PAF- KARACHI INSTITUTE OF ECONOMICS & TECHNOLOGY
College of Engineering

(Software Engineering)

CS3306 – Mobile Application Development

Semester: _____ **Date of Experiment: _____**

Student name: _____ **Faculty Signature: _____**

Student ID: _____ **Remarks/Comments: _____**

Lab01	**Installation of Android studio & NetBeans IDE and development of Hello World Application**			
PLOs	**PLO1 – Engineering Knowledge**		**Bloom's Taxonomy**	**C1 – Recall**
	PLO5 – Modern Tool Usage			**C3 - Apply**
	PLO8 – Ethics			**P2 – Set**

LAB TASK PERFORMANCE

CLO's	Aspects of Assessments	Excellent (75-100%)	Average (50-75%)	Poor (<50%)	Marks
CLO1 10%	**Recall** Recall the associated concepts form theory regarding basic concepts of OOP.	Complete understanding of the concepts of OOP / actively participate during lecture.	Complete understanding of the concepts of OOP / less actively participate during lecture.	Student lacks clear understanding of concepts of OOP/ Unable to read and interpret it.	
CLO4 80%	**Tools Utilization** Apply and discover different basic level functions of Android Studio and NetBeans IDE	Accurately implement the functions of Android Studio / Net Beans IDE and obtain the correct output as per requirement/ given tasks.	Implement the functions of Android Studio / Net Beans IDE with minor errors that will lead to a slightly different output as per given in a task.	Not able to implement the functions of Android Studio/ NetBeans IDE and don't understand how required output and task is achieved.	
CLO7 10%	**Lab Safety** Properly handle lab infrastructure/safety precautions	Properly handle lab equipment & obey safety measures.	Moderate level lab handling and safety measurements	Minor or no safety measurements has been considered.	
				Total Marks: 10	

LAB No 1. : Installation of Android Studio and NetBeans IDEs

Objective:

1) Make students familiar with IntelliJIDEA Android Studio IDE.
2) Make students familiar with NetBeans IDE.
3) Make students familiar with Java language syntax.
4) Make students learn basic logic building blocks of Android Mobile App.

INSTALLING AND RUNNING APPLICATIONS ON ANDROID STUDIO:

Step 1 - System Requirements

The required tools to develop Android applications are open source and can be downloaded from the Web. Following is the list of software's you will need before you start your Android application programming.

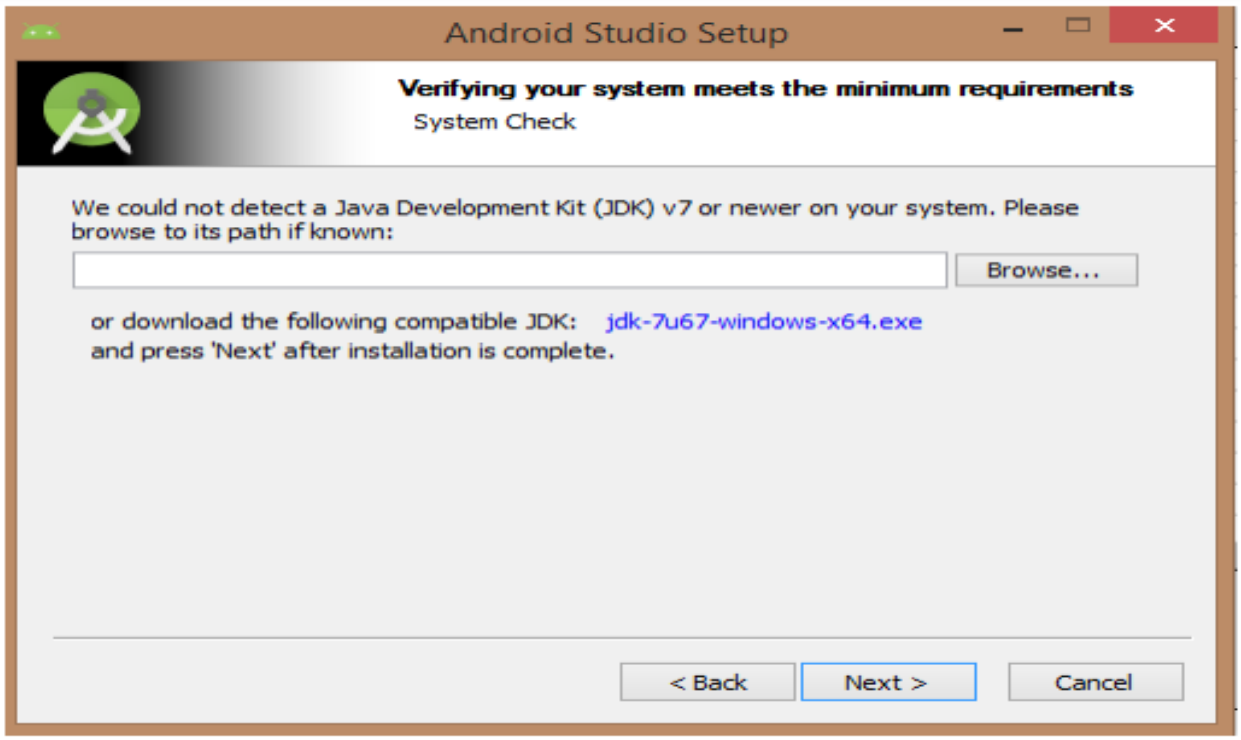
- Java JDK5 or later version
- Java Runtime Environment (JRE) 6
- Android Studio

Step 2 - Setup Android Studio

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 Studio 2.2 Download, If you are new to installing Android Studio on windows, you will find a file, which is named as android-studio-bundle-143.3101438-windows.exe. So just download and run on windows machine according to android studio wizard guideline. If you are installing Android Studio on Mac or Linux, You can download the latest version from Android Studio Mac Download, or Android Studio Linux Download, check the instructions provided along with the downloaded file for Mac OS and Linux.

