

ANDROID APPLICATION DEVELOPMENT REPORT ON ONE WEEK INTERNSHIP

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By

ESAKKIAMMAL M(Reg. No. 41140022)



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SCHOOL OF ELECTRICAL AND ELECTRONICS

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

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JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI – 600119

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that this INTERNSHIP Report is the bonafide work of **ESAKKIAMMAL M(41140022)** who have done the Internship in NATIONAL SMALL INDUSTRIES CORPORATION who carried out the Internship entitled "ANDROID APPLICATION DEVELOPMENT" from 15TH May 2023 to 19TH May 2023.

A handwritten signature in blue ink, appearing to read 'Dr. Radhika'.

Head of the Department

Dr. Radhika M.E., Ph.D.

Submitted for Viva voce Examination held on _____

A handwritten signature in blue ink, appearing to read 'S. Anand'.

Internal Examiner

A handwritten signature in blue ink, appearing to read 'C. S. Srinivasan'.

External Examiner

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INTRODUCTION

Android operating system is the largest installed base among various Mobile platforms across the globe. Hundreds of millions of mobile Devices are powered by Android in more than 190 countries of the world. It conquered around 71% of the global market share by the end of 2021, and this trend is growing bigger every other day.

The company named Open Handset Alliance developed Android for The first time that is based on the modified version of the Linux kernel and other open - source software. Google sponsored the project at initial stages and in the year 2005, it acquired the whole company. In September 2008, the first Android-powered device was launched in the market. Android dominates the mobile OS industry because of the Android operating system is the largest installed base among various Mobile platforms across the globe. Hundreds of millions of mobile devices are powered by Android in more than 190 countries of the world. It conquered around 71% of the global market share by the end of 2021, and this trend is growing bigger every other day.

1.1 INTRODUCTION OF ANDROID OS : Android is a mobile operating system based on a modified version of the Linux kernel and other open-source software, designed primarily for touchscreen mobile devices such as smartphones and tablets. Android is developed by a partnership of developers known as the Open Handset Alliance and commercially sponsored by Google. It was disclosed in November 2007, with the first commercial Android device, the HTC Dream, launched in September 2008. It is free and open-source software. Its source code is Android Open Source Project (AOSP), primarily licensed under the Apache License.

1.2 IMPORTANCE OF ANDROID APP DEVELOPMENT: The android application serves you various benefits to your business, such as -Apps serve many functions: it will provide you general info, prices, booking forms, search features, user accounts, messengers, news feeds, and many more. One of the best advantages is, it helps you to represent your business globally and you can easily inform your customers regarding special sales and promotions. Through push notification, you can get closer to direct interaction with customers and can easily remind a customer about new arrival products and services whenever it makes sense. Android application is the most powerful customer service tools, which help the business to provide better services to their customers so that they can encounter a hassle-free and comfortable shopping experience. By realizing the importance of having a mobile application, are you looking for a top android app Development Company? You can explore your search through the internet browsing to reach at Mobulous.

2.OVERVIEW OF JAVA FOR ANDROID DEVELOPMENT:JAVA is a programming language which is used in Android App Development. It is class based and object oriented programming whose syntax is influenced by C++. The primary goals of JAVA is to be simple, object-oriented, robust, secure and high level.JAVA application runs on JVM (JAVA Virtual Machine) but Android has it's own virtual machine called Dalvik Virtual Machine (DVM) optimized for mobile devices.However, it is not considered as pure object-oriented as it provides support for primitive data types (like int, char, etc). Java syntax is similar to C/C++.

2.1 WHY JAVA IS USED FOR ANDROID APPS: The fundamental Java ideas required for Android programming, such as object-oriented programming, data types and variables, control structures, arrays and strings, classes and objects, inheritance and polymorphism, and exception handling, have been covered in this article.Java is a general-purpose programming language that can be used to develop Android apps. Java is a simple and powerful programming language, which is easy to learn and has been around for decades. It also has a large, active community of developers that have created many libraries for different purposes.In this section, we will explore the benefits of Java for Android development. Java's open source nature means developers can easily find solutions to problems online.

