

Labwork-1: Setting up Ionic Framework and Developing First App

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Table of Contents

1	Learning Reflection	3
2	Installing NodeJS	3
3	Installing Java.....	5
4	Setting JDK Environment Variables	7
5	Creating a simple Ionic Mobile App	9

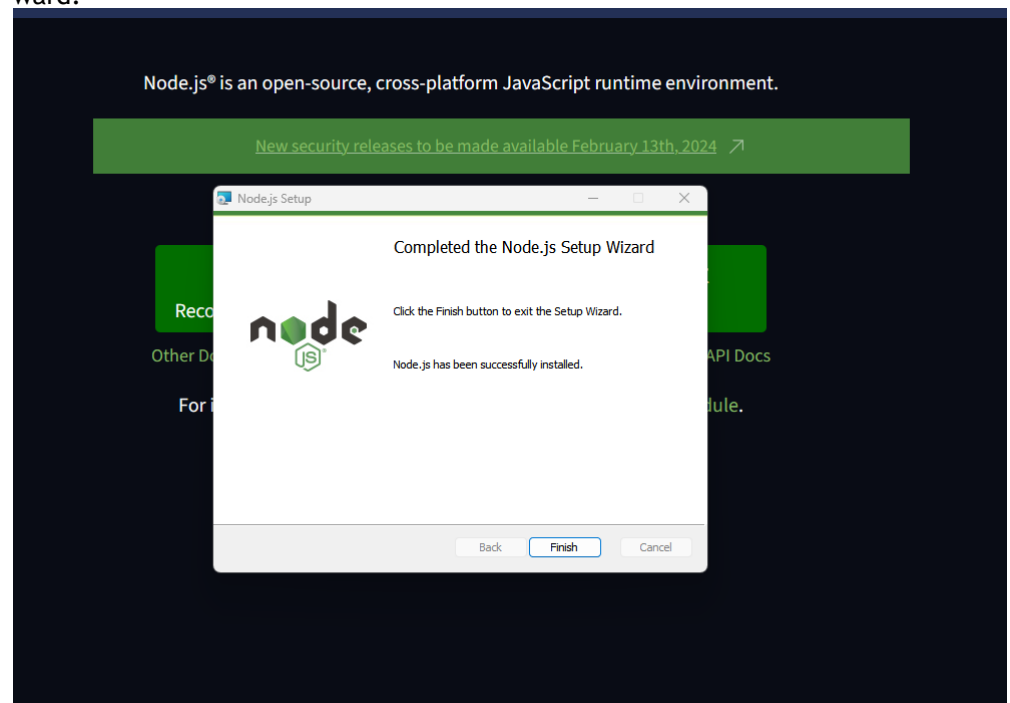
1 Learning Reflection

I watched all the videos required for module 1. One of the videos compared the following frameworks: Flutter, React Native, Ionic and NativeScripts and their best use. The comparison was between parameters such as ecosystem/third-party libraries, popularity, performance, real-world usage, and features. I am definitely more of a practical learner, and I like to learn by doing (and by making mistakes!). I like to keep step-by-step screenshots and tutorials, and I think I could repeat this Lab Work without problems. I have been interested in UX and UI design for quite some time, as I enjoy the intersection of graphic design/web development and psychology, but I never pursued this topic professionally as I feel the space seems quite competitive. Nevertheless, I enjoy this topic so much that I followed some courses on Coursera and EdX, and now also the videos on Udacity required for this module, which are made targeting UX for mobile development. It was very interesting to learn that Ionic is a “hybrid” framework for creating an app on multiple platforms (iOS, Android, Web) with one source code. Since I started learning and studying coding, I see it as a sort of magic that enables me to create what I imagine, just like painting or drawing. Learning how to create my own app would allow me to actually build some of the ideas I got in recent months: a personal finance application to use with my husband for our finances, an application about stolen bicycles, etc.

Following the instructions for the Lab Work was pretty easy and clear; I had to go a bit more in-depth regarding the environment and the Ionic app creation. Using VS Code, which is an IDE I know well, was also great. I did not encounter specific errors or difficulties, but this is only the first module.