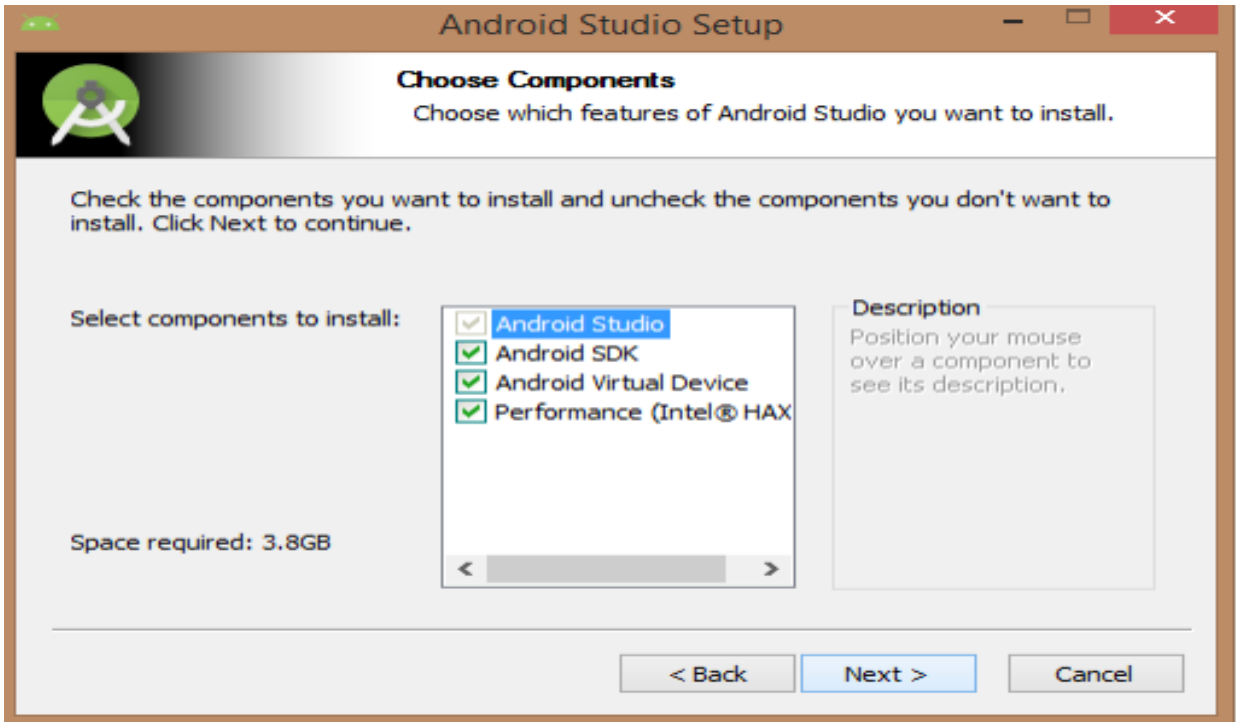
This Lab will consider that you are going to setup your environment on Windows machine having Windows 10 operating system. So let's launch Android Studio.exe, Make sure before launch Android Studio, Our Machine should have required Java JDK installed in it.