2.2 JAVA BASICS

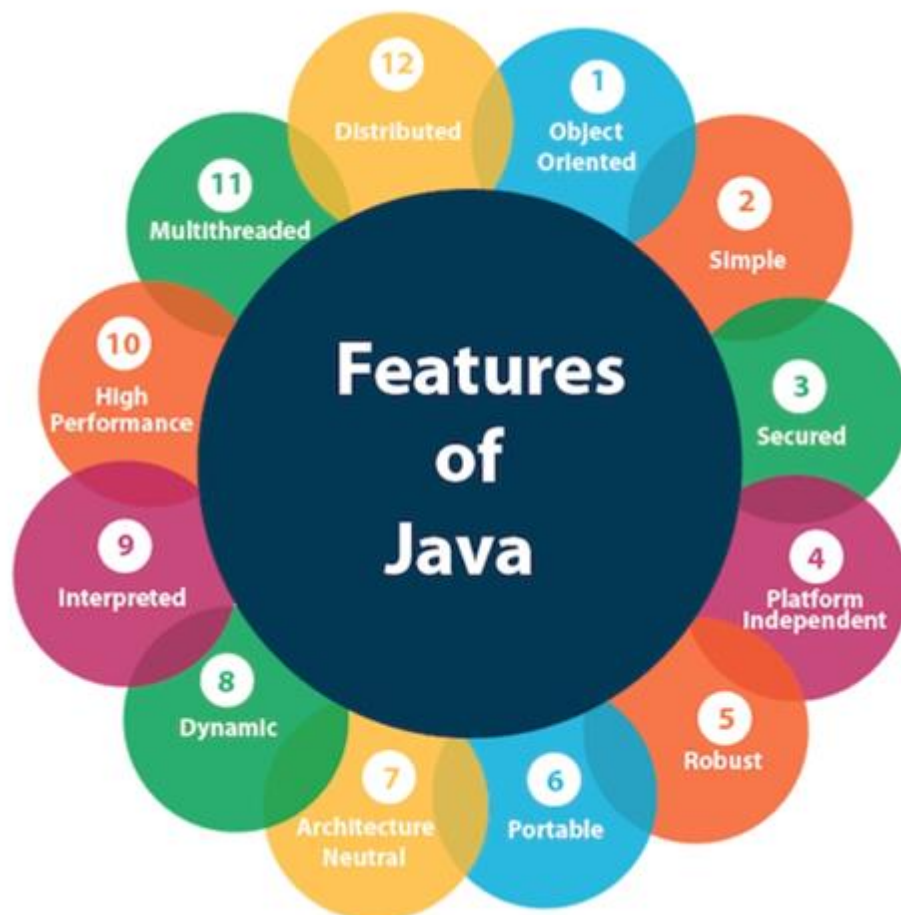
Standalone Applications: Java standalone applications use GUI components such as AWT, Swing, and JavaFX. These components contain buttons, list, menu, scroll panel, etc. It is also known as desktop applications.

Enterprise Applications: An application which is distributed in nature is called enterprise applications.

Web Applications: An application that runs on the server is called Web applications. We use JSP, Servlet, Spring, and Hibernate Technologies for creating web applications.

Mobile Applications: Java ME is a cross-platform to develop mobile applications which run across smartphones. Java is a platform for App Development in Android.

2.3 JAVA FEATURES RELEVANT TO ANDROID DEVELOPMENT



3. ANDROID DEVELOPMENT OF ENVIRONMENT SETUP

Being able to run Android apps on a Chromebook is great. It gives users access to the vast Android ecosystem offerings, and it gives Android developers the opportunity to reach Chrome OS users. Chrome OS provides Android developers with the tools to deploy and test their apps on Chromebooks. To improve users' experiences, verify your apps on different form factors. Whether you are deploying your Android app directly from Chrome OS (using Android Studio in your Chromebook) or from another device, you can use Android Debug Bridge to deploy your app and debug different interactions with Chromebooks. For more details, see the following steps.

3.1 ANDROID STUDIO INSTALLATION

1. Unpack the .zip file you downloaded to an appropriate location for your applications, such as within /usr/local/ for your user profile or /opt/ for shared users. For a 64-bit version of Linux, first install the required libraries for 64-bit machines.
2. To launch Android Studio, open a terminal, navigate to the android-studio/bin/ directory, and execute studio.sh.
3. Select whether you want to import previous Android Studio settings, then click OK.
4. Complete the Android Studio Setup Wizard, which includes downloading the Android SDK components that are required for development.

