# Experiment: 6

**Objective:** To study about the different open source mobile development tools.

**Introduction:**

Mobile app development is the act or process by which a mobile app is developed for mobile devices, such as personal digital assistants, enterprise digital assistants or mobile phones. These applications can be pre-installed on phones during manufacturing platforms, or delivered as web applications using server-side or client-side processing (e.g., JavaScript) to provide an "application-like" experience within a Web browser.

A 2013 analyst report estimates there are 529,000 direct app economy jobs within the EU than 28 members (including the UK), 60 percent of which are mobile app developers.

**Open source:**

Open source software is software with source code that anyone can inspect, modify, and enhance. "Source code" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software—a "program" or "application"—works.

Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly.

**Open Source Mobile Development Tools:**

The use of smartphones has given rise to the need to develop mobile applications. Whether it is for personal use or business purpose, contracting a development company requires big money.

Fortunately, you can now create your own app with the help of mobile app development software. You don’t need any prior coding experience or huge investments.

There is more than 100+ android development tools are available to develop android mobile applications.

Some of them are here to study and we are differentiating them on the basis of their characters and features.

1. **PhoneGap**


PhoneGap is an Open Source free to use mobile app development framework. It falls into the category of cross-platform app development. It can be used for developing a single app which works on all mobile devices.

**Features:**

- It works effectively on JavaScript, HTML5 and CSS3.
- It can integrate with various libraries to enhance app development.
- It allows development of various mobile applications with lesser time and efforts.
- It helps developers to extend the functionality of the application with the help of plug-in architecture.
- Robust tool for building apps without any special skill set.

**2. Xamarin**


Xamarin is the preferred mobile app development tool for native applications. It reuses business logic layers and data access across platforms. It is widely used to build apps for iOS, Windows, and Android app development.

**Features:**

- It is a mono framework which allows communication with the API of mobile devices.

- Xamarin Component Store includes UI controls, cross-platform libraries, and third-party libraries.
- It tends to produce fewer bugs and thus provides faster time to market.
- It allows application Indexing and Deep Linking.
- Platform-specifics allow to consuming functionality that's only available on certain platforms.

### 3. Appcelerator


Appcelerator allows developers to create apps with fewer lines of code. This app development tool supports iOS, Android, Windows, and browser-based HTML5 applications.

Features:

- It improves the speed of mobile app development.
- Higher cloud capacity limits.
- This tool allows building mobile apps for all supported operating system.
- Virtual private or on-premises deployment.
- Built on open-standards and full access to the underlying mobile OS.
- Support for multi-region global deployments.

### 4. Mobincube

Mobincube is a great App interface so that users can develop any kind of mobile app. Developers can create an app for business, educational, entertainment, health, and more.

**Features:**

- Create mobile stores and helps to boost sales
- Allows to Integrate 3rd party solutions within app
- Helps to developed advanced functionalities
- It allows updating online content
- Customize every little detail in app
- Allows to communicate with users

5. **FireBase**


Firebase is another mobile application development platform. It supports the web, iOS, OS X, and Android clients. It can significantly cut down development time and avoids messing with servers and data storage.

**Features:**

- It provides cloud service, so there isn't any setup required.
- Data is stored as native JSON, so users can see what they stored.
- Data is safe because Firebase requires 2048-bit SSL encryption for all data transfers.
- File storage backed by Google Cloud Storage.
- Treat data as streams to build highly scalable applications.
- Data is reflected and backed up to multiple secure locations, so hardly any chances of data loss.
- It integrates nicely with frameworks like Angular JS. So it allows creating an app in a very short time.