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

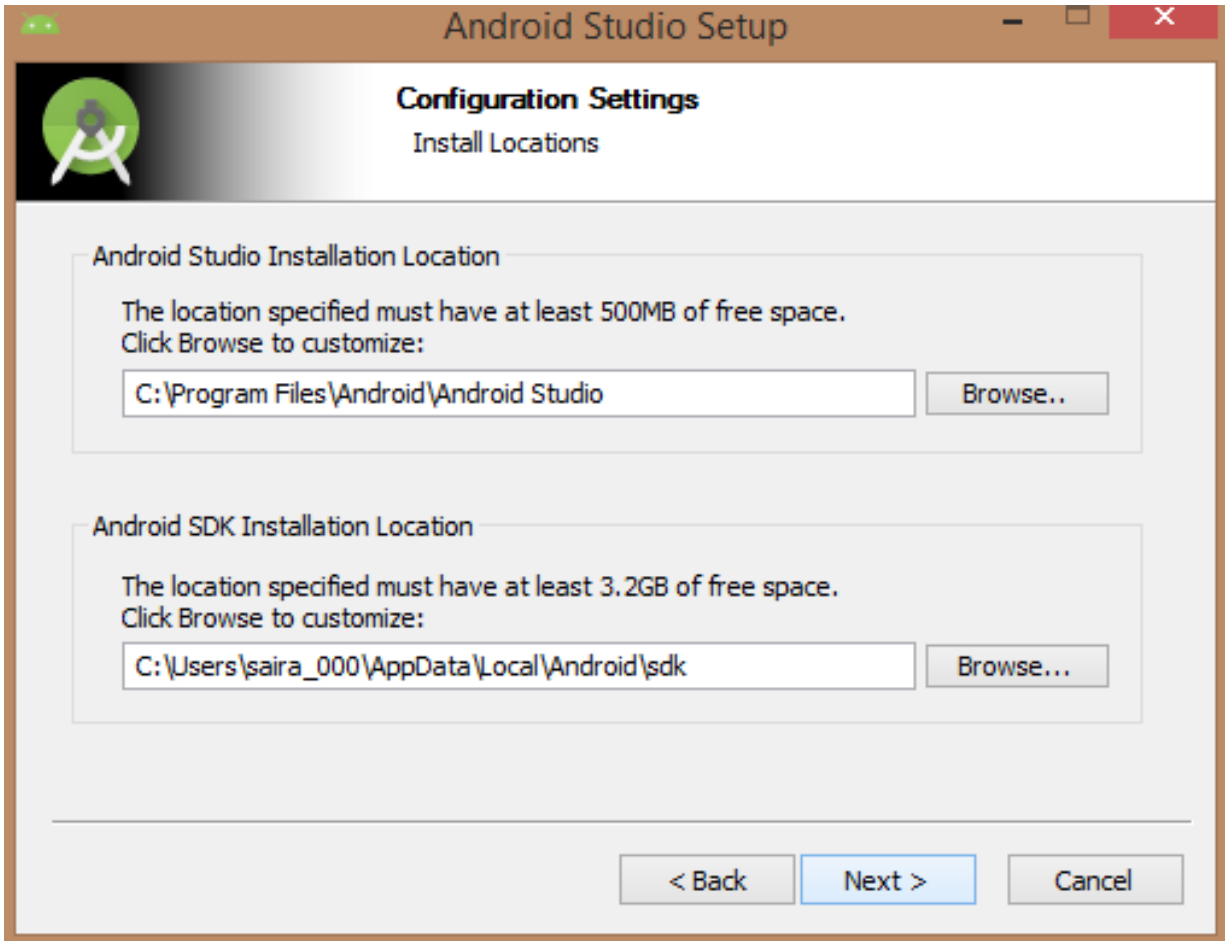


Below the image initiating JDK to android SDK

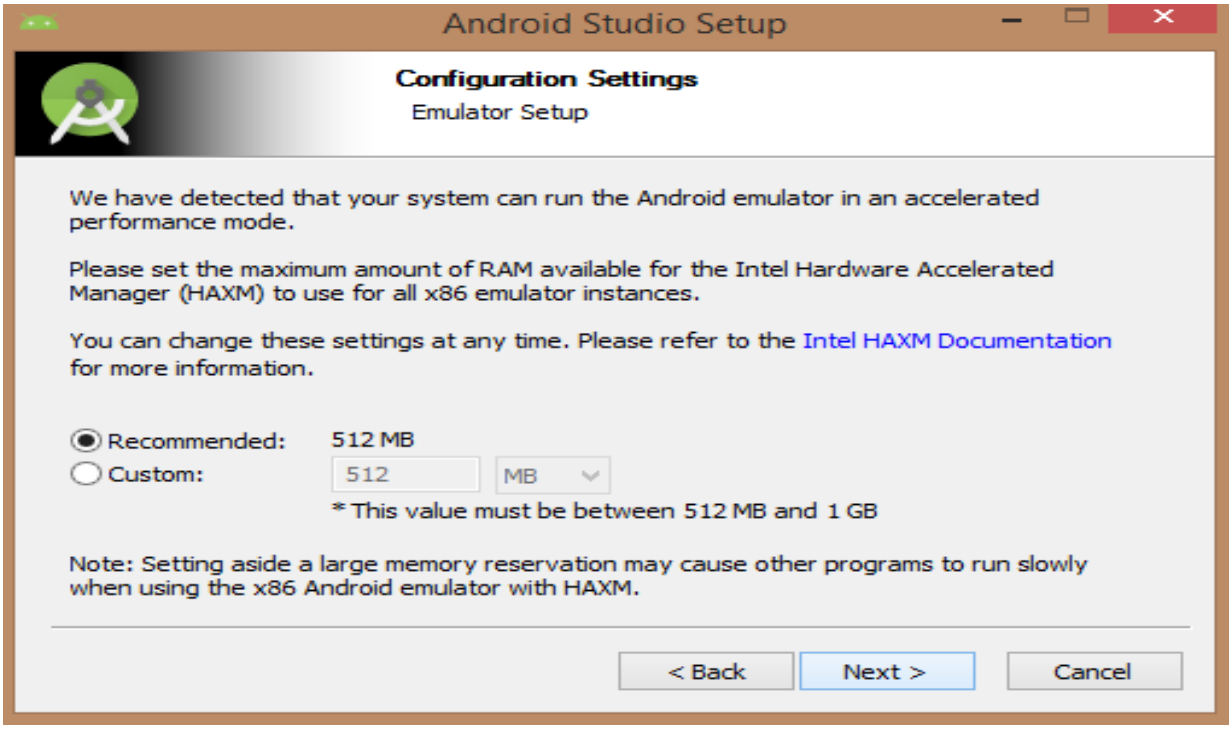
Need to check the components, which are required to create applications, below the image has selected Android Studio, Android SDK, Android Virtual Machine and performance on Intel Architecture.



