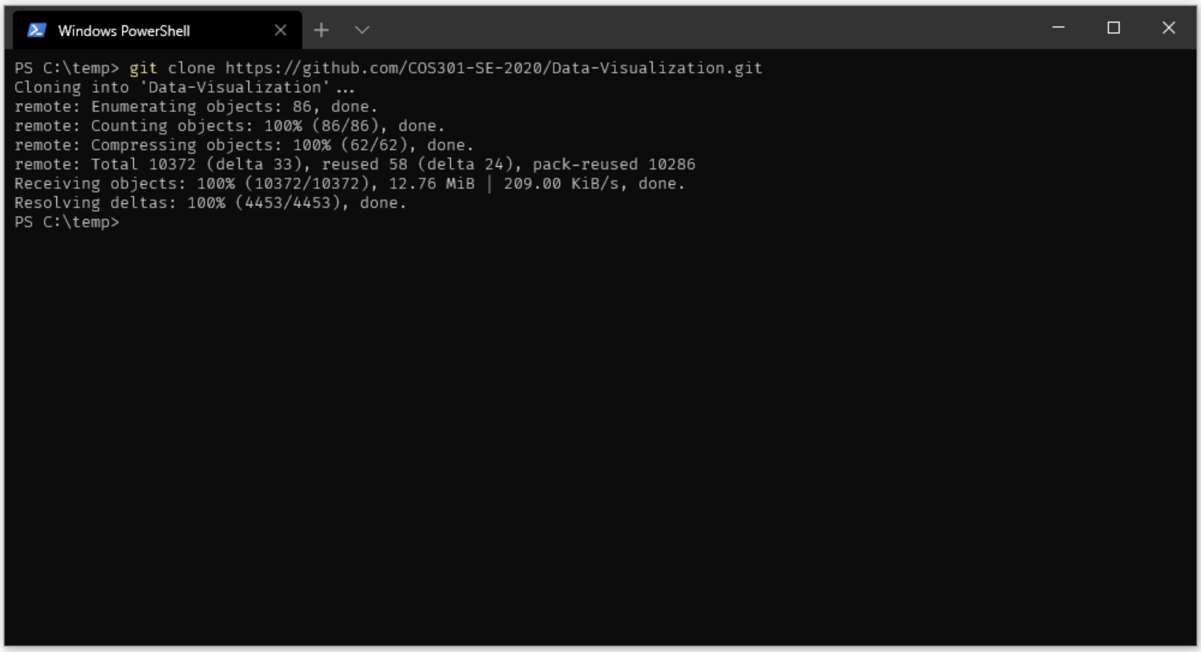
Setup has finished installing Git on your computer. The application may be launched by selecting the installed shortcuts.

Click Finish to exit Setup.

☑ Launch Git Bash

□ View Release Notes

- Clone the repo by creating a new folder calling it any name preferred, in this folder open the terminal and type **git clone *https://github.com/COS301-SE-2020/Data-Visualization.git***



