

# Guide to React Native Development Environment Setup and Creating New Project

## Introduction

React Native is a popular framework that allows developers to build mobile apps for both iOS and Android using a single codebase in JavaScript or TypeScript. This guide will walk you through setting up a React Native development environment and creating a new project using Windows and Android development OS. You will learn about the system requirements, how to install the necessary tools, configure your settings, and create your first project running on an Android simulator.

## Materials

- Windows 10 or 11 computer
- Minimum of 16GB of RAM
- Wi-Fi

## Tools

- Node.js
- JDK17
- React Native CLI
- Android Studio
- npm (Node Package Manager)
- Visual Studio Code

## Step-by-step instructions

To set up a React Native development environment using the React Native CLI, you need to install some tools and dependencies. Here's a simple step-by-step guide to help you set it up on Windows:

## Node.js

- **Download and Install**

1. Go to the official site of **Node.js** (<https://nodejs.org/en/download/package-manager>)
2. Go to the **Prebuilt Installer Tab**, select the latest version of LTS on the **drop-down menu**, then click the **Download Node.js v20.18.0** button.

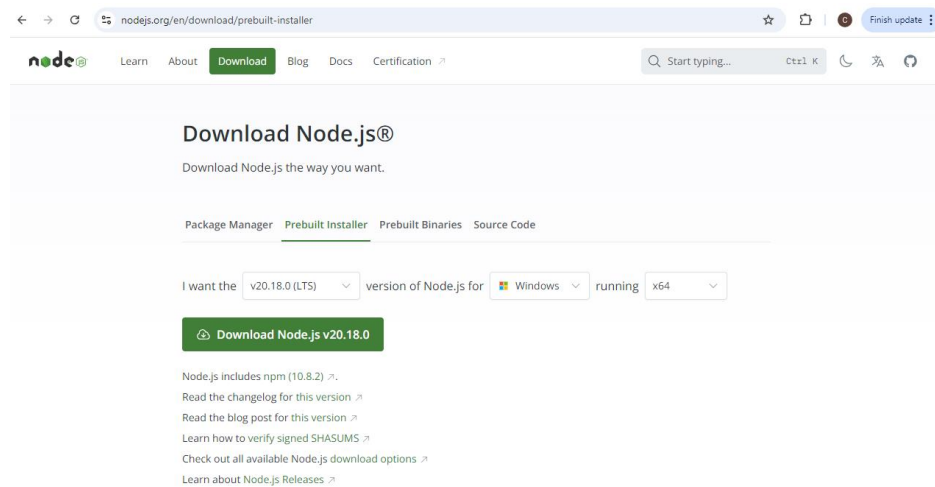


Figure 1: Download button

Source: Adapted from [1]

3. Wait for the download to **complete**.

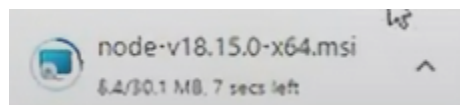


Figure 2: Downloading Node.js file

Source: Adapted from [2]

4. The **Setup window** will pop up, click **Next**.



Figure 3. Setup window  
Source: Adapted from [2]

5. Tick the box to **accept the license agreement** and click **Next**.



Figure 4: End-User Agreement  
Source: Adapted from [2]

6. Install the file to the **folder of your choice**. If you want to install it in a different folder, click **Change**. Otherwise, click **Next**

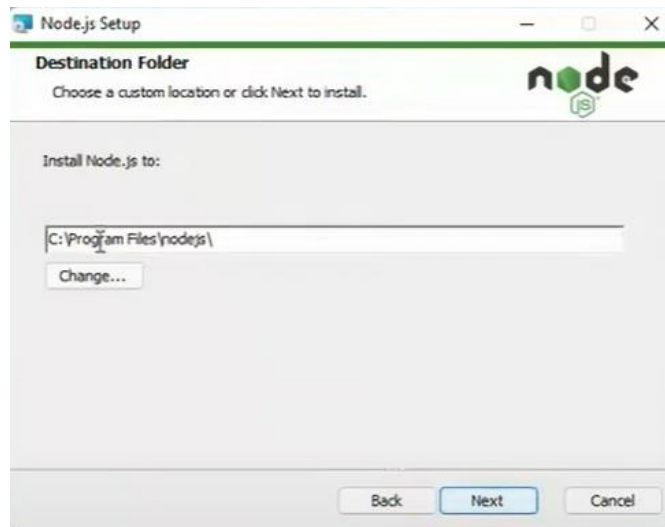


Figure 5: Destination Folder

Source: Adapted from [2]