2 Installing NodeJS

To install NodeJS, I visited the website <https://nodejs.org/en/>, which is provided in the guide, and downloaded the latest version. This process was quite straightforward.



```
Install Additional Tools for Node.js
Tools for Node.js Native Modules Installation Script

This script will install Python and the Visual Studio Build Tools, necessary
to compile Node.js native modules. Note that Chocolatey and required Windows
updates will also be installed.

This will require about 3 GiB of free disk space, plus any space necessary to
install Windows updates. This will take a while to run.

Please close all open programs for the duration of the installation. If the
installation fails, please ensure Windows is fully updated, reboot your
computer and try to run this again. This script can be found in the
Start menu under Node.js.

You can close this window to stop now. Detailed instructions to install these
tools manually are available at https://github.com/nodejs/node-gyp#on-windows

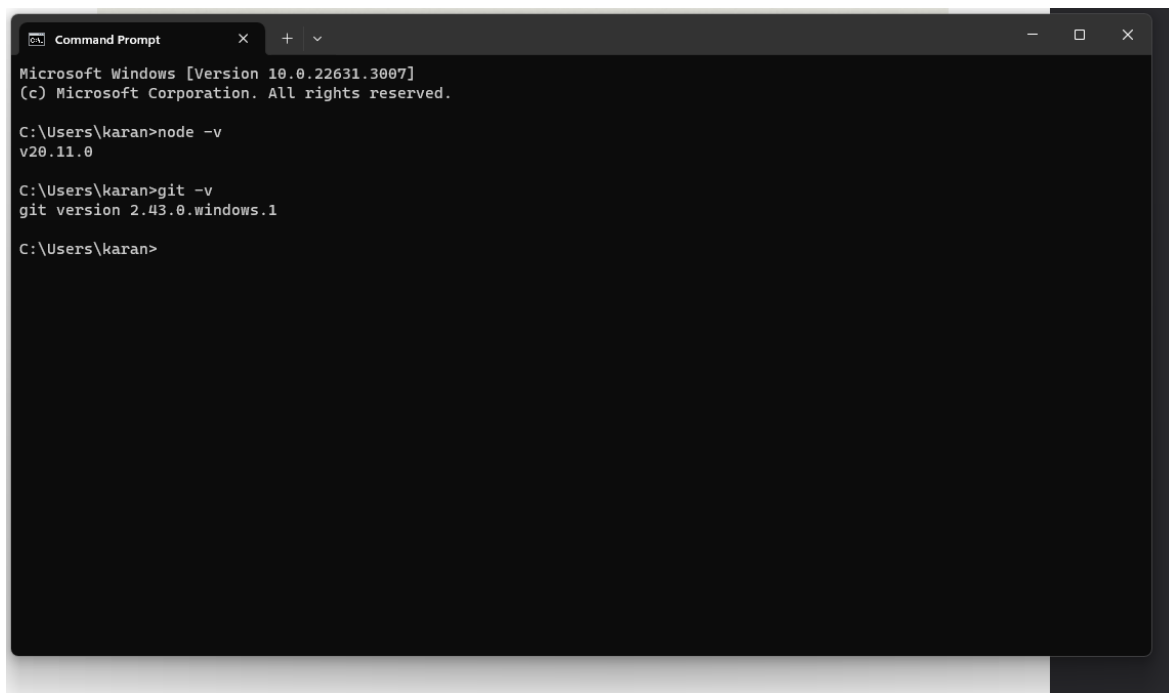
Press any key to continue . . .
```

```
[1239c:0015][2024-02-12T18:40:05] Package Microsoft.Net.4.8.FullRedist is not applicable: The current OS Version '10.0.2631.0' is not in the supported version range '[6.1.1,10.0.17763]'.
[1239c:0015][2024-02-12T18:40:05] Package Microsoft.VisualStudio.NuGet.PowershellBindingRedirect is not applicable: The current OS Version '10.0.22631.0' is not in the supported version range '[6.1,6.2]'.
Warning: [1239c:0015][2024-02-12T18:40:05] No previous catalog found at 'C:\ProgramData\Microsoft\VisualStudio\Packages\Instances\b76a076d\catalog.previous.json'
[1239c:0015][2024-02-12T18:40:05] Shutting down the application with exit code 0
[1239c:0001][2024-02-12T18:40:05] Releasing singleton lock.
[1239c:0001][2024-02-12T18:40:05] Releasing singleton lock succeed.
[1239c:0001][2024-02-12T18:40:05] Releasing singleton lock.
[1239c:0001][2024-02-12T18:40:05] Singleton lock does not exist. Releasing singleton lock skipped.
Warning: [1239c:0022][2024-02-12T18:40:05] No previous catalog found at 'C:\ProgramData\Microsoft\VisualStudio\Packages\Instances\b76a076d\catalog.previous.json'
[1239c:0020][2024-02-12T18:40:05] Status changed to NoUpdate
Warning: [1239c:000f][2024-02-12T18:40:05] Didn't find any channel feed.
[1239c:0001][2024-02-12T18:40:05] Closing the installer with exit code 0
[1239c:0001][2024-02-12T18:40:05] Exit Code: 0
[1239c:0001][2024-02-12T18:40:05] Cleared previous session ID.
[1239c:0001][2024-02-12T18:40:05] Trying to remove channel manifest: C:\Users\karan\AppData\Local\Microsoft\VisualStudio\Packages\Channels\e5023e2a\installChannelManifest.json
[1239c:0001][2024-02-12T18:40:05] Trying to remove product manifest: C:\Users\karan\AppData\Local\Microsoft\VisualStudio\Packages\Channels\e5023e2a\install_catalog.json
Warning: [1239c:0001][2024-02-12T18:40:05] Didn't find any channel feed.
visualstudio2019-workload-vctools has been installed.
visualstudio2019-workload-vctools may be able to be automatically uninstalled.
The upgrade of visualstudio2019-workload-vctools was successful.
Software install location not explicitly set, it could be in package or default install location of installer.

Chocolatey upgraded 19/19 packages.
See the log for details (C:\ProgramData\chocolatey\logs\chocolatey.log).

Upgraded:
- chocolatey-compatibility.extension v1.0.0
- chocolatey-core.extension v1.4.0
- chocolatey-dotnetfx.extension v1.0.1
- chocolatey-visualstudio.extension v1.11.1
- chocolatey-windowsupdate.extension v1.0.5
- dotnetfx v4.8.0.20220524
- KB2919355 v1.0.20160915
- KB2919442 v1.0.20160915
- KB2999226 v1.0.20181019
- KB3033929 v1.0.5
- KB3035131 v1.0.3
- python v3.12.2
- python3 v3.12.2
- python312 v3.12.2
- vc_redist140 v14.38.33135
- vc_redist2015 v14.0.24215.20170201
- visualstudio2019buildtools v16.11.33
```