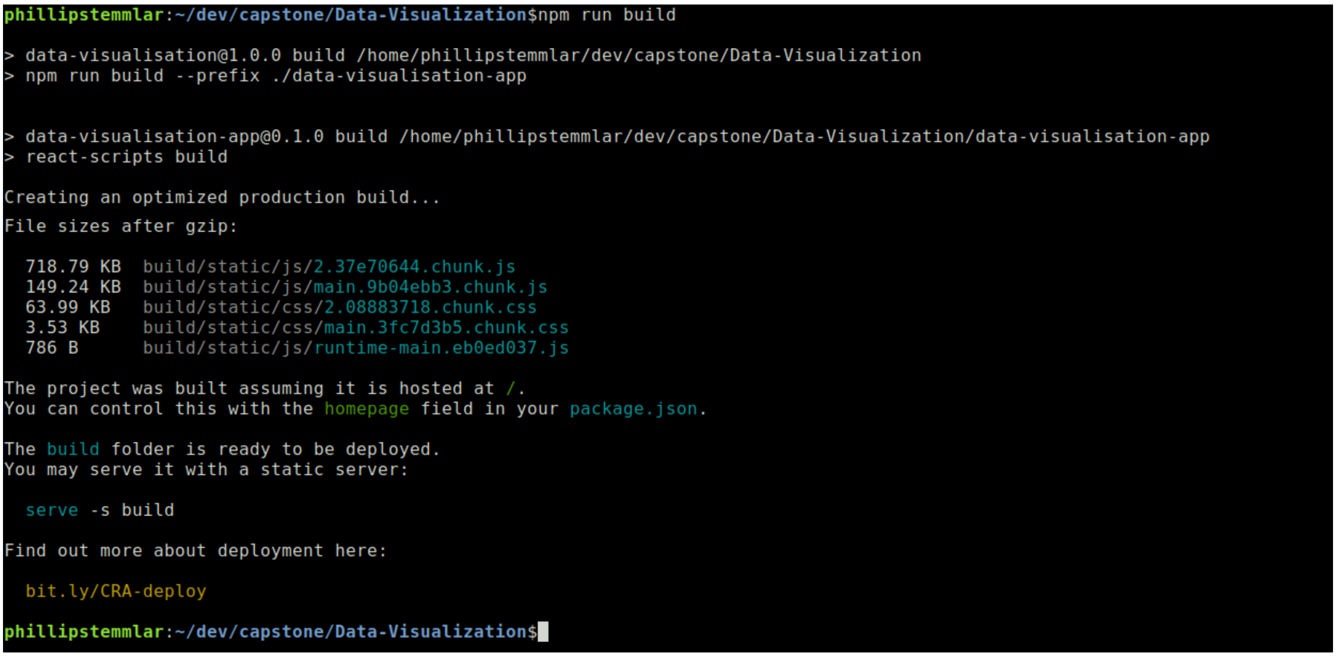
```
PS C:\temp> git clone https://github.com/COS301-SE-2020/Data-Visualization.git
Cloning into 'Data-Visualization'...
remote: Enumerating objects: 86, done.
remote: Counting objects: 100% (86/86), done.
remote: Compressing objects: 100% (62/62), done.
remote: Total 10372 (delta 33), reused 58 (delta 24), pack-reused 10286
Receiving objects: 100% (10372/10372), 12.76 MiB | 209.00 KiB/s, done.
Resolving deltas: 100% (4453/4453), done.
PS C:\temp>
```

- Inside the root directory type in the terminal **npm install** and then **npm run install:front** (These will install all the Dependencies and Development Dependencies packages as stated in the Prerequisites Section.)