7. Click on **Install** to start the installation of Node.js.

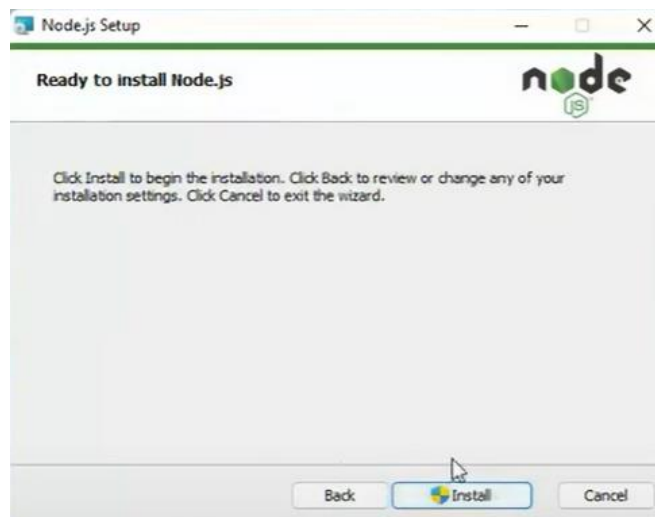


Figure 6: Installation

Source: Adapted from [2]

8. **Wait** for the installation to finish. This may take a few minutes. Once complete, click **"Finish."**



Figure 7. Setup window  
Source: Adapted from [2]

## Troubleshooting

1. **Compatibility Issues:** If your Node.js needs a specific version, Create the required version .nvmrc file in your folder.
2. **Installation Failures:** If installations failed, clear the npm cache and try checking the errors or re installing Node.js.

## JDK 17

### Step 1: Install JDK

1. Go to the official site of **JDK17**. <https://www.oracle.com/java/technologies/downloads/>
2. Go to **JDK17 tab**.

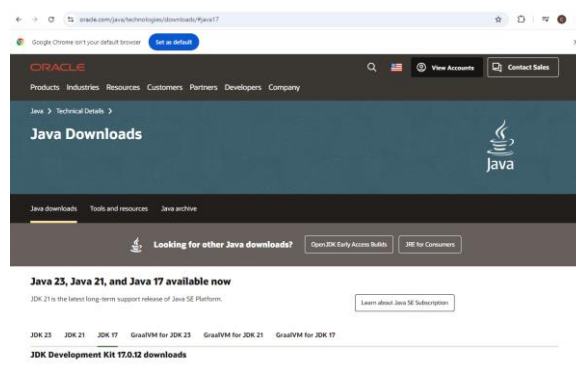


Figure 8: JDK Download  
Source: Adapted from [3]

3. For the **Window System**, click the **Windows** tab and download the **x64 Installer**.

Linux	macOS	Windows
Product/file description	File size	Download
x64 Compressed Archive	172.87 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.zip">https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.zip</a> ( sha256)
x64 Installer	153.92 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.exe">https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.exe</a> ( sha256)
x64 MSI Installer	152.67 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.msi">https://download.oracle.com/java/17/latest/jdk-17_windows-x64_bin.msi</a> ( sha256)

Figure 9. JDK17 for Windows

Source: Adapted from[3]

4. Wait for the download to **Complete**.

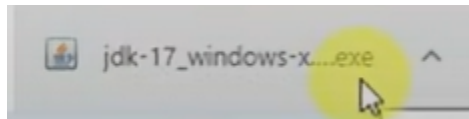


Figure 10: Downloading JDK17 file

Source: Adapted from [4]

5. The **Setup window** will pop up, click **Next**.



Figure 11: JDK17 Setup Window

Source: Adapted from [4]

6. **Install the file** to the folder of your choice. If you want to install it in a different folder, click **Change**. Otherwise, click **Next**.



Figure 12: Destination Folder

Source: Adapted from [4]

7. **Wait** for the installation to finish. This may take a few minutes. Once **complete**, click **Close**.



Figure 13: Installation Finished

Source: Adapted from [4]