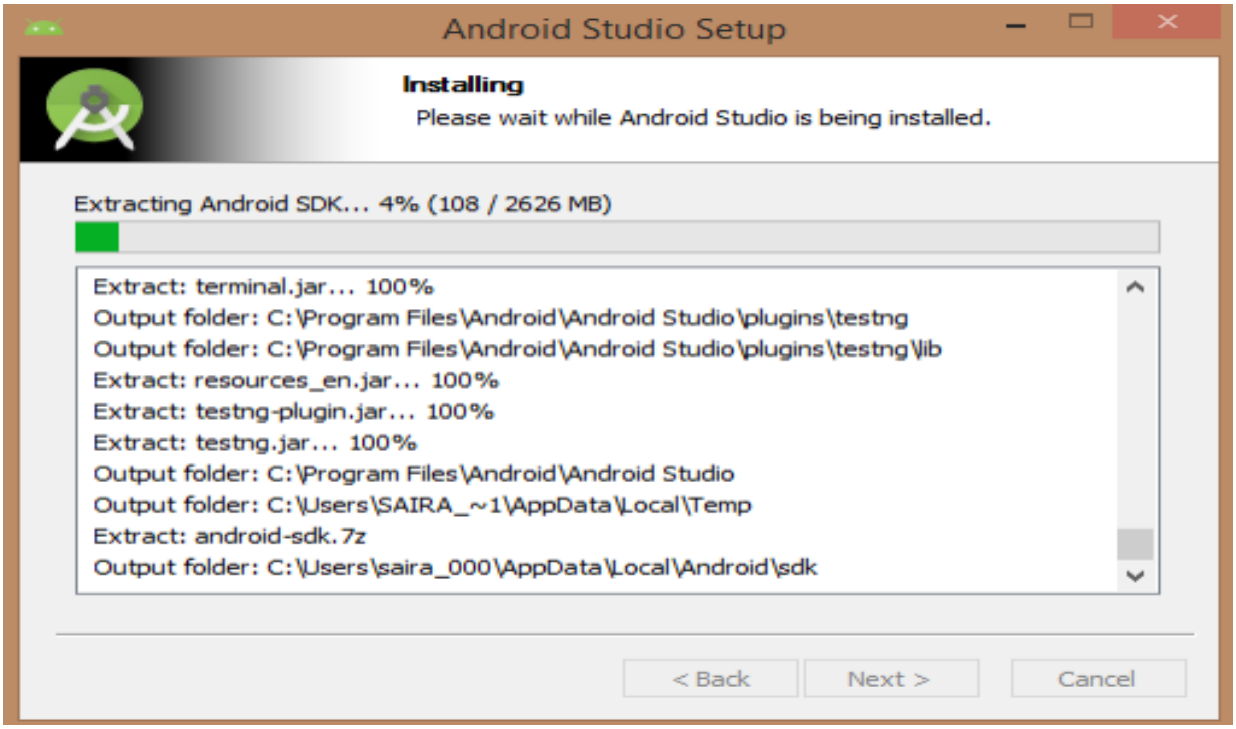
Need to specify the location of local machine path for Android studio and Android SDK, below the image has taken default location of windows 10 x64 bit architecture.



Need to specify the ram space for Android emulator by default it would take 512MB of local machine RAM.

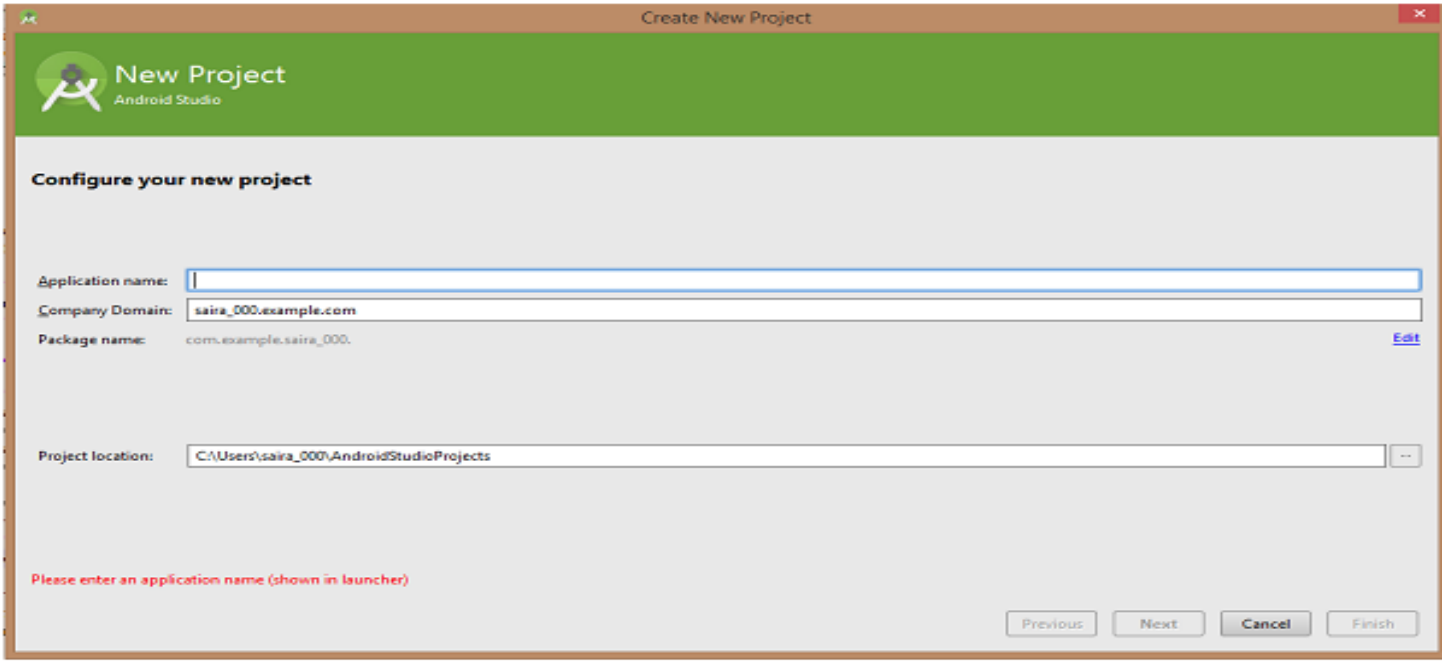


At final stage, it would extract SDK packages into our local machine, it would take a while time to finish the task and would take 2626MB of Hard disk space.