# Experiment: 7

**Objective:** To study about the installation of Eclipse and Android Studio.

## Introduction:

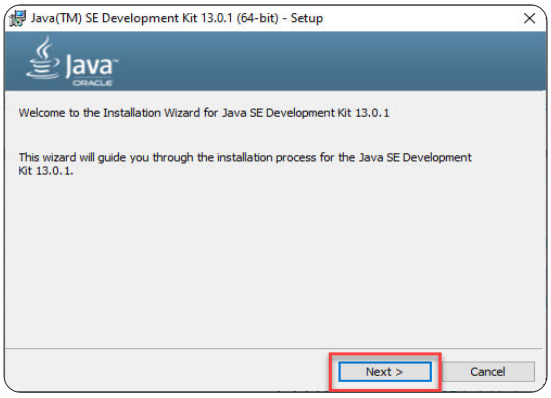
Eclipse is an integrated development environment used in computer programming. It contains a base workspace and an extensible plug-in system for customizing the environment. On the other hand, Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development.

Android Studio is available for download on Windows, macOS and Linux based operating systems. It is a replacement for the Eclipse Android Development Tools (ADT) as the primary IDE for native Android application development.

## Installation of Eclipse

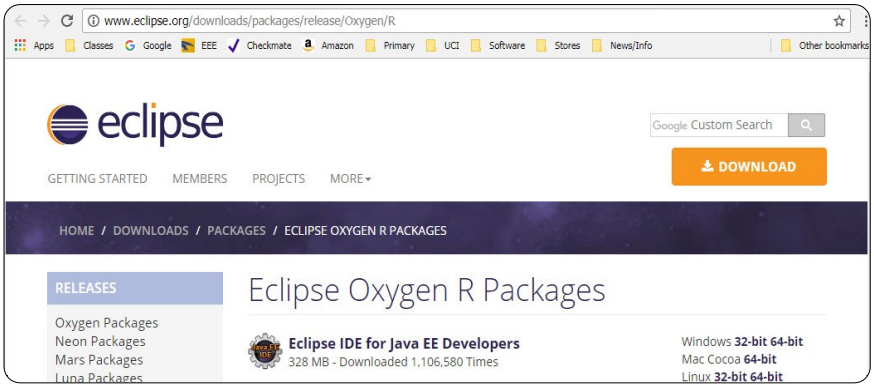
1) Install the Java Development Kit (JDK)

For creating android application, JDK must be installed if you are developing the android application with Java language. download the JDK.




2) Download and install the Eclipse IDE

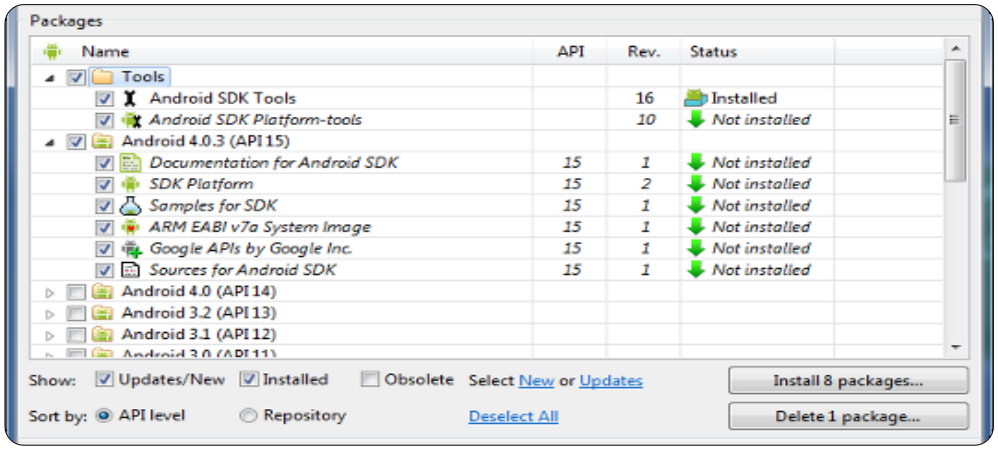
For developing the android application using eclipse IDE, you need to install the Eclipse.We are using the Eclipse IDE for JavaEE Developer.



3) Download and install the android SDK

First of all, download the android SDK. In this example we have installed the android SDK for windows (.exe version).

Now double click on the exe file, it will be installed. I am using the android 2.2 version here.