## Step 2: Set up JAVA\_HOME Environment Variable

1. Open **File Explorer**.
2. Right-click on **This PC** and select **Properties**.

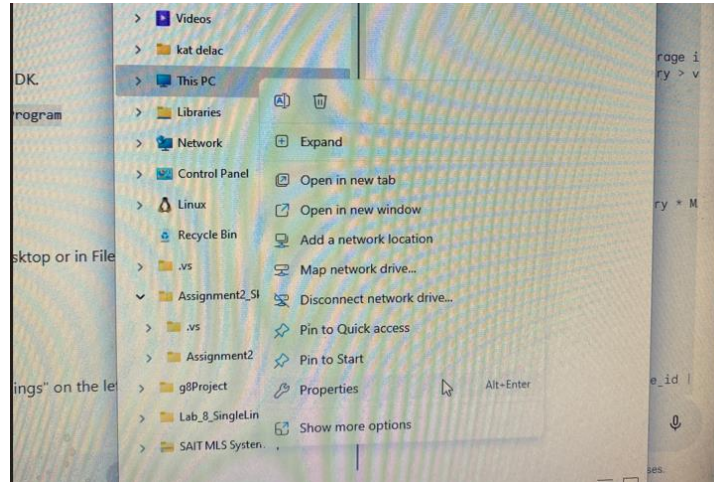


Figure 14: System Properties  
Source: Screenshot by Author

3. Click on **Advance System Settings** to open the **System Properties Window** and click on **Environment Variables**.

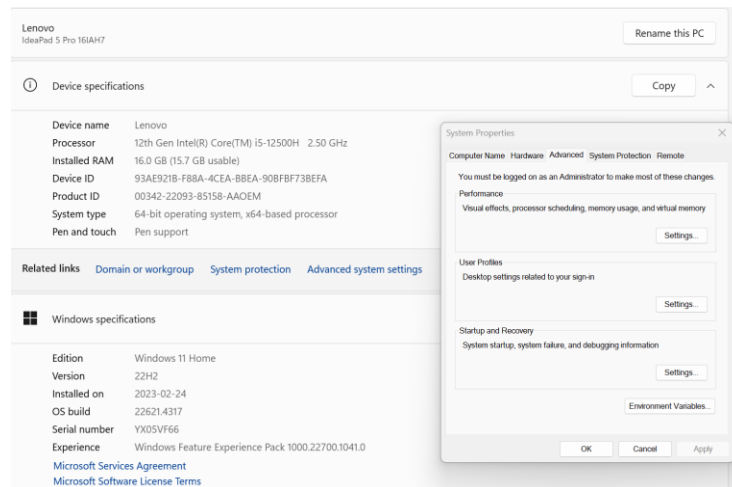


Figure 15: Advance Settings  
Source: Screenshot by Author



4. In the **Environment Variable Window**, click on the **New** button.

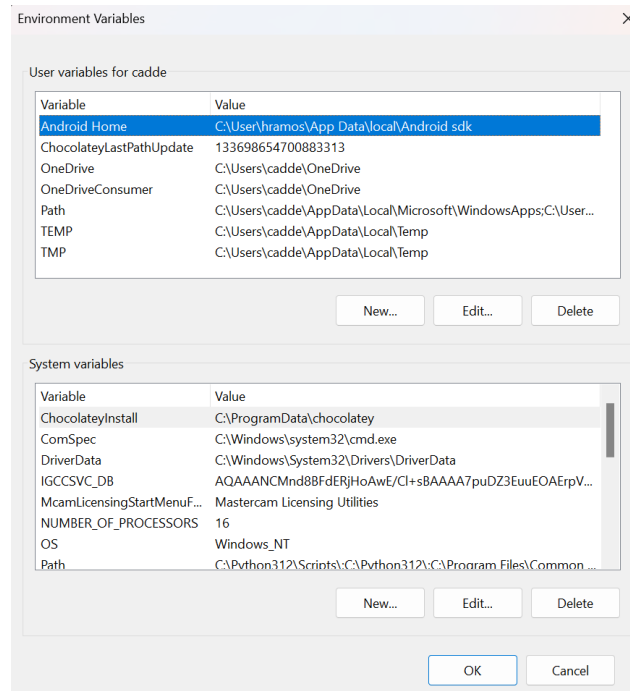


Figure 16: Environment Variable Window

Source: Screenshot by Author

### Step 3: Update the JDK 17 path Variables

1. In **Variable Name**, enter **JAVA\_HOME**, and enter the **path** to your JDK installation (e.g., c: \Program Files\Java\jdk-11.0.x). Click **OK**.