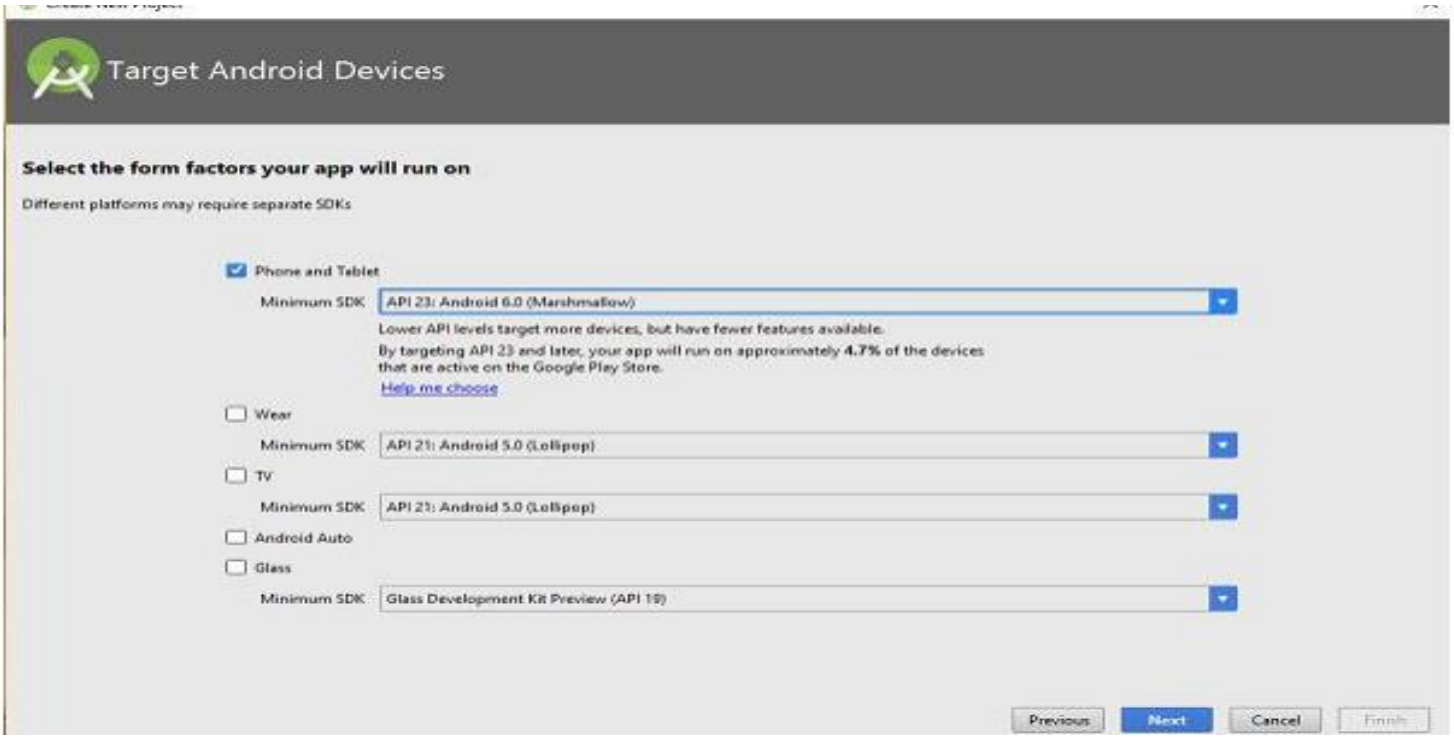


After done all above steps perfectly, you must get finish button and it gonna be open android studio project with Welcome to android studio message as shown below

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.

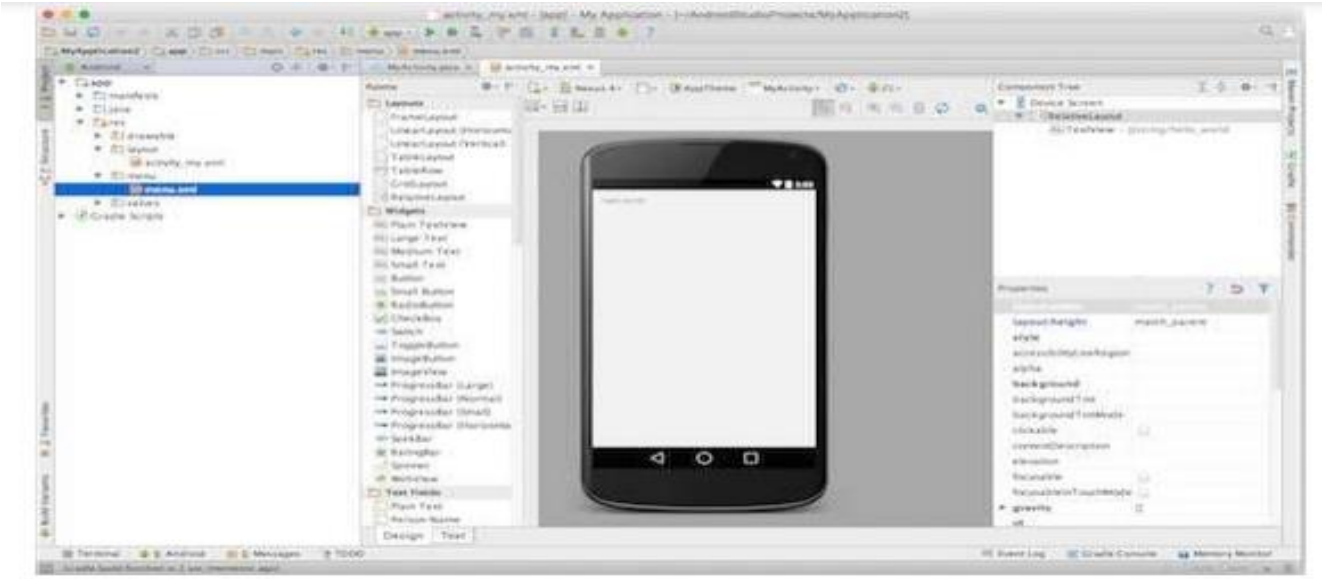


After entered application name, it going to be called select the form factors your application runs on, here need to specify Minimum SDK, in our tutorial, I have declared as API23: Android 6.0(Mashmallow)



