



# Samrat Ashok Technological Institute, Vidisha

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## Assignment - II

Q1 An Emulator runs directly inside Android Studio by default. Tell the uses of emulator.

An An emulator is typically a program that lets you run software from a completely different device on your computer.

Uses -

1) The most common uses of emulator are to play video games and run different operating system - for example, you can put a MAC operating system on your window computer.

2) Emulator can allow you to run apps that normally would not work on your computer.

3) with the help of an emulator, a host system can run software, program, which are designed for the guest system.

Q-2 "Minimum SDK" is one of the factor to develop an android app. Restate your thought on the statement.

Ans - The minimum SDK or API level of determine your project determines on how many devices your app can run. The lower the API level, the more devices your app will be compatible with, but there must also be a balance. The API level needs to be low enough to be compatible with a fair number of devices, but you don't want to go too low to lose features you want your app to run. You can use your own min SDK but be careful about features you use. In fact, minSDK with greater numbers have more features. You can always adapt the minimum SDK in your project in the module's build.gradle file.

Exq - Suppose you select a min. SDK (6) than equal of above 6 devices will be able to use the app.



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Q.3 outline the features of Android

Ans here are some unique features of android -

(1) custom home screen - While it's possible to hack certain phones to customize the home screen, Android comes with ~~as~~ this capability from the get-go. Download a third-party launcher like Apex, Nova, and you can add gesture, new shortcuts or even performance enhancement for older mobile devices.

(2) Widgets:- Apps are versatile, but sometimes you want information at a glance instead of having to open an app and wait for it to load. Android widgets let you display just about any feature you choose on the home screen; including weather, music or productivity tools.

(3) storage and battery swap:- Android phones also ~~swap~~ have unique hardware capabilities. Google's operating system makes it

possible to upgrade, replace and remove your battery that no longer holds a charge. In addition, Android phones come with SD card slots for expandable storage.

Q4 List the logical components of an android app. Also, give a brief overview of these logical components.

Answer

① **Activity**- An activity represents a single screen with a user interface, in that activity perform action on the screen. For example an email application might have one activity that shows a list of new emails, another activity to compose an email.

public class MainActivity extends Activity {

}

② **Services**- A service is a component that runs in the background to perform long-running application. For ex, A service can might play a music in the background while the user is ~~on~~ in a different application.

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public class MyService extends Service

(3) Broadcast Receiver - Broadcast receiver

simply respond to broadcast messages from other application or from the system. For example, application can also initiate broadcast to let other app know that some data has been downloaded to the device and available to use.

public class MyReceiver extends BroadcastReceiver

public void OnReceive(Context, Intent)

(4) Content provider - A content provider

component supplies the data from one application to others on request, such methods are handled by the methods of the Content Resolver class.

A content provider is implemented as a subclass of ContentProvider class.

public class MyContentProvider extends

ContentProvider

public void onCreate()

⑤ Widgets - These are the small visual application components that you can find on the homescreen of the devices. They are a special variation of Broadcast Receivers that allow us to create dynamic, interactive application components for users to embed on their home screen.

⑥ Intent - Intent is a powerful inter-application message-passing framework. They are extensibly used throughout android. Intent can be used to start and stop activities and services, to broadcast messages system-wide or to an explicitly Activity, service or broadcast receiver.

⑦ Fragment - Represents a portion of user interface in an Activity

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Output :



Email id

Subject

Body of Mail

[Send]



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Q.5 List any five example where you have experienced Toggle button.

Ans In android, Toggle button is used to display checked and unchecked state of a button. Toggle button is basically a off/on button with a light indicator which indicate the current state of toggle button.

Example of toggle button -

- 1) On/off sound
- 2) Bluetooth
- 3) Wi-fi
- 4) hotspot
- 5) Airplane Mode. on/off
- 6) notification disable/  
ring bck

Q6 Differentiate between Internal and External intent.

Ans Internal intent :- do not name a specific component, but instead declare a general action to perform, which allow a component from another app to handle it. For example if you want to show the user a location on map, you can use an internal intent to request that another capable app show a specified location on a map.



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External intents :- do not name a specific component. Specify which application will satisfy the intent, by supplying either the target app's package name or a fully qualified Component class name. You will typically use an external intent to start a component in your own app, because you know the class name of the activity or service you want to start.

For example - you might start a new activity to start a service to download a file in the background.

Q-7 Give the structure of manifest file used in android app development.

Ans Manifest file in the Android appli. is one of the core files for android application. without the presence of manifest file, braddle won't be able to build your application. usually, the android application creates a manifest file with the basic details of the application.