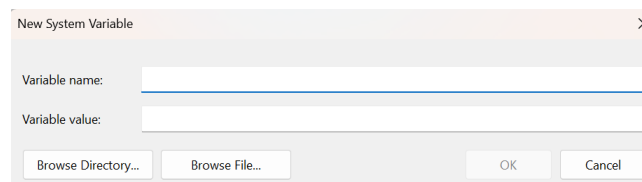


Figure 17: New System Variable Window

Source: Screenshot by Author

2. In the **Environment Variables** window, select the path under **System Variables**, and click the **Edit** button.

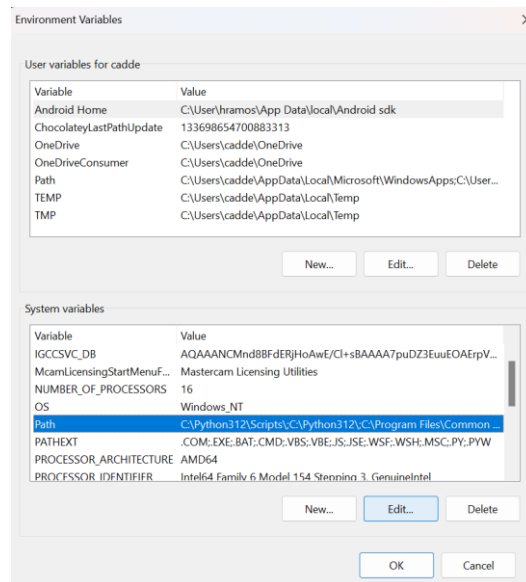


Figure 18: JDK Environment Variables  
Source: Screenshot by Author

3. Click **New** button, type **%JAVA\_HOME%\bin**, then click **OK** to save.

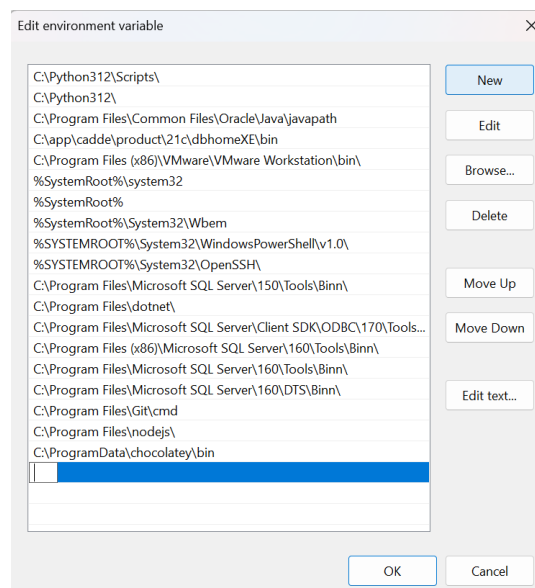


Figure 19: Editing Path Window  
Source: Screenshot by Author

## Troubleshooting

1. Compatibility Issues: If your JDK17 needs a specific version, ensure you use the correct version.
2. Installation Failures: If installations fail, make sure your path directory has no special characters or spaces and that you meet the minimum requirement of installing JDK17.

## Android

### Step 1: Download Android Studio

1. Go to the official site of **Android Studio**. <https://developer.android.com/studio>

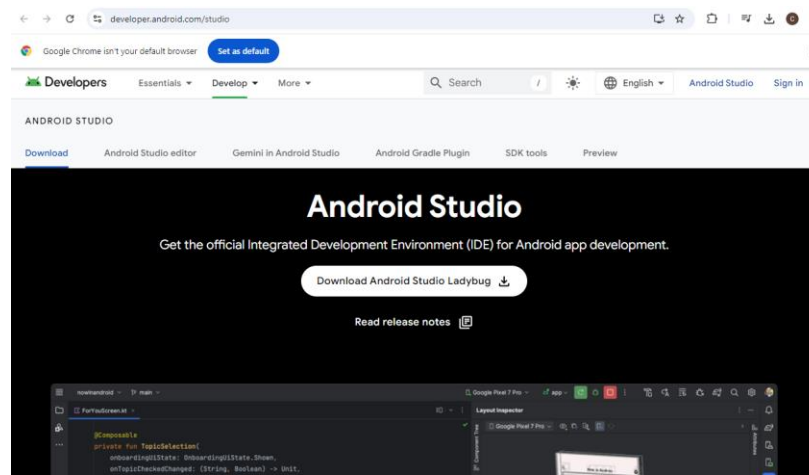


Figure 20: Android Website

Source: Adapted from [6]

2. Wait for the download to **complete**.

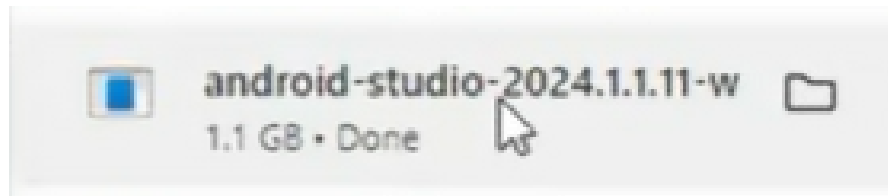


Figure 21: Downloading Android file

Source: Adapted from [6]

3. The **Configuration Settings** window will pop up. **Install the file** to the folder of your choice. If you want to install it in a different folder, click **Change**. Otherwise, click **Next**.

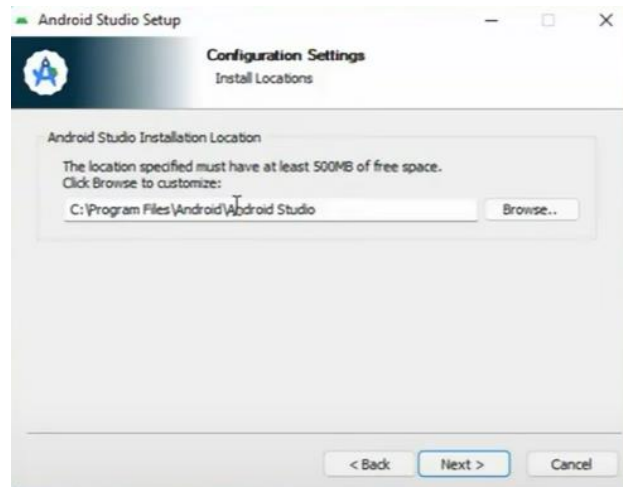


Figure 22: Configuration Settings  
Source: Adapted from [6]

4. **Wait** for the installation to finish. This may take a few minutes. Once **complete**, click **Close**.



Figure 23: Completing Android Studio Setup  
Source: Adapted from [6]

- Click on the **More Actions** menu on the **Home Screen** and select **Virtual Device Manager** on the drop-down menu.