After ensuring I installed NodeJS correctly, I checked the version using the “cmd” (the Command Prompt) from the search bar. Since I already have git installed, I updated my version. I also already have VS Code installed and up-to-date.



```
Microsoft Windows [Version 10.0.22631.3007]
(c) Microsoft Corporation. All rights reserved.

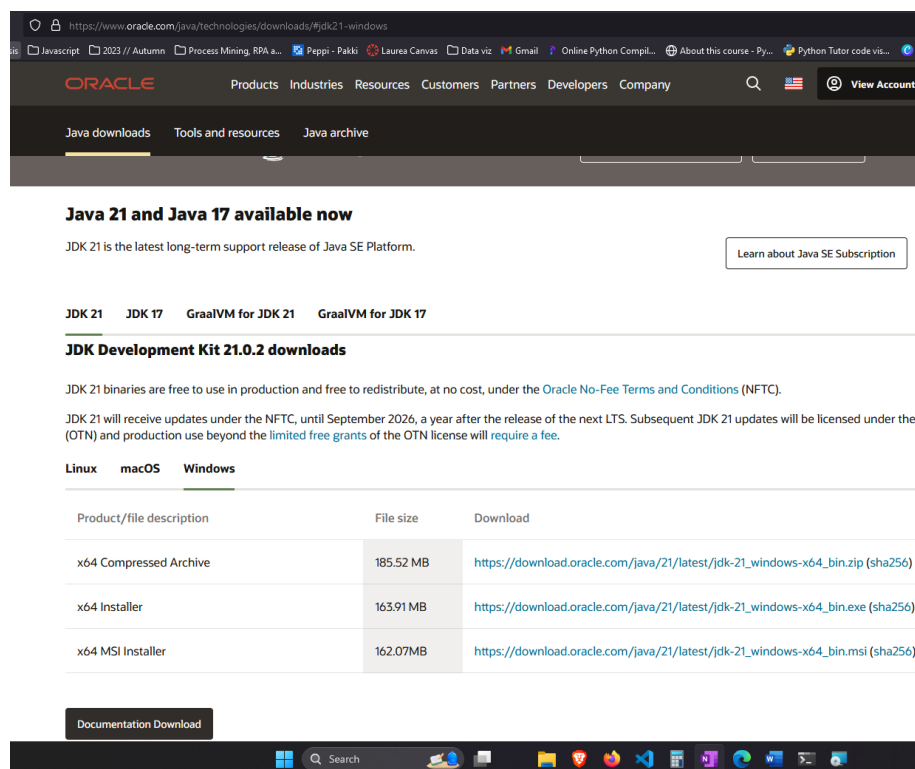
C:\Users\karan>node -v
v20.11.0

C:\Users\karan>git -v
git version 2.43.0.windows.1

C:\Users\karan>
```

3 Installing Java

I installed the newest JAVA version, which is the 21.0.2:



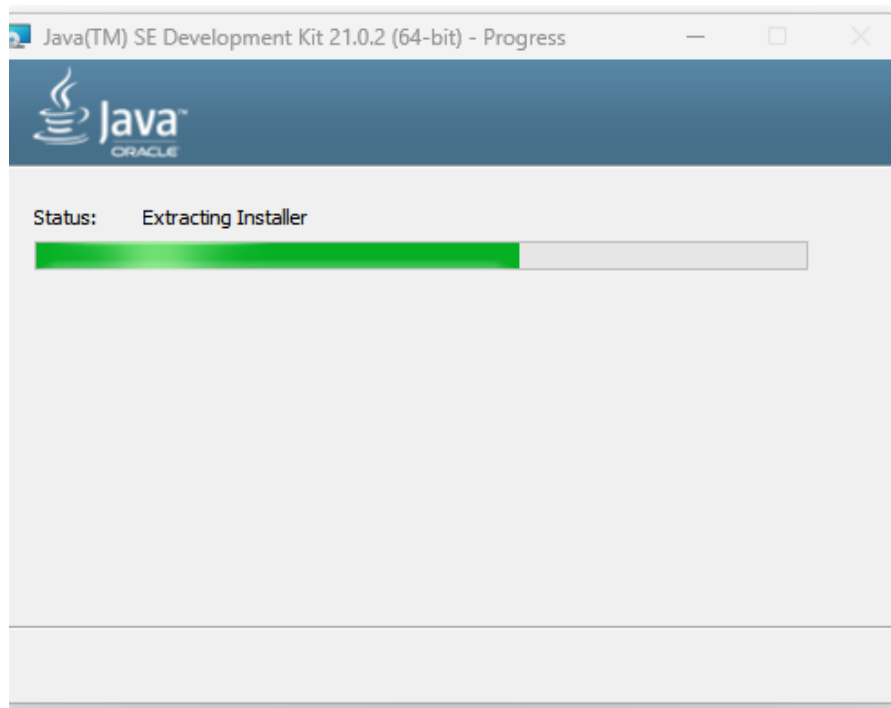
The screenshot shows the Oracle Java 21 download page. The page title is "Java 21 and Java 17 available now". It states that JDK 21 is the latest long-term support release of Java SE Platform. Below this, there are tabs for "JDK 21", "JDK 17", "GraalVM for JDK 21", and "GraalVM for JDK 17". The "JDK 21" tab is selected. Underneath, it says "JDK Development Kit 21.0.2 downloads". It mentions that JDK 21 binaries are free to use in production and free to redistribute, at no cost, under the Oracle No-Fee Terms and Conditions (NFTC). It also states that JDK 21 will receive updates under the NFTC, until September 2026, a year after the release of the next LTS. Subsequent JDK 21 updates will be licensed under the (OTN) and production use beyond the limited free grants of the OTN license will require a fee.

Below this, there are tabs for "Linux", "macOS", and "Windows". The "Windows" tab is selected. It shows a table with three columns: "Product/file description", "File size", and "Download".

Product/file description	File size	Download
x64 Compressed Archive	185.52 MB	https://download.oracle.com/java/21/latest/jdk-21_windows-x64_bin.zip (sha256)
x64 Installer	163.91 MB	https://download.oracle.com/java/21/latest/jdk-21_windows-x64_bin.exe (sha256)
x64 MSI Installer	162.07MB	https://download.oracle.com/java/21/latest/jdk-21_windows-x64_bin.msi (sha256)

At the bottom of the page, there is a "Documentation Download" button.

