**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.

A screenshot of a computer

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Figure 1: Download button

Source: Adapted from [1]

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

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Figure 2: Downloading Node.js file

Source: Adapted from [2]

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

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Figure 3. Setup window

Source: Adapted from [2]

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

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Figure 4: End-User Agreement

Source: Adapted from [2]

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

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Figure 5: Destination Folder

Source: Adapted from [2]

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

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Figure 6. Installation

Source: Adapted from [2]

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

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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**.

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Figure 8: JDK Download

Source: Adapted from [3]

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

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Figure 9. JDK17 for Windows

Source: Adapted from[3]

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

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Figure 10: Downloading JDK17 file

Source: Adapted from [4]

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

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Figure 11: JDK17 Setup Window

Source: Adapted from [4]

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

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Figure 12: Destination Folder

Source: Adapted from [4]

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

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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.**

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Figure 14: System Properties

Source: Screenshot by Author

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

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Figure 15: Advance Settings

Source: Screenshot by Author

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

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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.**

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Figure 17: New System Variable Window

Source: Screenshot by Author

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

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Figure 18: JDK Environment Variables

Source: Screenshot by Author

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

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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>

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Figure 20: Android Website

Source: Adapted from [6]

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

A computer screen with a mouse cursor

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Figure 21: Downloading Android file

Source: Adapted from [6]

1. 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.**

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Figure 22: Configuration Settings

Source: Adapted from [6]

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

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Figure 23: Completing Android Studio Setup

Source: Adapted from [6]

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

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Figure 24: Welcome Android Studio I

Source: Adapted from [6]

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

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Figure 25: Select Hardware

Source: Adapted from [6]

1. 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

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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.

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Figure 27: Android Environment Variables

Source: Screenshot by Author

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

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Figure 28: ANDROID\_HOME Variables

Source: Screenshot by Author

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

A screenshot of a computer program

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

Source: Screenshot by Author

1. 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

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Figure 30: Android Environment Variables

Source: Screenshot by Author

**Troubleshooting**

1. Emulator Issues: If your Android emulator doesn’t start, install the system image for the virtual device and create a new one.
2. 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, andtype 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)

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Figure 31: New Folder Name

Source: Screenshot by Author

1. Open Android Studio, Click the New Project

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Figure 32: Creating New Project

Source: Screenshot by Author

1. 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.

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Figure 33: New Project Name

Source: Screenshot by Author

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

A screenshot of a computer screen

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Figure 34: Creating New Folder

Source: Screenshot by Author

1. 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.

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Figure 35: Device Manager

Source: Screenshot by Author

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

A screenshot of a phone

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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>

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