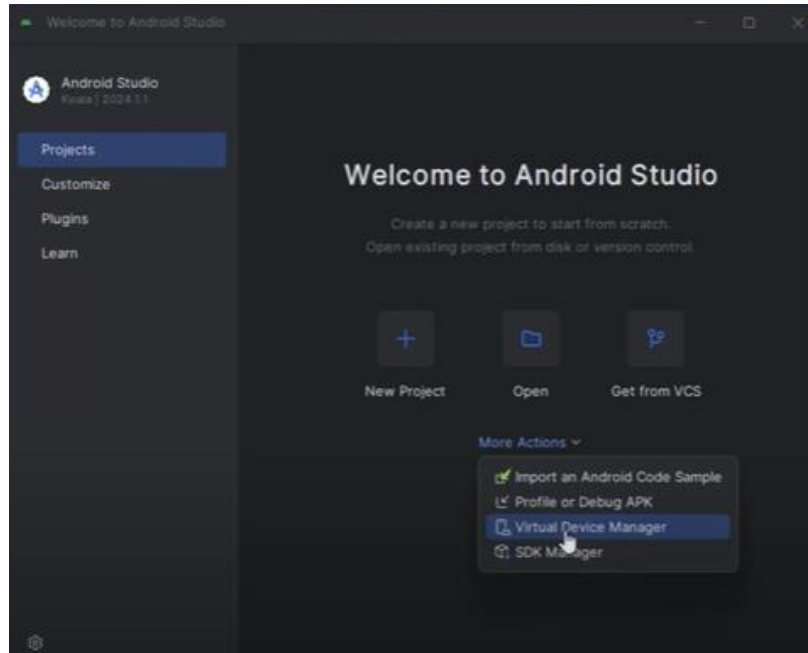


Figure 24: Welcome Android Studio I

Source: Adapted from [6]

- Create your **Virtual Design** by selecting your choice under **Category** (e.g., Phone) and **Name** (e.g., Medium Phone), then click **Next**.

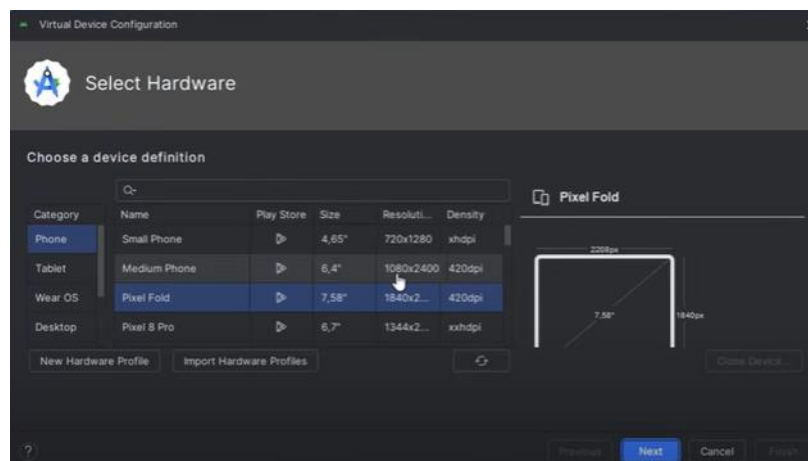


Figure 25: Select Hardware

Source: Adapted from [6]

7. Return to the **Home Screen** again and select **SDK Manager** from the drop-down menu. Check the boxes for the following options on the tab, then click **OK**.

### SDK Platforms tab

1. Under Android 15.0 ("VanillaIceCream")
  - Google Play ARM 64 v8a System Image
2. Under Android 14.0 ("UpsideDownCake")
  - Android SDK Platform 34
  - Intel x86 Atom\_64 System Image or Google APIs Intel x86 Atom System Image