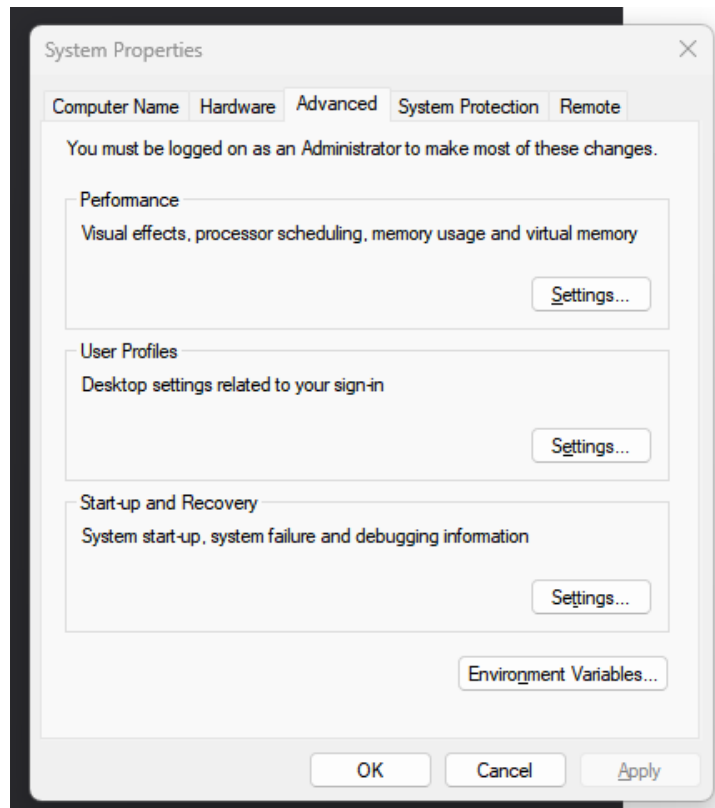
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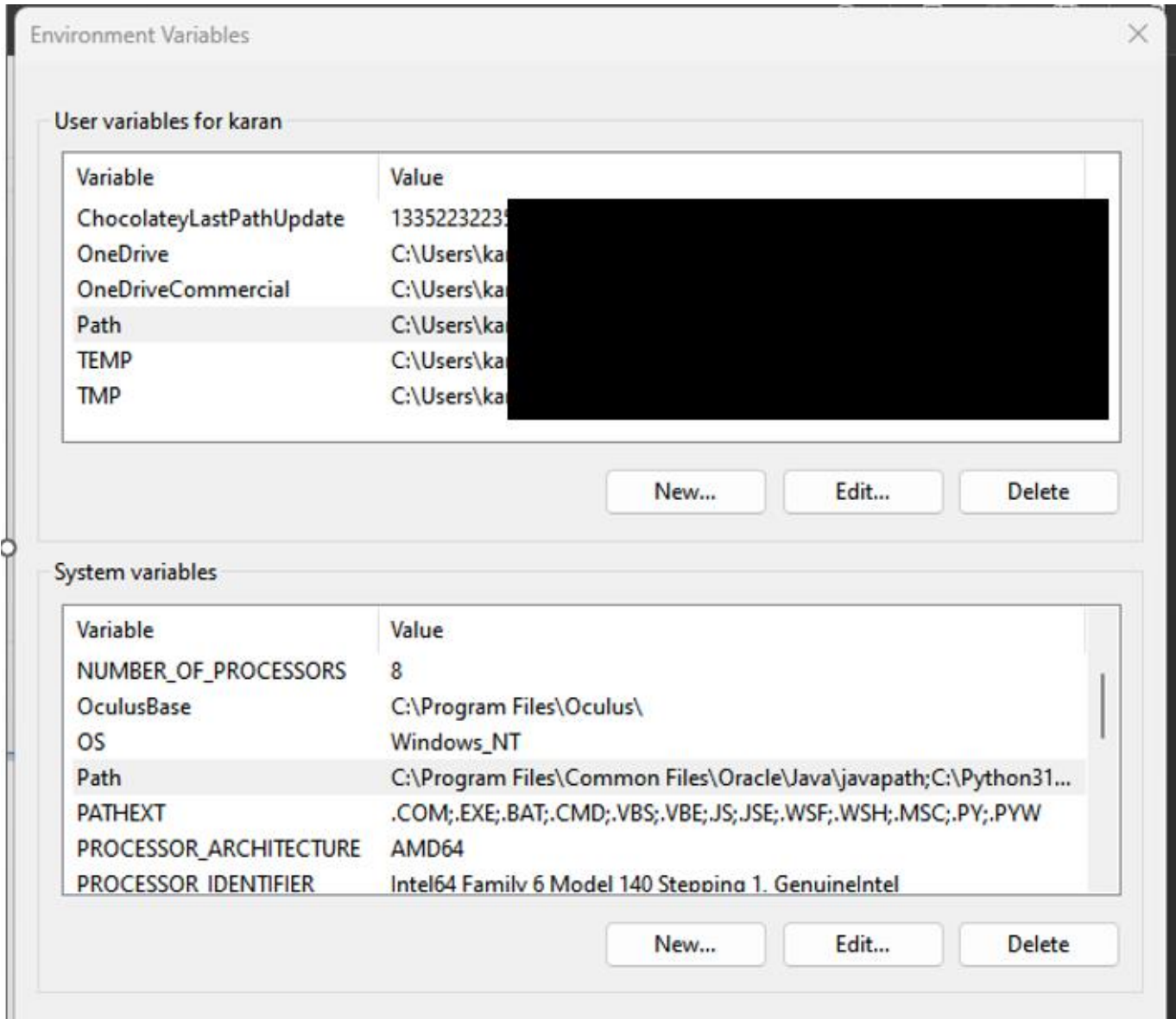