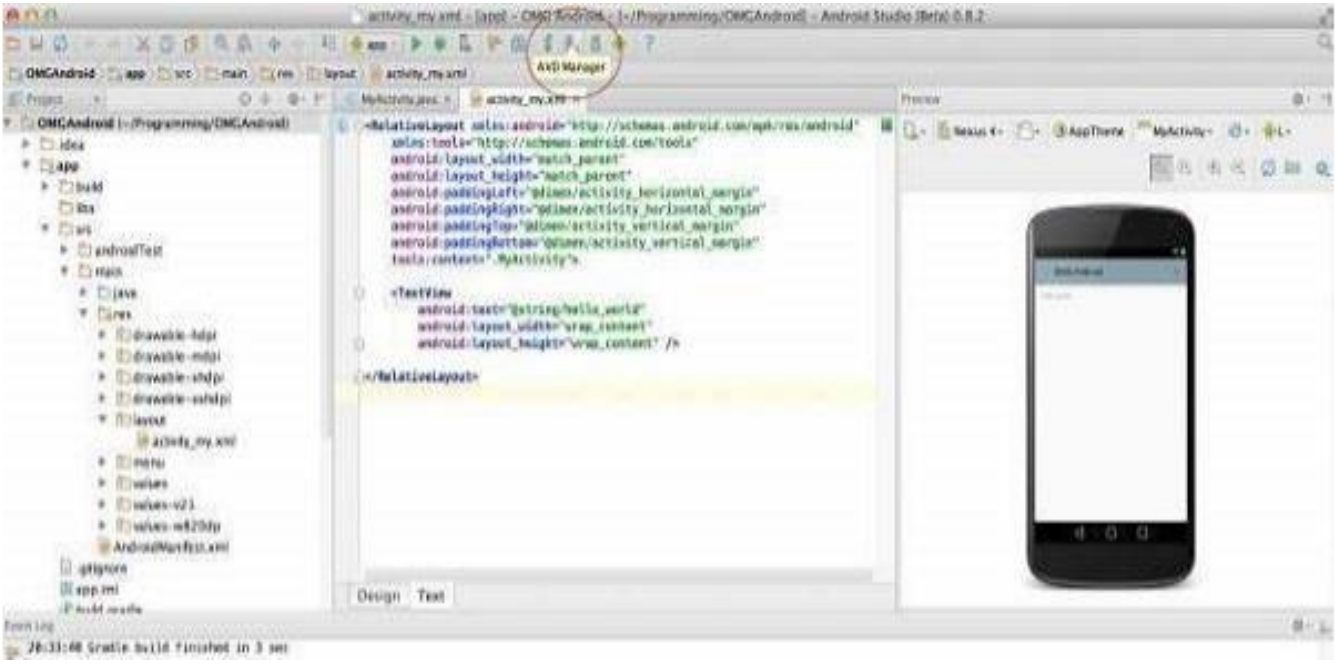
The next level of installation should contain selecting the activity to mobile, it specifies the default layout for Applications

At the final stage it going to be open development tool to write the application code

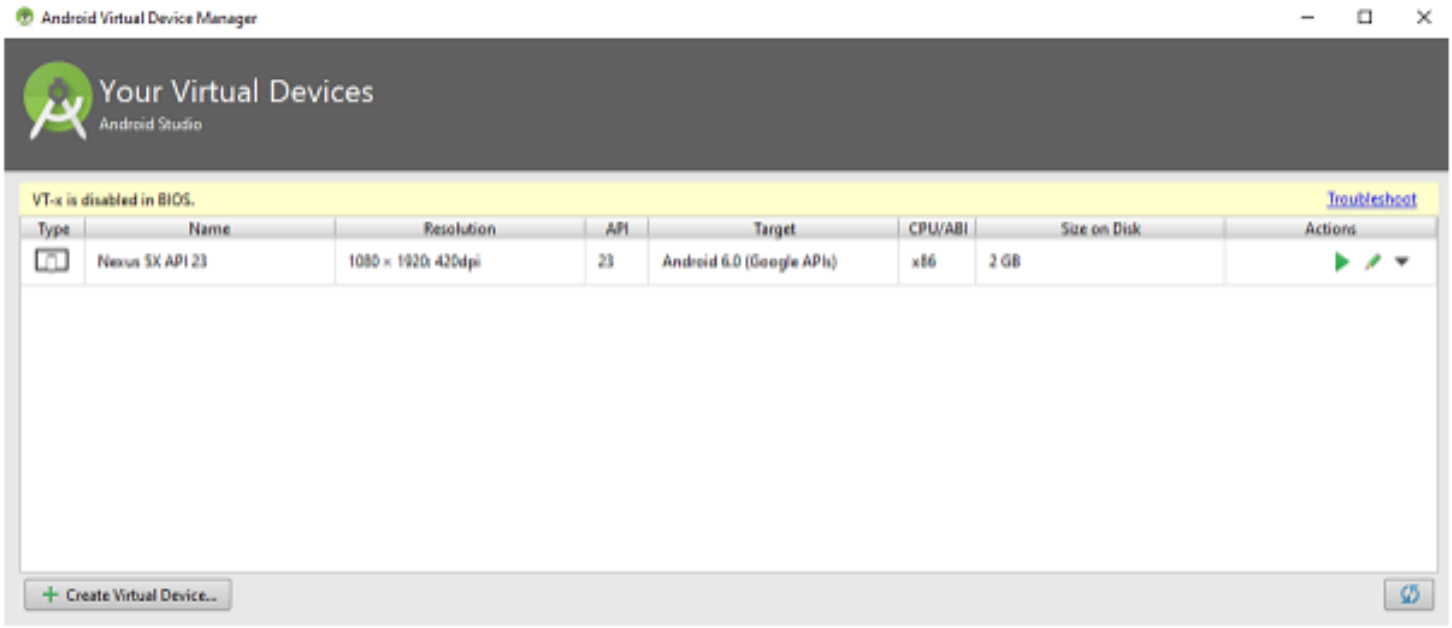


Step 3 - Create Android Virtual Device

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



After Click on a virtual device icon, it going to be shown by default virtual devices which are present on your SDK, or else need to create a virtual device by clicking Create new Virtual device button



If your AVD is created successfully it means your environment is ready for Android application development. If you like, you can close this window using top-right cross button. Better you restart your machine and once you are done with this last step, you are ready to proceed for your first Android example but before that we will see few more important concepts related to Android Application Development.

