

ASSIGNMENT NO: 1 (Android)

Title: To Install Android studio.

Aim: Download Install and Configure Android Studio on Linux/windows platform.

Objectives:

1 To study installation of Android Studio.

Apparatus:

Ubuntu 18.04

Android Studio 3.2

Questions:

1. Define Activity in android studio?
2. How to call another activity in android?
3. Explain Android Architecture?
4. Explain lifecycle of activity?
5. Explain Project explorer of android studio?

Aim : To install and configure Android Studio.

Questions

1. Define Activity in android studio.

Ans. An activity is a single, standalone module of application functionality that usually correlates directly to a single user interface screen and its corresponding functionality.

An appointments application might, for example, have an activity screen that displays appointments set up for the current day.

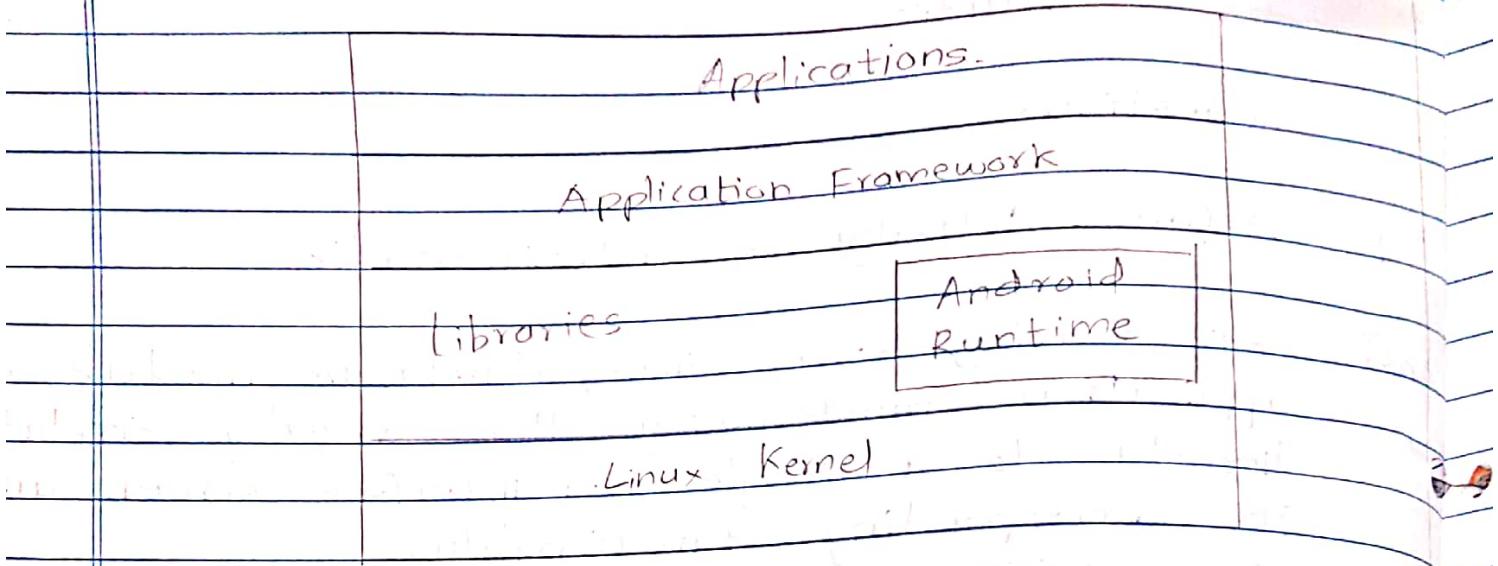
2. How to call another activity in android?

Ans. Intents are the mechanism by which one activity is able to launch another and implement the flow through the activities that make up an application. Intents can be explicit, in that they request the launch of a specific activity by referencing the activity by class name, or implicit by stating either the type of action is to be performed.

3. Explain Android Architecture.

Ans. Android is structured in the form of a software stack comprising applications, an OS, run-time

environment, middleware, services and libraries.



The Linux Kernel —

It provides a level of abstraction between the device hardware and upper layers.

The kernel provides preemptive multitasking, low-level core system services such as memory, process and power management in addition to providing a network stack and device drivers for hardware such as device display, WiFi and audio.

Android RunTime —

When an application is loaded onto the device, the Android RunTime uses a process referred to as Ahead-of-Time (AOT) compilation to translate the bytecode down to the native instructions required by device processor.

Android Libraries —

Android Libraries are a set of Java-based

libraries that are specific to Android development. Examples of libraries in this category include the application framework libraries in addition to those that facilitate user interface building, graphics drawing and database access.

Application Framework -

It is a set of services that collectively form the environment in which Android applications run and are managed.

Q. Explain lifecycle of an activity.

Ans. An activity can be in one of a number of different states during the course of its execution within an application -

- Active / Running - The activity is at the top of the Activity stack, is the foreground task visible on the device screen, has focus and is currently interacting with user.
- Paused - Paused activities are held in memory, remain attached to the window manager, retain all state information and can quickly be restored to active state when moved to the top of Activity Stack.
- Stopped - The activity is currently not visible to the user.
- Killed - The Activity has been terminated by the runtime system in order to free up memory and is no longer present on the memory

Activity Stack.