3.2 SDK MANAGER

The `sdk manager` is a command-line tool that lets you view, install, update, and uninstall packages for the Android SDK. If you're using Android Studio, then you don't need to use this tool, and you can instead manage your SDK packages from the IDE. The `sdkmanager` tool is provided in the Android SDK Command-Line Tools package. To use the SDK Manager to install a version of the command-line tools, follow these steps

1. Download the latest "command line Tools only" package from the android studio download pages and unzip the package.
2. Move the unzipped `cmdline-tools` directory into a new directory of your choice, such as `android_sdk`. This new directory is your Android SDK directory.
3. In the unzipped `cmd line-tools` directory, create a sub-directory called `latest`.
4. Move the original `cmdline-tools` directory contents, including the `lib` directory, `bin` directory, `NOTICE.txt` file, and `source.properties` file, into the newly created `latest` directory. You can now use the command-line tools from this location.
5. (Optional) To install a previous version of the command-line tools, run the following command:
6. `android_sdk/cmdline-tools/latest/bin/sdkmanager -in`

3.3 EMULATOR SETUP

The Android Emulator lets you test your app on many different devices virtually. The emulator comes with Android Studio, so you don't need to install it separately. To use the emulator, follow these basic steps, which are described in more detail in the sections that follow:

1. Verify that you have the system requirements.
2. Create an Android Virtual Device (AVD).
3. Run your app on the emulator.
4. Navigate the emulator. For the best experience, you should use the emulator in Android Studio on a computer with at least the following specs:

- 16 GB RAM • 64-bit Windows, macOS, Linux, or Chrome OS operating system
- 16 GB disk space

3.4 JDK INSTALLATION

JDK installers now support only one version of any Java feature release. You can't install multiple versions of the same feature release. For example, you can't install jdk-20 and jdk-20.0.1 simultaneously. If you attempt to install jdk-20.0.1 after jdk-20 is installed, the installer uninstalls jdk-20 and installs jdk-20.0.1. You run a self-installing executable file to unpack and install the JDK on Windows computers.

Install JDK on Windows computers by performing the actions described in the following topics:

- Downloading the JDK Installer • Installing the JDK from the JDK .exe Installer • Installing the JDK from the MSI Enterprise Installer

4. CREATING YOUR FIRST ANDROID APP

Install Android Studio on your computer if you haven't done so already. Check that your computer meets the system requirements required for running Android Studio (located at the bottom of the download page). If you need more detailed instructions on the setup process, refer to the [Download and install Android Studio](#) codelab. In this codelab, you create your first Android app with a project template provided by Android Studio. You use Kotlin and Jetpack Compose to customize your app. Note that Android Studio gets updated and sometimes the UI changes so it is okay if your Android Studio looks a little different than the screenshots in this codelab.

4.1 PROJECT STRUCTURE IN ANDROID STUDIO

A project in Android Studio contains everything that defines your workspace for an app, from source code and assets to test code and build configurations. When you start a new project, Android Studio creates the necessary structure for all your files and makes them visible in the Project window in Android Studio. To open the window, select **View > Tool Windows > Project**. This page provides an overview of the key components inside your project.

4.2 CREATING UI ELEMENT

Try creating UI for websites or mobile with real components from the Insert Menu. Drag and drop UI elements for iPhones, Androids, MacOS, and more to get your interactive designs started. Experiment with different backgrounds, hands, and real devices to customize how people experience your interactive designs in preview.

4.3 HANDLING USER INPUT

The body of handler should be guarded with , just like the handler. Otherwise (1) a drag that starts the square, but ends over it, is treated as a click; and (2) after cancelling a drag, the next event sets the status to . Another way to handle user input is polling, or periodically checking the state of the hardware.

4.4 BASIC JAVA CODE FOR FUNCTIONALITY

Java is one of the most popular programming languages in the world, and one of its key features is its ability to define and use functions. Functions in Java are blocks of code that perform a specific task, and they are used to organize code and make it more modular and reusable. In this article, we will explore the basics of Java functions, including how to define them, how to pass parameters, and how to return values.

5. ANDROID UI COMPONENTS

To create new UIs, we recommend using Compose, Android's declarative UI toolkit. Google designed Compose to simplify and accelerate UI development, so you can use less code, more-powerful tools, and intuitive Kotlin APIs.

5.1 TEXT VIEW

In Android, TextView displays text to the user and optionally allows them to edit it programmatically. TextView is a complete text editor, however basic class is configured to not allow editing but we can edit it.

5.2 EDIT VIEW

The edit view will be rendered on the click of the Edit link in the student list view, which we already created the student list view in the Create a View chapter. Here, we will build the following edit view in order to edit a student record.

5.3 BUTTON VIEW

A Button is a user interface that are used to perform some action when clicked or tapped. In this article, we will try to change the shape and color of Button to various designs, like: Please refer to this article to see in detail about how to create a new Android Studio project.

6.CONCLUSION

In Conclusion , Android App Development is a dynamic and evolving field that offers exciting oppurtunities fordevelopers.With a vast user base and a wide range of devices , Android presents a diverse market for creating innovative and impactful applications.Success in this space requires a deep understanding of JAVA or Kotlin, a focus on user experience, and keeping up with industry trends.