INSTALLING AND RUNNING APPLICATIONS ON NETBEANs IDE

Step 1 - Install JDK

To use NetBeans for Java programming, you need to first install Java Development Kit (JDK).

Step 2 - Download

Download "NetBeans IDE" installer from http://netbeans.org/downloads/index.html . There are many "bundles" available. For beginners, choose the 1st entry "Java SE" (e.g., "netbeans-8.2-javase-windows.exe " 95MB).

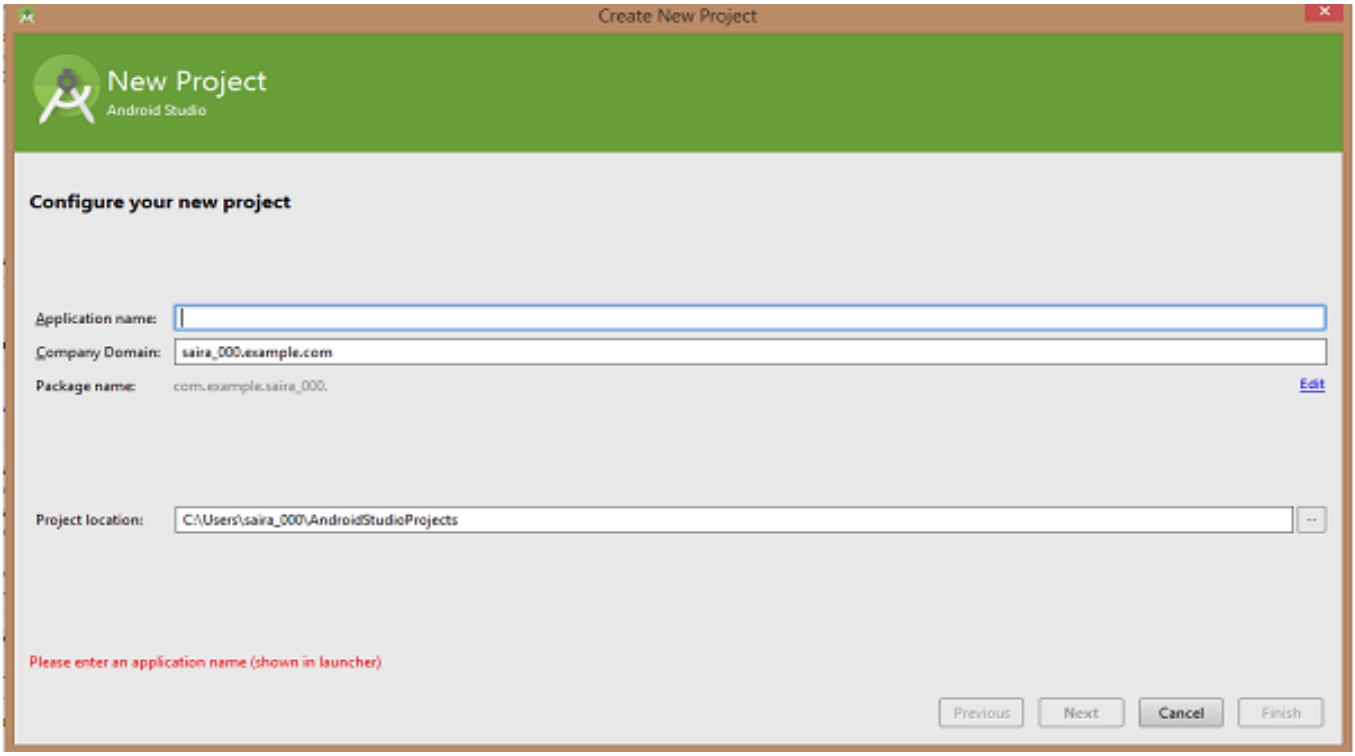
Step 3 - Run the Installer

Run the downloaded installer.