4) Download the ADT plugin for eclipse

ADT (Android Development Tools) is required for developing the android application in the eclipse IDE. It is the plugin for Eclipse IDE that is designed to provide the integrated environment.

For downloading the ADT, you need to follow these steps:

(i) Start the eclipse IDE, then select Help > Install new software...
(ii) In the work with combo box.
(iii) select the checkbox next to Developer Tools and click next.
(iv) You will see, a list of tools to be downloaded here, click next.
(v) click finish.
(vi) After completing the installation, restart the eclipse IDE.

5) Configuring the ADT plugin

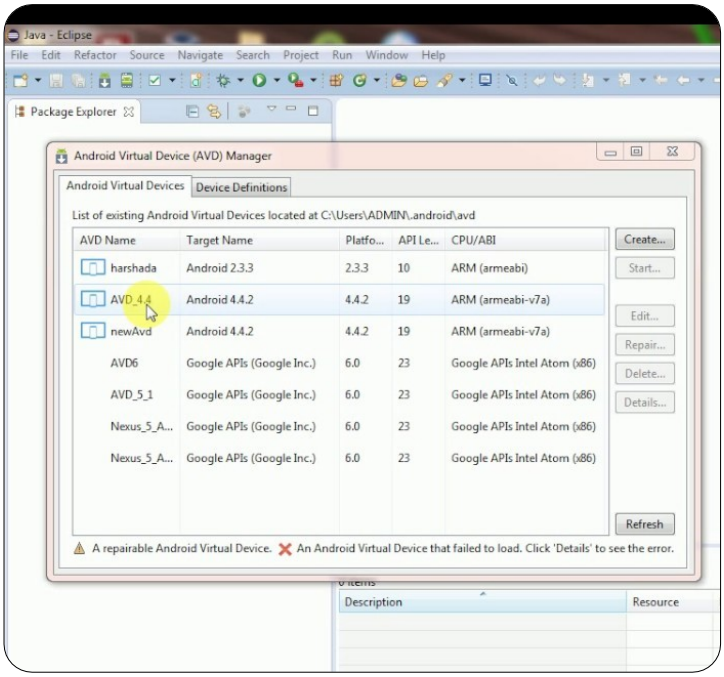
After the installing ADT plugin, now tell the eclipse IDE for your android SDK location. To do so:

(i) Select the Window menu > preferences.
(ii) Now select the android from the left panel. Here you may see a dialog box asking if you want to send the statistics to the google. Click proceed.
(iii) Click on the browse button and locate your SDK directory e.g. my SDK location is C:\Program Files\Android\android-sdk .
(iv) Click the apply button then OK.

6) Create an Android Virtual Device (AVD)

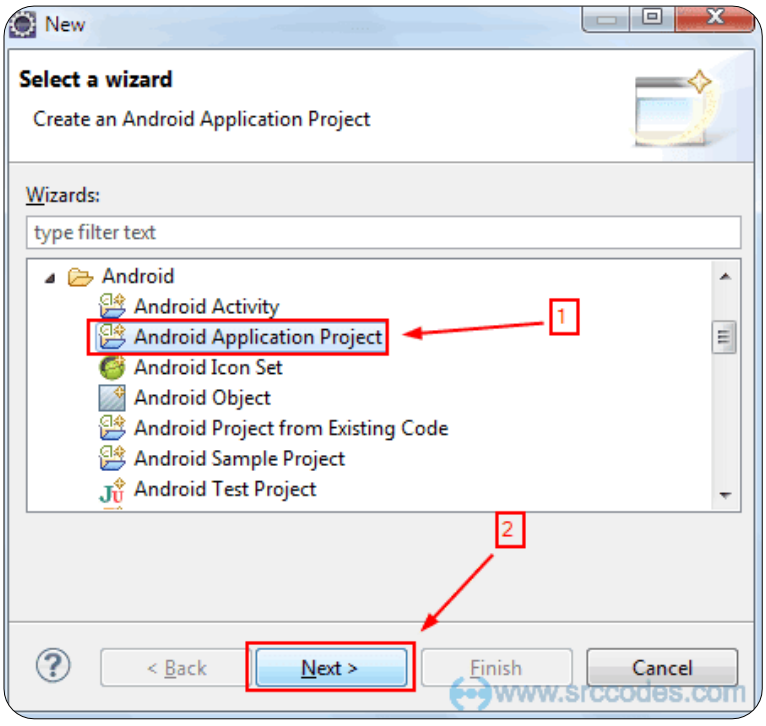
For running the android application in the Android Emulator, you need to create and AVD. For creating the AVD:

(i) Select the Window menu > AVD Manager.
(ii) Click on the new button, to create the AVD.
(iii) Now a dialog appears, write the AVD name e.g. myavd. Now choose the target android version e.g. android2.2.
(iv) click the create AVD.




7) create and run the simple android example

Visit the next page to create first android application.



**Installation of Android**

1) System Requirements

You will be delighted, to know that you can start your Android application development on either of the following operating systems.

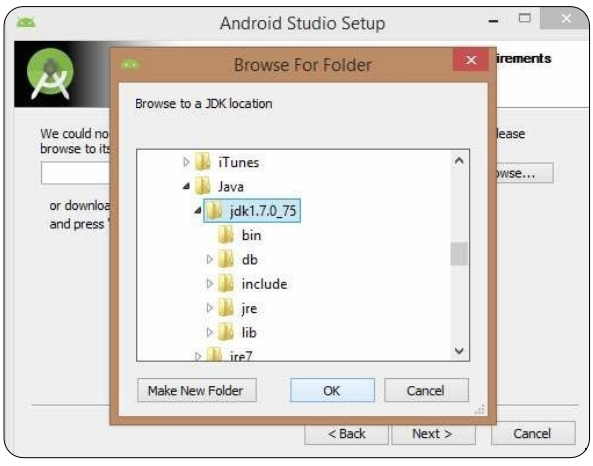
- Microsoft® Windows® 10/8/7/Vista/2003 (32 or 64-bit)Microsoft® Windows® 10/8/7/Vista/2003 (32 or 64-bit).
- Mac® OS X® 10.8.5 or higher, up to 10.9 (Mavericks)Mac® OS X® 10.8.5 or higher, up to 10.9 (Mavericks).
- GNOME or KDE desktopGNOME or KDE desktop.

Second point is that all the required tools to develop Android applications are open source and can be downloaded from the Web.

- Java JDK5 or later versionJava JDK5 or later version.

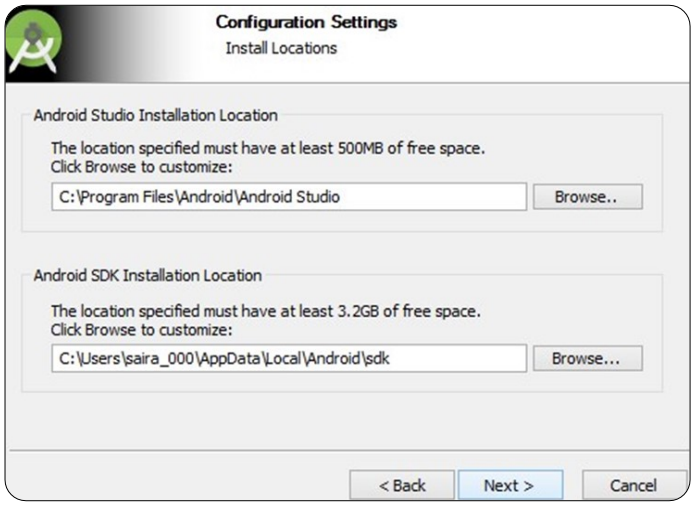
Android Studio is the official IDE for android application development .It works based on IntelliJ IDEA, You can download the latest version of android studio from Android official website.


Once you launched Android Studio, its time to mention JDK7 path or later version in android studio installer.