5. Explain Project Explorer of Android Studio.

- Ans.
- i) 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.
 - ii) When you start a new project, Android Studio creates the necessary structure for all your files and make them visible in the Project window, on the left side of the IDE.
 - iii) This page provides an overview of the key components inside your project.

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ASSIGNMENT NO: 2 (Android)

Title: A mobile app for media player.

Aim: Design a mobile app for media player.

Objectives:

- 1 To study of mobile app development in android studio.
- 2 To study of mobile app development for media player.

Apparatus:

Ubuntu 18.04

Android Studio 3.2

Questions:

1. Describe the android framework?
2. What items are important in every Android project?
3. What is the importance of Android in the mobile market?
4. What are the four essential states of an activity?
5. What is AIDL?

Aim : To design a mobile app for media player.

Questions

1. Explain Android framework

- Ans.) i) The Android Framework is the entire stack of stuff that makes up the OS.
- ii) The android framework is the set of APIs that allow developers to quickly and easily write apps for android phones.
- iii) Android SDK provides you the APIs, libraries and tools for building and developing new applications on Android operating environment using Java programming language.

2. What items are important in every Android Project?

Ans. The key components of a project are -

i) Modules —

A module is a collection of source files and build settings that allow you to divide your project into discrete units of functionality.

ii) Project files —

Within each Android app module, files are shown in the following groups —

manifests

Contains the AndroidManifest.xml

java

Contains the Java source code files.

res

Contains all non-code resources.

iii) Project structure settings —

To change various settings for your Android Project.

It contains following sections -

SDK Location — sets the location of JDK, Android SDK and Android NDK.

Project — Sets the version for Gradle, and the repository location name.

Developer Services — Contains settings for Android Studio add-in components

Modules — Allows you to edit module-specific build configurations.

3. What is the importance of Android in mobile market?

Ans. i) Android remains the market leader in mobile OS , Apple iOS being the second.

ii) The popularity of Android is its open source applications barring a few proprietary apps.

iii) The multitude of applications and the ease of use makes Android a very popular platform for many mobile phones.

i) Developers can write and register apps that will specifically run under Android environment.

j) This means that every mobile device that is Android enabled will be able to support and run these apps.

What are four essential states of an activity?

- Ans. i) Active / Running — if the activity is at foreground.
- . Paused — if the activity is in the background and still visible.
- . Stopped — if the activity is not visible
- . Killed — if the activity is terminated by run time system.

5. What is AIDL?

Ans. i) AIDL stands for Android Interface Definition Language.

- ii) It is similar to other IDLs you might have worked with.
- iii) It allows you to define the programming interface that both the client and service agree upon in order to communicate with each other using Inter-Process Communication (IPC).
- iv) IPC describes the mechanism how different eyed.

~~types of android components communicate with each other.~~

- ✓ It is a universal mechanism of passing data between processes.

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ASSIGNMENT NO: 3 (Android)

Title: Design a mobile app to store data using internal or external storage.

Aim: Design a mobile app for storage

Objectives:

- 1 To study of mobile app development in android studio.
- 2 To study of mobile app development for internal or external storage.

Apparatus

Ubuntu 18.04

Android Studio 3.2

Questions:

1. What are the life cycle methods of android activity?
2. What are the basic tools used to develop an android app?
3. What is SQLite? How does it differ from client-server database management systems?
4. What is DDMS? Describe some of its capabilities.
5. What is the difference between a fragment and an activity? Explain the relationship between the two.

Aim: To design a mobile app to store data using internal or external storage.

Questions

1. What are the life cycle methods of android activity?

Ans: `onCreate()` — The method that is called when the activity is first created.

`onRestart()` — Called when the activity is about to restart after having previously been stopped.

`onStart()` — Always called immediately after the call to `onCreate()` or `onRestart()` methods.

`onResume()` — Indicates that the activity is now at the top of the ~~activity~~ stack and is the activity with which the user is currently interacting.

~~`onPause()`~~ — Indicates that a previous activity is about to become the foreground activity. This call will be followed by a call to either `onResume()` or `onStop()`.

`onStop()` — the activity is now no longer visible to the user.

`onDestroy()` — The activity is about to be destroyed.

2. What are the basic tools used to develop an android app?

Ans. You can build Android apps using number of different languages and Integrated Development Environments (IDEs). Some of them are listed below -

- i) Adobe Flash (Flash / AIR)
- ii) Rubato (Ruby)
- iii) Xamarin (C#)
- iv) Basic4android (BASIC)
- v) Appcelerator Titanium (HTML / Javascript)
- vi) IntelliJ IDEA (Java)
- vii) Android Studio (Kotlin / Java).

3. What is SQLite? How does it differ from client server database management systems?

Ans. i) SQLite is a Relational DataBase Management System contained in C programming library.

ii) The big difference is SQLite is app resident library, whereas RDBMS typically uses client-server architecture where client process interacts with DB server process using some parts of networking.