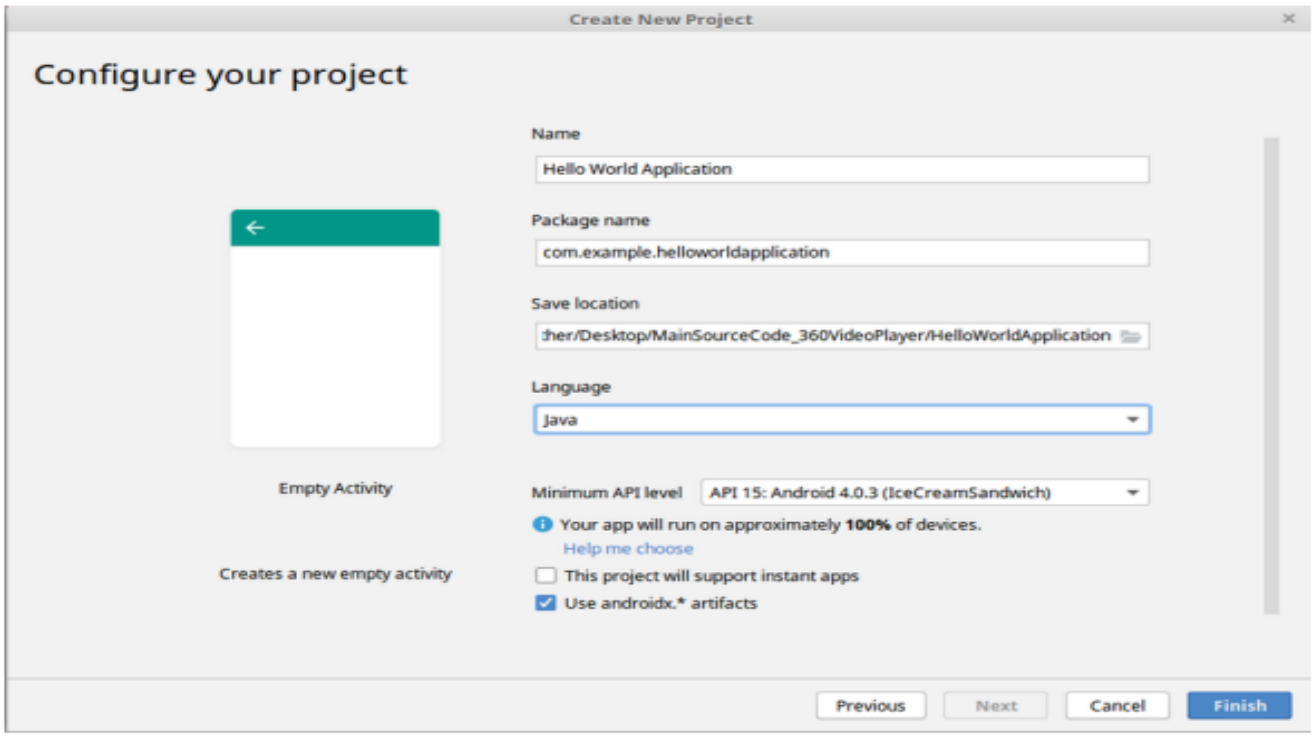
DEVELOPMENT OF HELLO WORLD APPLICATION

To design an android application to display Hello World First step is to create a simple Android Application using Android studio. When you click on Android studio icon, it will show screen as shown below

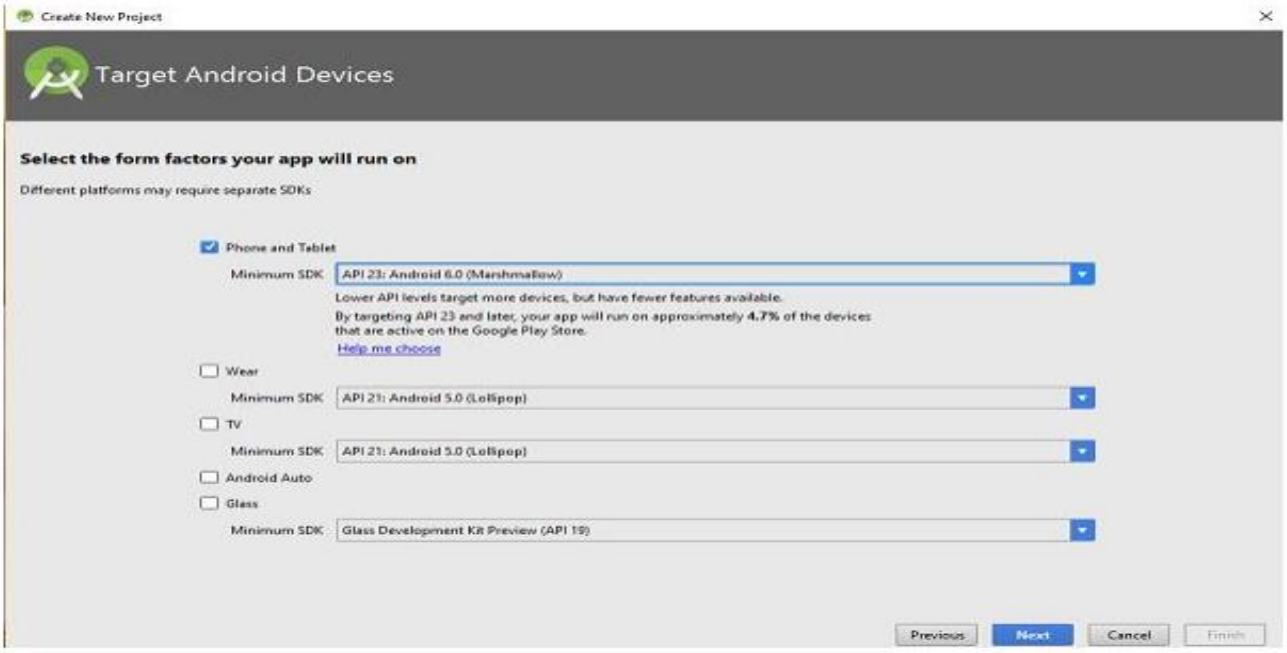
You can start your application development by calling start a new android studio project. in a new installation frame should ask Application name, package information and location of the project.−



Configure the Hello World Project Details, we'll finish creating the project by configuring some details about its name, location, and the API version it



Change the name of the application. Change the default Project location to your preferred directory or just leave it as the default location. On the minimum API level, ensure that API 15: Android 4.0.3 IceCreamSandwich is set as the Minimum SDK. This ensures that your application runs on almost all devices.



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

Home Task:

1. Write a main function in Java Language on NetBeans IDE and also Run & Compile your code.
2. Develop a Hello World Mobile Application on Android Studio and write the source code of following files.
    a. MainActivity.java
    b. activity_main.xml