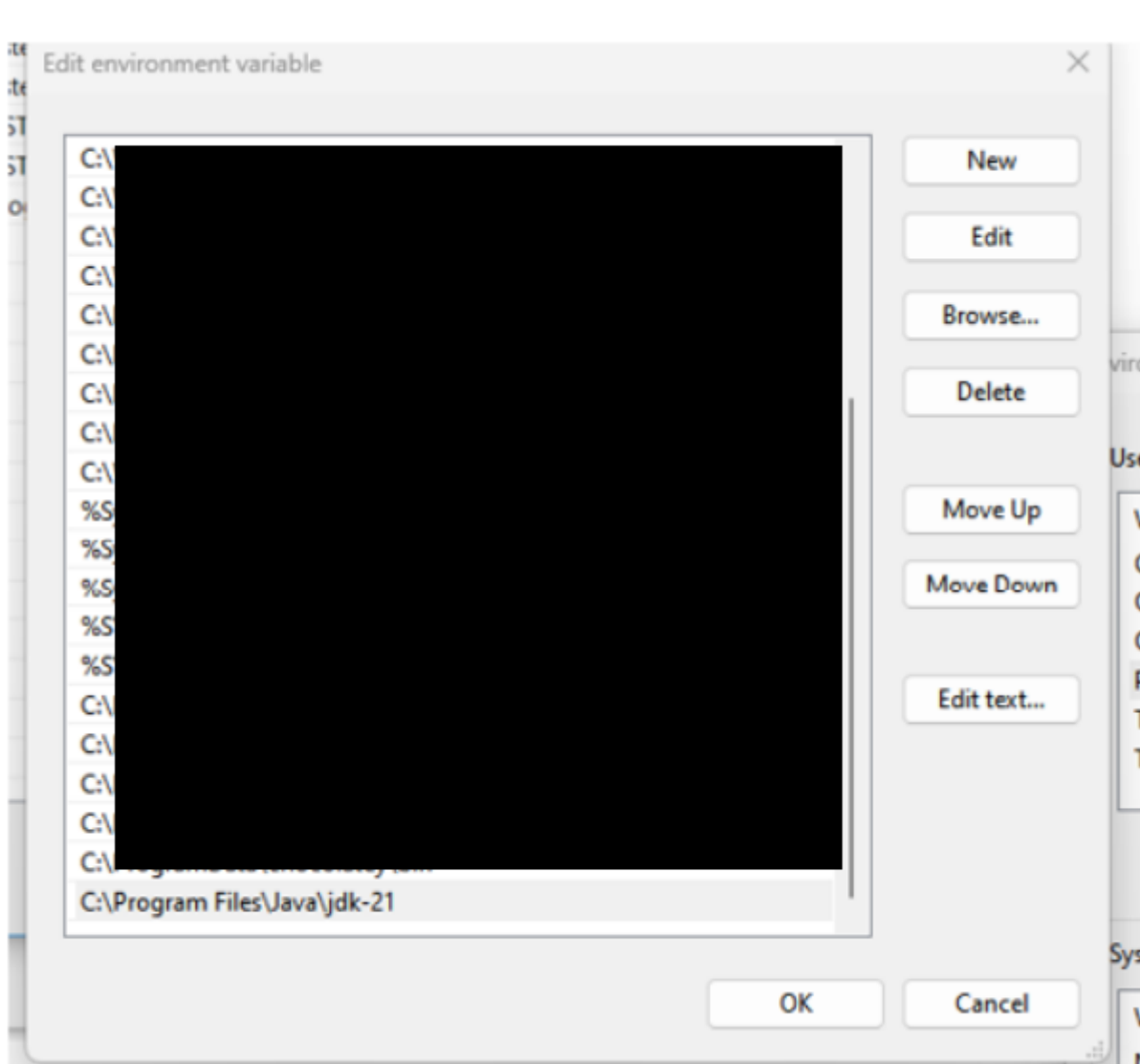
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4 Setting JDK Environment Variables

This process was something I have never done before, but it was quite easy to follow.