### SDK Tools tab

1. Under Android SDK Build-Tools 35
  - 34.0.0

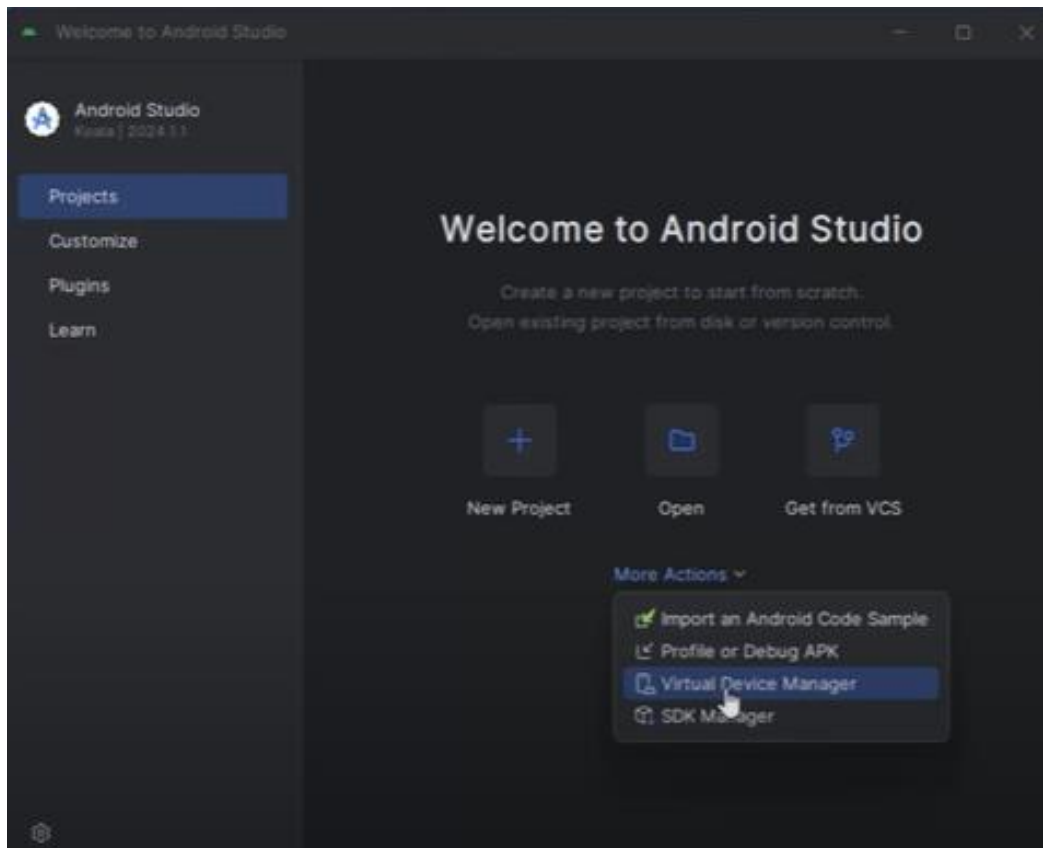


Figure 26: Welcome to Android Studio II

Source: Adapted from [6]

## Step 2: Update Android path variables

1. Open the **Control Panel** by pressing **Windows icon + S**, then click the **Control Panel**, click the **User Account**, click the **User Account** again, then click the **Change my Environment Variables**. Under User Variables, click the **New** button.

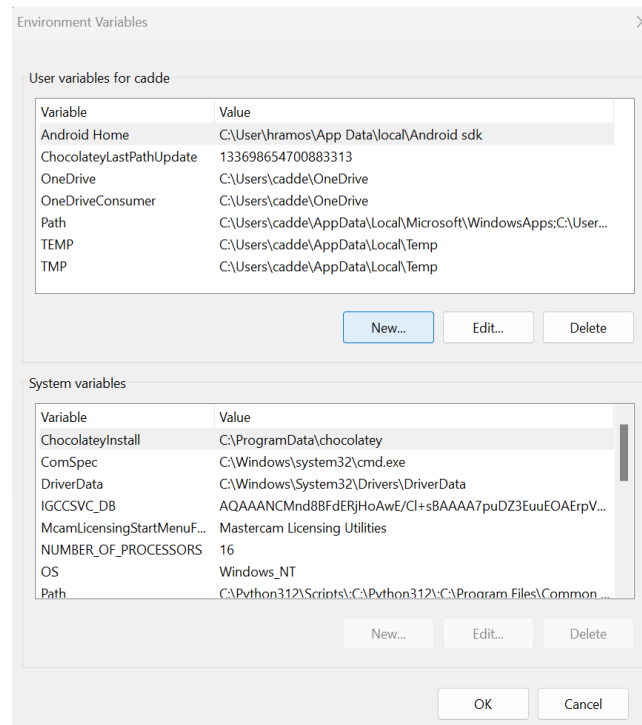


Figure 27: Android Environment Variables

Source: Screenshot by Author

2. In **Variable Name**, enter **ANDROID\_HOME** and the **path** to your Android installation (e.g., C:\Users\cadde\AppData\Local\Android\Sdk). Click **OK**.

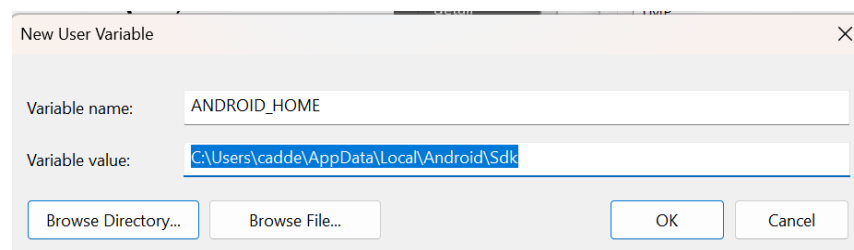


Figure 28: ANDROID\_HOME Variables

Source: Screenshot by Author

- To verify if **ANDROID\_HOME** has been successfully added, open **PowerShell** by pressing **Windows icon + X** then **Terminal** then type **Get-ChildItem -Path Env:\**.

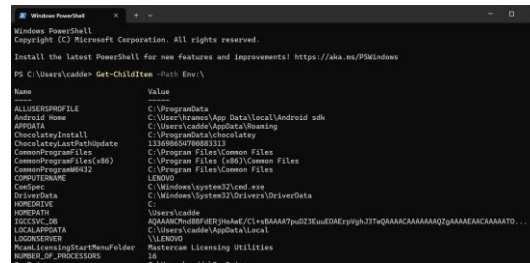


Figure 29: Get-ChildItem -Path Env:\.