4 Deployment/Running

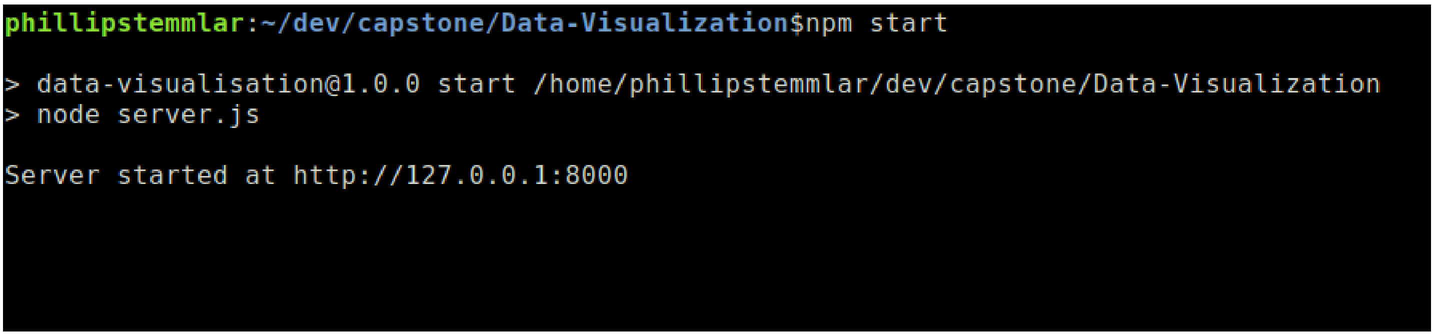
4.1 UNIX systems

(a) First the project must be built. It lets you perform any necessary building/prep tasks for your project. Open the terminal in the root directory of the cloned repository and type: **npm run build**



```
phillipstemmlar:~/dev/capstone/Data-Visualization$npm run build

> data-visualisation@1.0.0 build /home/phillipstemmlar/dev/capstone/Data-Visualization
> npm run build --prefix ./data-visualisation-app


> data-visualisation-app@0.1.0 build /home/phillipstemmlar/dev/capstone/Data-Visualization/data-visualisation-app
> react-scripts build

Creating an optimized production build...
File sizes after gzip:

  718.79 KB  build/static/js/2.37e70644.chunk.js
  149.24 KB  build/static/js/main.9b04ebb3.chunk.js
  63.99 KB   build/static/css/2.08883718.chunk.css
  3.53 KB    build/static/css/main.3fc7d3b5.chunk.css
  786 B      build/static/js/runtime-main.eb0ed037.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  serve -s build

Find out more about deployment here:

  bit.ly/CRA-deploy

phillipstemmlar:~/dev/capstone/Data-Visualization$
```

(b) After npm build has run, and type **npm start** to start the server, the web-application url can now be visisted by going to http://127.0.0.1:8000 in the web-browser

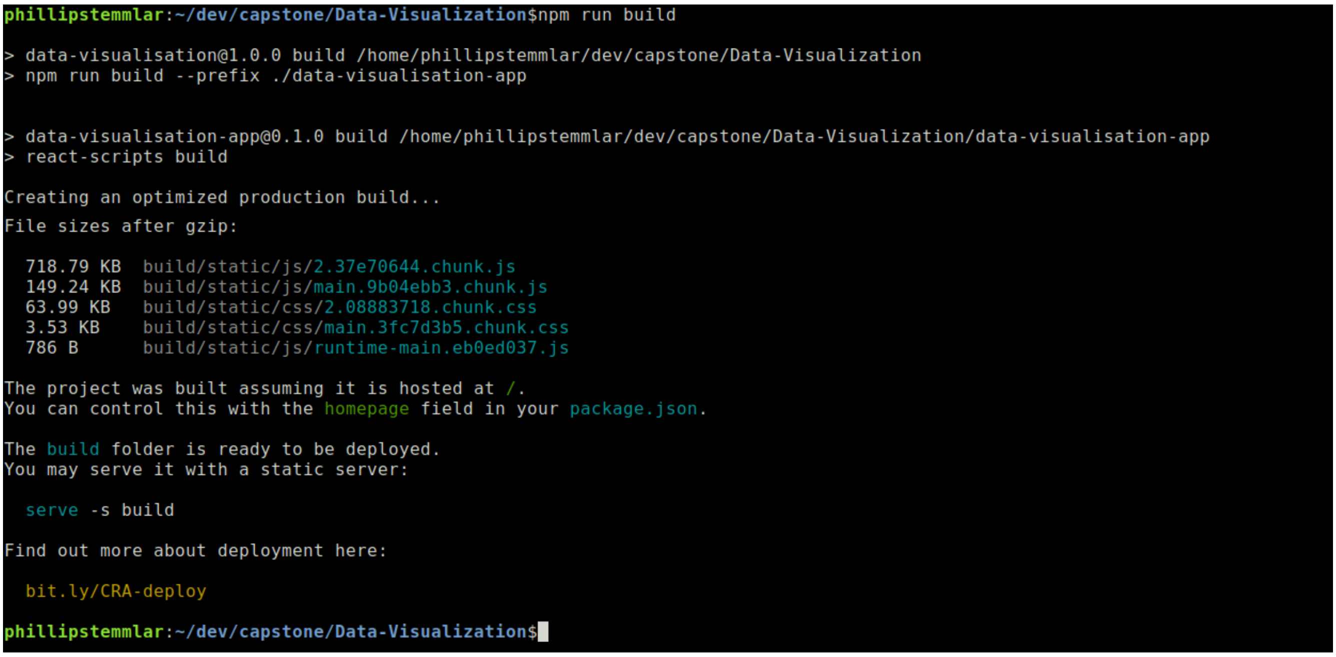


```
phillipstemmlar:~/dev/capstone/Data-Visualization$npm start

> data-visualisation@1.0.0 start /home/phillipstemmlar/dev/capstone/Data-Visualization
> node server.js

Server started at http://127.0.0.1:8000
```