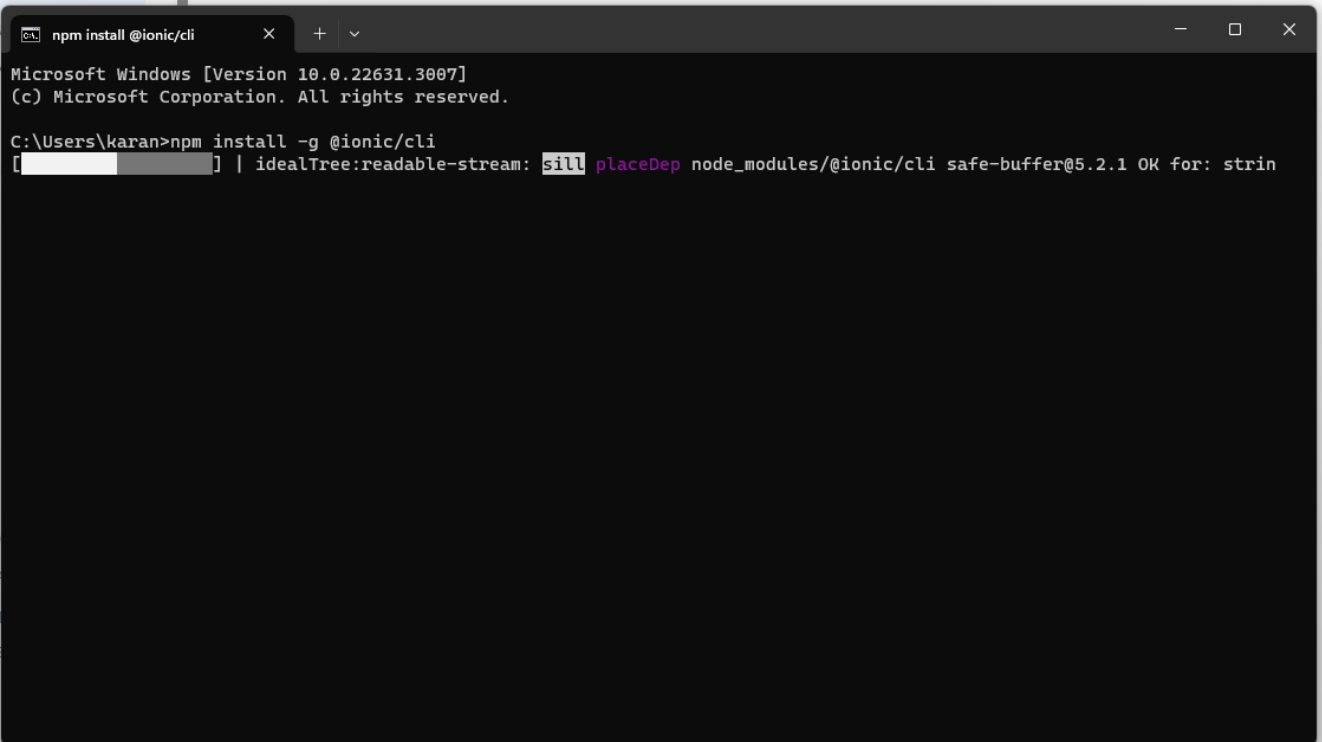


5 Creating a simple Ionic Mobile App

The guide, website and videos on how to install and use Ionic were comprehensive and easy to follow. I am familiar with using the Command Prompt to install programs, so I did not encounter any difficulties.

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Install the Ionic CLI

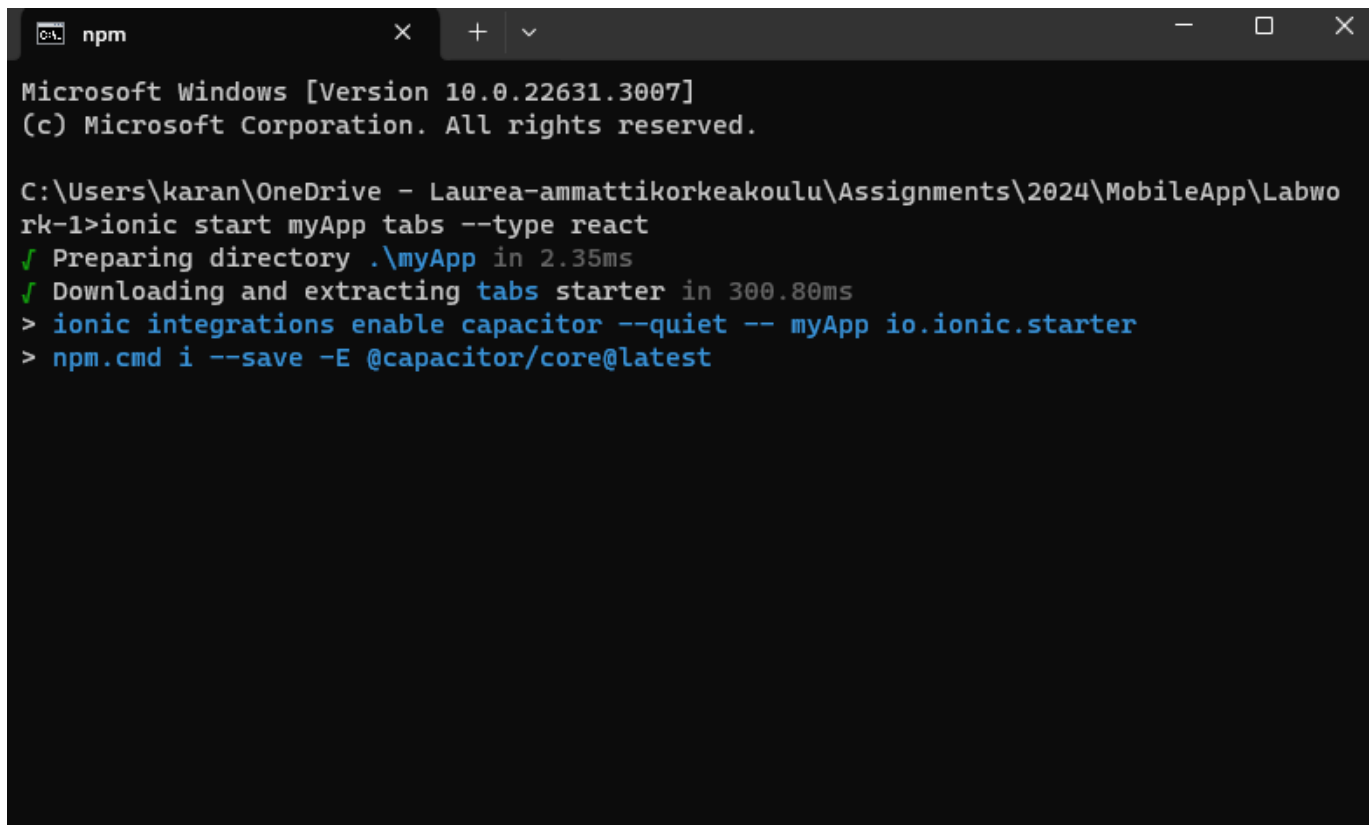


```
npm install @ionic/cli
Microsoft Windows [Version 10.0.22631.3007]
(c) Microsoft Corporation. All rights reserved.

C:\Users\karan>npm install -g @ionic/cli
[Progress Bar] | idealTree:readable-stream: sill placeDep node_modules/@ionic/cli safe-buffer@5.2.1 OK for: strin
```

Start an App

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```
Microsoft Windows [Version 10.0.22631.3007]
(c) Microsoft Corporation. All rights reserved.