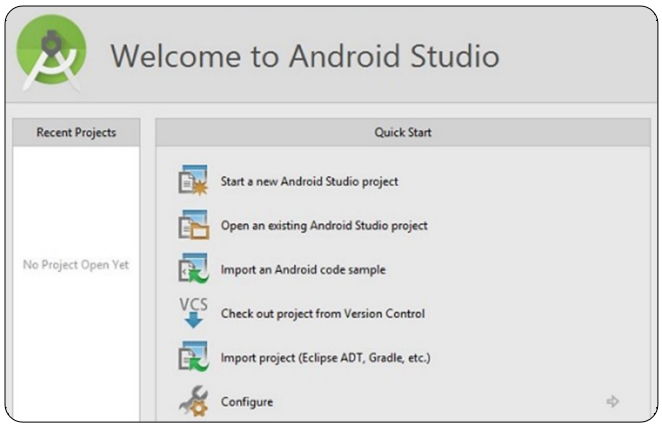


2) Setup Android Studio

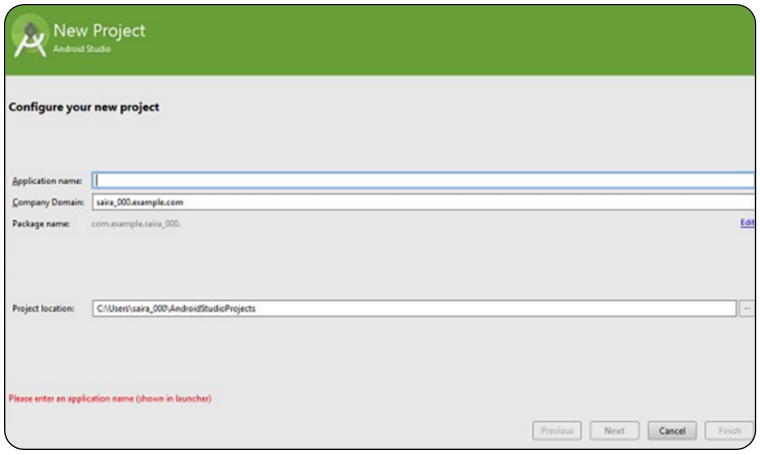
Need to specify the location of local machine path for Android studio and Android SDK, below the image has taken default location of windows 8.1 x64 bit architecture.




After done all above steps perfectly, you must get finish button and it gone be open android studio project with Welcome to android studio message as shown below.




You can start your application development by calling start a new android studio project. in a new installation frame should ask Application name, package information and location of the project.



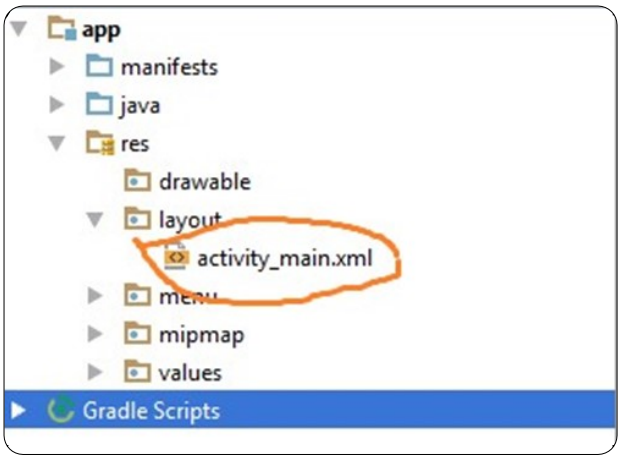
The next level of installation should contain selecting the activity to mobile, it specifies the default layout for Applications.


3) Create Android Virtual Device

To test your Android applications, you will need a virtual Android device. So before we start writing our code, let us create an Android virtual device. Launch Android AVD Manager Clicking AVD_Manager icon as shown below.


**Hello Word Example**

Before Writing a Hello word code, you must know about XML tags.To write hello word code, you should redirect to App>res>layout>Activity_main.xml



4) At last you have to run your created application

Need to run the program by clicking Run>Run App or else need to call should be placed at Virtual devices as shown below.