Source: Screenshot by Author

- To add Platform tools to Path, open Control Panel by pressing Windows icon + S then Control Panel. Click the **User Account**, click the **User Account** again, then click the **Change my Environment Variables**, click Path, click Edit, click New then add the path to platform tools to the list

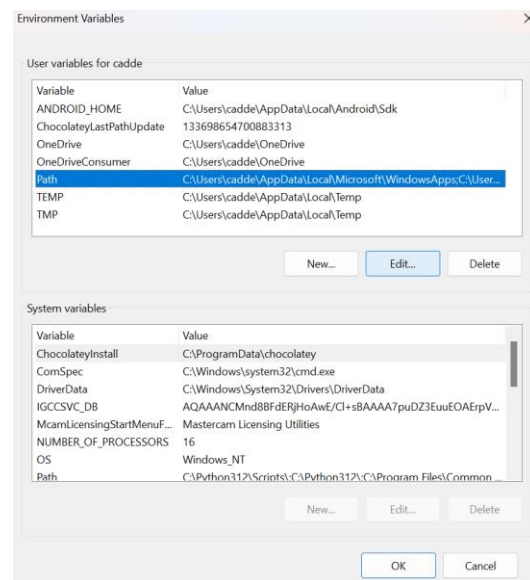


Figure 30: Android Environment Variables

Source: Screenshot by Author

## Troubleshooting

- Emulator Issues:** If your Android emulator doesn't start, install the system image for the virtual device and create a new one.
- Installation Issues:** If installations fail, check the system's minimum requirements for downloading the Android Studio version you need.

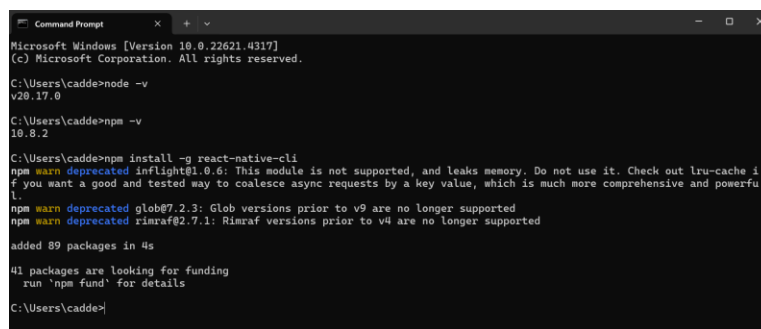


## React Native CLI

1. Open the **Command Prompt** by pressing the **Windows icon + S**, then click the command prompt, and type `npm install -g react-native-cli` to install **React Native CLI**.

## Creating a New React Native Project

1. Open the **Command Prompt** by pressing the **Windows icon + S**, then click command prompt. Type `npx react-native init + your folder name (e.g., Type npx react-native init CPRG303F)`



```
Microsoft Windows [Version 10.0.22621.4317]
(c) Microsoft Corporation. All rights reserved.

C:\Users\cadde>node -v
v20.17.0

C:\Users\cadde>npm -v
10.8.2

C:\Users\cadde>npm install -g react-native-cli
npm warn deprecated inflight@1.0.6: This module is not supported, and leaks memory. Do not use it. Check out lru-cache if
you want a good and tested way to coalesce async requests by a key value, which is much more comprehensive and powerfu
l.
npm warn deprecated glob@7.2.3: Glob versions prior to v9 are no longer supported
npm warn deprecated rimraf@2.7.1: Rimraf versions prior to v4 are no longer supported

added 89 packages in 4s

41 packages are looking for funding
  run 'npm fund' for details

C:\Users\cadde>
```

Figure 31: New Folder Name  
Source: Screenshot by Author

2. Open Android Studio, Click the New Project

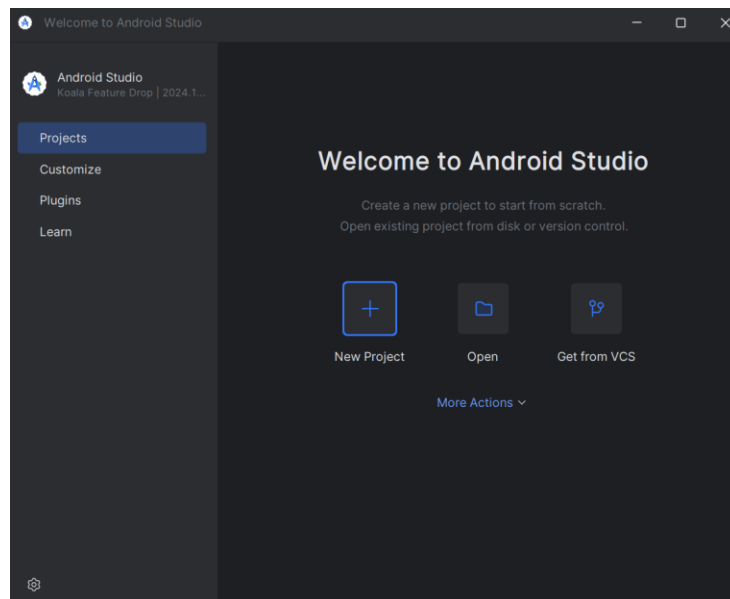


Figure 32: Creating New Project  
Source: Screenshot by Author

3. Type the name of the project you want under **Name**, select the folder where you want to store your project under **Save Location**, then click the **Finish** button.