C:\Users\karan\OneDrive - Laurea-ammattikorkeakoulu\Assignments\2024\MobileApp\Labwork-1>ionic start myApp tabs --type react
✓ Preparing directory .\myApp in 2.35ms
✓ Downloading and extracting tabs starter in 300.80ms
> ionic integrations enable capacitor --quiet -- myApp io.ionic.starter
> npm.cmd i --save -E @capacitor/core@latest
```

```
npm i
found 0 vulnerabilities
> npm.cmd i --save -E @capacitor/haptics @capacitor/app @capacitor/keyboard @capacitor/status-bar

added 4 packages, and audited 756 packages in 5s

155 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
> capacitor.cmd init myApp io.ionic.starter --web-dir dist
✓ Creating capacitor.config.ts in C:\Users\karan\OneDrive - Laurea-ammattikorkeakoulu\Assignments\2024\MobileApp\Labwork-1\myApp in 4.23ms
[success] capacitor.config.ts created!

Next steps:
https://capacitorjs.com/docs/getting-started#where-to-go-next
[OK] Integration capacitor added!

Installing dependencies may take several minutes.



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Ionic Enterprise, platform and solutions for teams by Ionic

    Powerful library of native APIs
    A supercharged platform for teams

Learn more: https://ion.link/enterprise



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> npm.cmd i

up to date, audited 756 packages in 2s

155 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
> git.exe init
Initialized empty Git repository in C:/Users/karan/OneDrive - Laurea-ammattikorkeakoulu/Assignments/2024/MobileApp/Labwork-1/myApp/.git/

Join the Ionic Community! ❤️

Connect with millions of developers on the Ionic Forum and get access to live events, news updates, and more.

? Create free Ionic account? (y/N) cc|
```

```
C:\WINDOWS\system32\cmd. X + v

create mode 100644 ionic.config.json
create mode 100644 package-lock.json
create mode 100644 package.json
create mode 100644 public/favicon.png
create mode 100644 public/manifest.json
create mode 100644 src/App.test.tsx
create mode 100644 src/App.tsx
create mode 100644 src/components/ExploreContainer.css
create mode 100644 src/components/ExploreContainer.tsx
create mode 100644 src/main.tsx
create mode 100644 src/pages/Tab1.css
create mode 100644 src/pages/Tab1.tsx
create mode 100644 src/pages/Tab2.css
create mode 100644 src/pages/Tab2.tsx
create mode 100644 src/pages/Tab3.css
create mode 100644 src/pages/Tab3.tsx
create mode 100644 src/setupTests.ts
create mode 100644 src/theme/variables.css
create mode 100644 src/vite-env.d.ts
create mode 100644 tsconfig.json
create mode 100644 tsconfig.node.json
create mode 100644 vite.config.ts

Your Ionic app is ready! Follow these next steps:

- Go to your new project: cd .\myApp
- Run ionic serve within the app directory to see your app in the browser
- Run ionic capacitor add to add a native iOS or Android project using Capacitor
- Generate your app icon and splash screens using cordova-res --skip-config --copy
- Explore the Ionic docs for components, tutorials, and more: https://ion.link/docs
- Building an enterprise app? Ionic has Enterprise Support and Features:
https://ion.link/enterprise-edition

C:\Users\karan\OneDrive - Laurea-ammattikorkeakoulu\Assignments\2024\MobileApp\Labwork-1>cd .\myApp

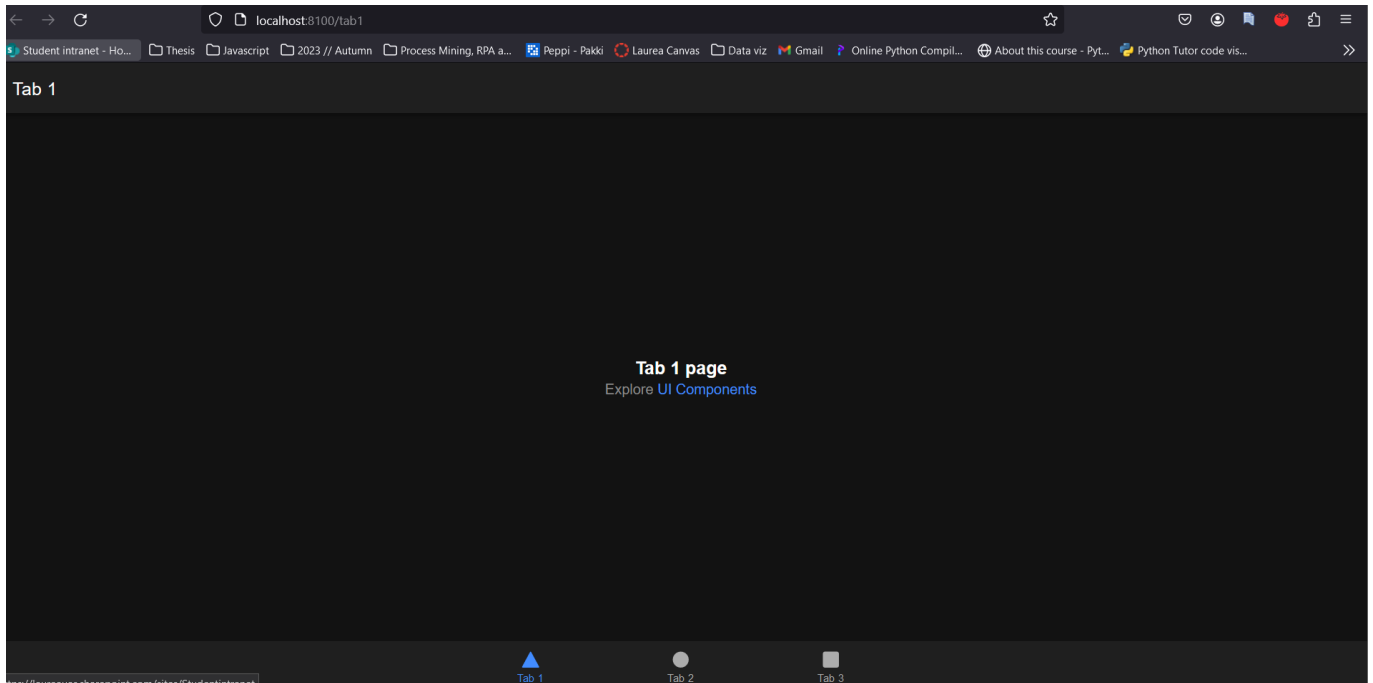
C:\Users\karan\OneDrive - Laurea-ammattikorkeakoulu\Assignments\2024\MobileApp\Labwork-1\myApp>ionic serve
> vite.cmd --host=localhost --port=8100
[vite] → Local: http://localhost:8100/
[vite] → press h + enter to show help