4. What is DDMS? Describe some of its capabilities.

Ans. The DDMS is the Dalvik Debug Monitor

Service is a debugging tool used in Android Platform. The DDMS is downloaded as a part of Android SDK. Some of the services provided by DDMS are—

i) Port forwarding.

ii) On device screen capture.

iii) On device thread.

iv) Radio state information.

5. What is the difference between fragment and activity? Explain relationship between the two.

Ans. Activity — When activity is placed at the back of activity stack, the user can navigate back to the previous activity by just pressing back button.

~~Activity can exist independently.~~

Fragment — When fragment is placed in the activity, the user has to request the instance to be saved by calling `addToBackStack()` during fragment transaction.

~~Fragment has to live inside an activity.~~

Activity implementations can optionally make use of fragment class for purposes such as producing more modular code, building more sophisticated user interfaces for larger screens and so on. Multiple fragments can be

combined within a single activity. and the same fragment can often be reused across multiple activities. This structure is largely intended for faster code reuse and facilitate economically viable scaling.

A fragment is essentially a modular section of an activity, with its own lifecycle and input events which can be added or removed at will.

It is important to remember that a fragment's lifecycle is directly affected by its host activity's lifecycle i.e when the activity is destroyed, so are all of its fragments.

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ASSIGNMENT NO: 4 (Android)

TITLE: Google Map and GPS.

AIM: Design a mobile app using Google Map and GPS to trace the location.

OBJECTIVES:

1. To go through creation of location tracker using Android location API and Google maps services.
2. Android provides a very straight forward API to access Location information derived from GPS hardware along with Wi-Fi.

APPARATUS:

Ubuntu 18.04

Android Studio 3.2

Theory-Android allows us to integrate google maps in our application. You can show any location on the map , or can show different routes on the map e.t.c. You can also customize the map according to your choices.

QUESTIONS

1. Explain the Location Objects with methods and Description.
2. How to get the current location from Android.
3. How location Address is Displayed.
4. Explain Android GPS API in detail.
5. How to Customize Google Map

Assignment No. 4 (Android)

Explain the location objects with methods and description.

The location object represents a geographic location which consists of latitude, longitude, timestamp and other information such as bearing, altitude and velocity. There are following important methods which you can use with location object to get location specific information.

- i) float distanceTo (Location dest) — Returns the appropriate distance in metres between the given location.
- ii) float getAccuracy () — Get the estimated accuracy of this location in metres.
- iii) double getAltitude () — Get the ~~attribute~~^{altitude} if available in metres above the sea level.
- iv) double getLatitude () — Get the latitude in degrees.
- v) double getLongitude () — Get the longitude in degrees.
- vi) float getSpeed () — Get the speed if it is available in m/s over ground.
- vii) boolean hasAccuracy () — True, if location has an accuracy.

viii) void setLatitude (double lat) — Set the latitude in degrees.

ix) void setLongitude (double lon) — set the longitude in degrees.

x) String toString () — returns a string.

2. How to get current location from android?

Ans. Location Manager class provides the facility to get latitude and longitude co-ordinates of current location. The class in which you want to get location should implement location listener and override all its abstract methods.

~~Location manager = (Location Manager) getSystemService (context Location. SERVICE);~~

~~location Manager requestLocationUpdate (Location Manager. GPS_PROVIDER, 5000, 5, this);~~

In requestLocationUpdates (), the 2nd argument is time in milliseconds and 3rd argument is distance in metres.

Here to get co-ordinates ,use getLatitude() and getLongitude() methods with variable of Location class. Whenever Location is changed it can be fetched inside onLocationChange () method.

3. How is Location Address displayed?

Ans. Geocoding is the process of converting the addresses into geo-coordinates as longitude and latitude. In reverse geocoding a geo-coordinate is converted to a postal address.

Step 1 — We need location address permissions to find latitude and longitude of Android Device.

Step 2 — Accessing the geolocation for latitude and longitude following class is the key element in accessing the longitude and latitude of the android device. It implements Location Listener and get location co-ordinates update.

Step 3 — Reverse geocoding to get location address following the key element for reverse geocoding to the address for the passed latitude and longitude co-ordinates.

We access the geocoder Google API for reverse geocoding and get every line of address like street, city, pin/zip, etc.

4. Explain Android GPS API in detail.

Ans. Android location API can be used to track your current mobile location. android.location.LocationListener is used to get user location.

All location API methods require the ACCESS_COARSE_LOCATION or ACCESS_FINE_LOCATION permission. Location Manager has 2 means of acquiring location.

Location Manager. GPS_PROVIDER

location Manager. NETWORK_PROVIDER.

5. How to customize the Google Map?

Ans. There are four ways to customize Google Maps.

google.map.setMapType(Google.map-TYPE-NORMAL)

google.map.setMapType(Google.map-TYPE-HYBRID)

google.map.setMapType(Google.map-TYPE-SATELLITE)

google.map.setMapType(Google.map-TYPE-TERRAIN)

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