(c) **Click Here** to view our user manual to see how our system works.

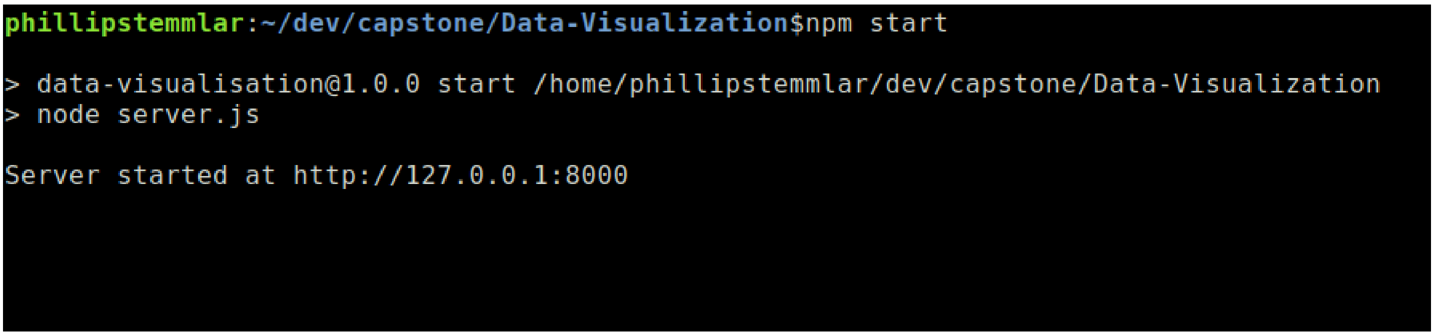
4.2 Windows

1. First the project must be built. It lets you perform any necessary building/prep tasks for your project. Open the command prompt in the root directory of the cloned repository and type: **npm run build**



```
phillipstemmlar:~/dev/capstone/Data-Visualization$npm run build

> data-visualisation@1.0.0 build /home/phillipstemmlar/dev/capstone/Data-Visualization
> npm run build --prefix ./data-visualisation-app


> data-visualisation-app@0.1.0 build /home/phillipstemmlar/dev/capstone/Data-Visualization/data-visualisation-app
> react-scripts build

Creating an optimized production build...
File sizes after gzip:

  718.79 KB  build/static/js/2.37e70644.chunk.js
  149.24 KB  build/static/js/main.9b04ebb3.chunk.js
  63.99 KB   build/static/css/2.08883718.chunk.css
  3.53 KB    build/static/css/main.3fc7d3b5.chunk.css
  786 B      build/static/js/runtime-main.eb0ed037.js

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  serve -s build

Find out more about deployment here:

  bit.ly/CRA-deploy

phillipstemmlar:~/dev/capstone/Data-Visualization$
```

2. After npm build has run, and type **npm start** to start the server, the web-application url can now be visisted by going to http://127.0.0.1:8000 in the web-browser



```
phillipstemmlar:~/dev/capstone/Data-Visualization$npm start

> data-visualisation@1.0.0 start /home/phillipstemmlar/dev/capstone/Data-Visualization
> node server.js

Server started at http://127.0.0.1:8000
```

3. **Click Here** to view our user manual to see how our system works.