[INFO] Development server running!

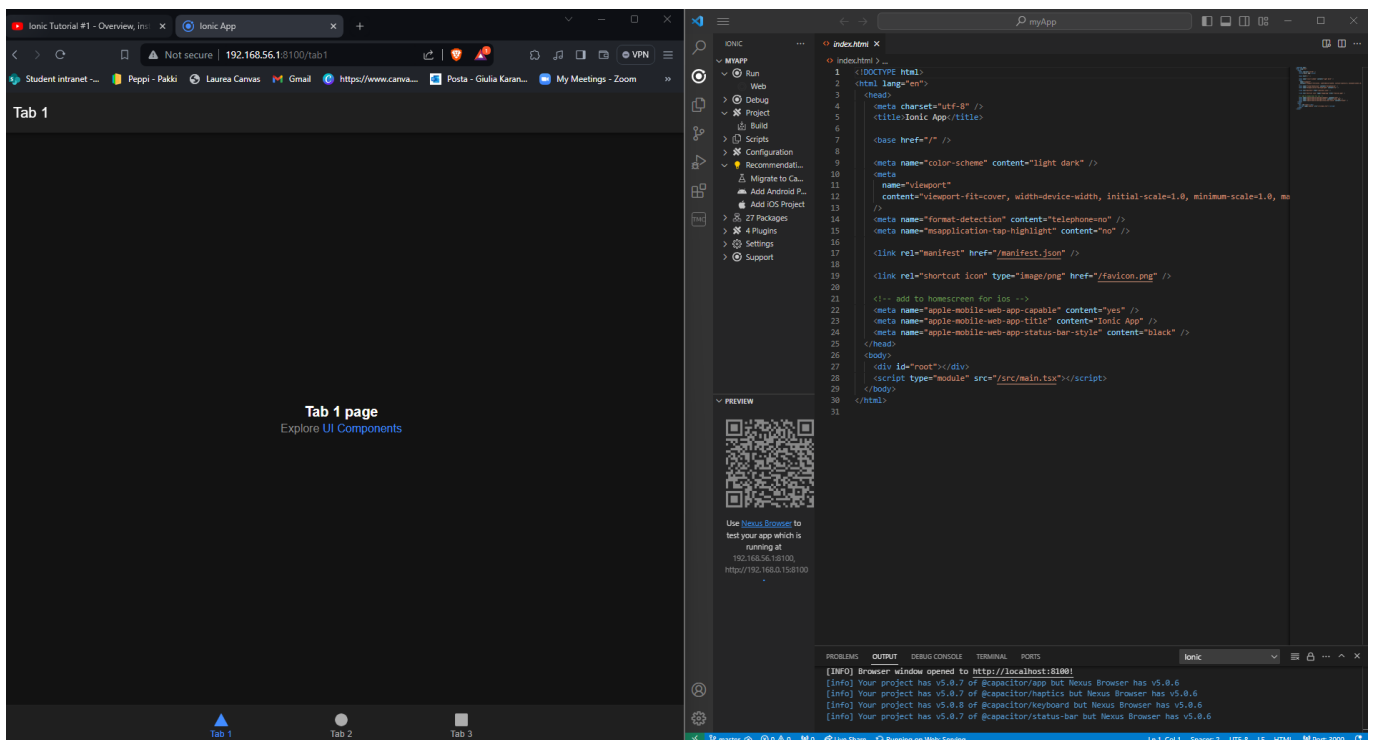
Local: http://localhost:8100

Use Ctrl+C to quit this process

[INFO] Browser window opened to http://localhost:8100!
```



After creating the app with the “Tab” layout, and after following the video on YouTube “Ionic Tutorial 1”, I opened VS Code, and downloaded the Ionic extension for the IDE.



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References

Electronic sources

Academind (2019). Which one is best for you? Flutter, React Native, Ionic or NativeScript? [YouTube video]. [Accessed 07.2.2024]. Available: <https://www.youtube.com/watch?v=PKRXbLnfXXk>

Rathod, P. (2024). Configure Mobile App Development Environment. HANDS-ON LAB-WORK-1. [pdf document]. [Accessed 07.2.2024].

Alves, P. (2021). Ionic Tutorial #1 - Overview, installation and creating the project. [YouTube video]. [Accessed 12.2.2024]. Available: <https://youtu.be/5Gj4Y8zvl-s>