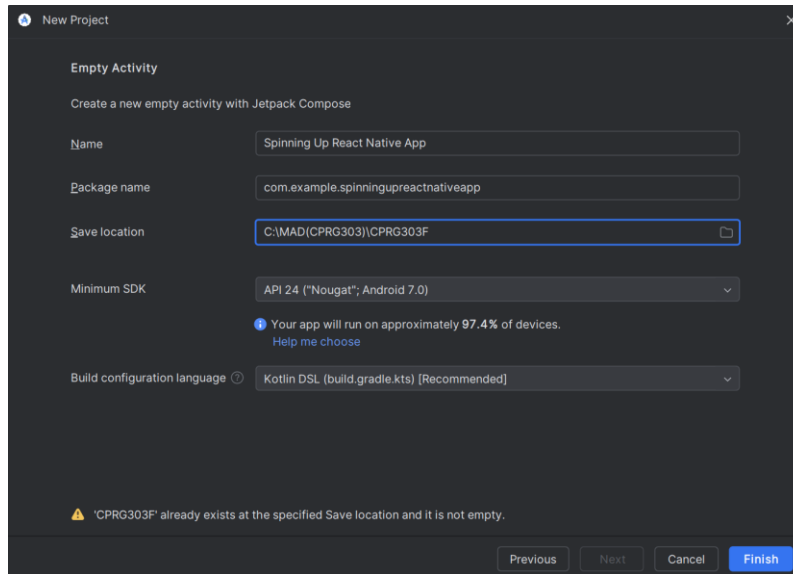


Figure 33: New Project Name

Source: Screenshot by Author

4. You can now create your code for your project.

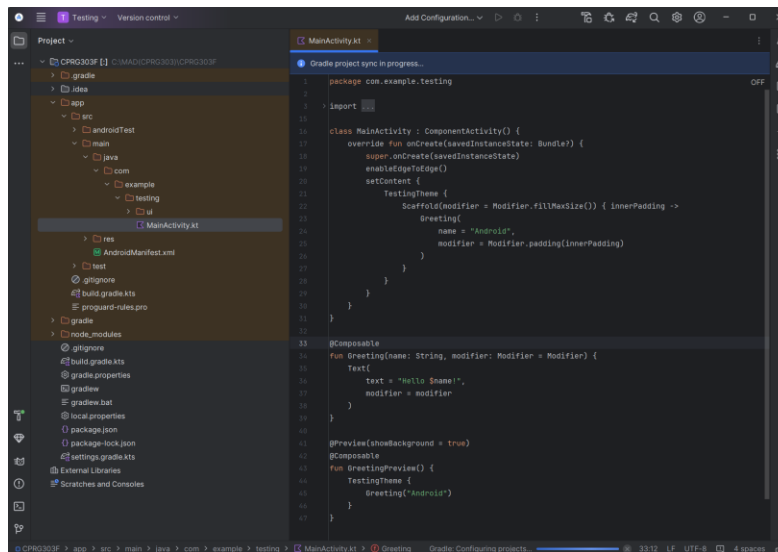



Figure 34: Creating New Folder

Source: Screenshot by Author

5. If you have your physical device, you can plug it in and use it, but if you don't, you can use a virtual device by clicking the **Device Manager** icon on the side panel. Click the + sign to **add a new device**, then click the **play** button  on the side to start.

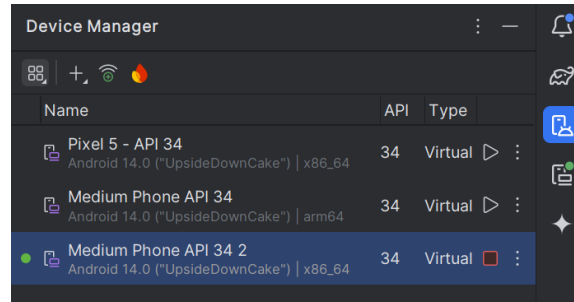


Figure 35: Device Manager  
Source: Screenshot by Author

6. Now you are done with the set up and you can start designing your project.



Figure 36: Virtual Phone  
Source: Screenshot by Author

## Warnings

- Only download the tools you need from the official link provided; avoid third-party sources to prevent the download of malicious files.
- Always scan files for potential viruses before downloading.
- Ensure your antivirus protection is activated.

## References

- [1] Node. "Download Node.js®". Node.js. Accessed: Oct. 8, 2024. [Online]. Available: <https://nodejs.org/en/download/package-manager>
- [2] ProgrammingKnowledge. "How to install Node.js on Window 11". Youtube.com. Accessed: Oct.8, 2024. [Online]. Available: <https://www.youtube.com/watch?v=06X51c6WHsQ>.
- [3] Oracle. "Java Downloads".Oracle.com, Accessed: Oct. 14, 2024. [Online]. Available: <https://www.oracle.com/java/technologies/downloads/#java17>
- [4] Amit Thinks. "How to install java JDK17 on Windows 11". Youtube.com. Accessed: Oct. 14, 2024. [Online]. Available: <https://www.youtube.com/watch?v=ykAhL1IoQUM>
- [5] Developers. "Android Studio". Andriod.com. Accessed: Oct. 14, 2024. [Online} Available: <https://developer.android.com/studio>
- [6] ProgrammingKnowledge. "How to install Andriod Studio on Windows 11 (2024)". Youtube.com. Accessed: Oct. 14, 2024. [Online} Available: <https://www.youtube.com/watch?v=8gc5z3aKc6k>