The structure of manifest file is given below -



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```
<Manifest>
  <Application>
    <activity
      android:name = "com.example.applicationname.MainActivity">
    </activity>
  </application>
</manifest>
```

The following data is contained in the manifest file -

- The name of the application's package
- The component that consists of all the actions, service, recipients and content providers.
- The permission that application needs in order to access the system's and apps protected area.
- Which device can download the app from the Google playstore depends on the functionalities that the app need.
- Additionally, it contains information about the program metadata, such as icon, version, theme etc

\* Element tags of manifest file -

```
<Manifest>, <application>, <activity>, <action>,
<category> <service>
```

Q.8 Outline the various layouts used in Android. List five attributes of any layout. compare the linear layout with relative layout.

Ans There are number of Layouts provided by Android which you will see in almost all the application to provide different view, look and feel.

Linear layout:- Linear layout is a view group that aligns all children in a single direction, vertically or horizontally.

Relative layout:- Relative layout is a view group that displays child views in relative positions

Absolute layout:- Absolute layout enables you to specify the exact location of its children.

Table layout:- Table layout is a view that groups view into rows and columns

Frame layout:- The frame layout is a placeholder on screen that you can use to display a single view



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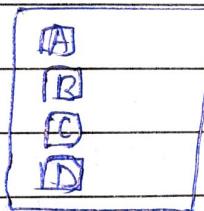
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Difference between Linear layout and Relative layout.

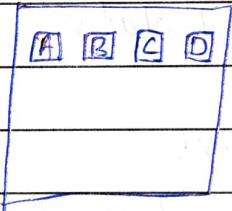
Linear layout :- Linear layout is a type of view group which is responsible for holding views in it either horizontally or vertically. It is a type of layout where one can arrange groups either horizontally or vertically.

Ex:-

Vertical view



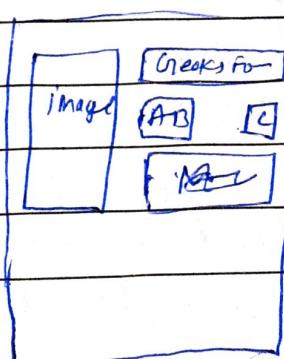
Horizontal view



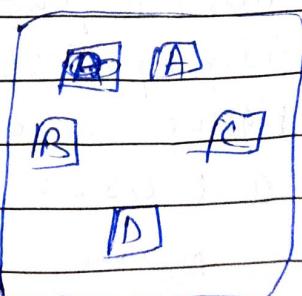
Relative layout:- Relative layout is a layout in which we can arrange View/ widgets according to the position of other View/ widgets. It is independent of horizontal and vertical view and we can arrange it according to one's satisfaction.

Ex:-

Relative view 1



Relative view 2



## Linear layout

1) We can adjust ~~the~~ view and widgets linearly i.e. Horizontally and Vertically.

2) It is useful when we arrange view in a linear fashion.

3) Linear layout is less used as compared to Relative layout.

## Syntax:

```
<linear layout>
```

```
<!--view, widgets-->
```

```
</LinearLayout>
```

4) We can use Linear layout inside Relative layout.

5) Eg - In various Apps, Linear layout is mainly applicable in the sign up screen when all are arranged in linear fashion.

## Relative layout

1) We can adjust the view and widgets according to one's satisfaction.

2) It is useful when we arrange view in a relative fashion.

3) Relative layout is used more in applications.

## Syntax:

```
<RelativeLayout>
```

```
<!--View, Widgets-->
```

```
</RelativeLayout>
```

4) We can also use RelativeLayout as a child of LinearLayout.

5) In Google play store when we open the app, all the sections like game, books, movie and app section are in Relative layout format.

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List view :- List view is a view group that displays a list of scrollable items.

Grid view :- Gridview is a view group that displays item in a two-dimensional, scrollable grid.

5 attributes of Linear Layout:-

1) android:id :- This is a unique ID which uniquely identify the view.

2) android:layout\_width :- This is the width of the layout, ~~width~~

3) android:layout\_height :- This is height of layout

4) android:orientation :- How elements should be arranged in the layout.

It can be horizontal or vertical

5) android:gravity :- It specifies how an object should position its content on its X and Y axis.

Position values are - center, vertical, fill, center, bottom, end etc

6) android:layout\_gravity :- This specifies how child views are positioned.

Q.1 Outline the adapter used to create an app for android platform.

A. - An adapter basically connects the user interface and data source. According to android official, "An adaptor object acts as a bridge between an AdapterView and the data for that view. Android adapters basically provides access to the data items."

Android provide us with the following different types of adapters that are used to fill the data in UI component

1) Base adapter - It is the parent adapter for the rest of the adapters.

2) Cursor adapter - This adapter makes it easy and more controlled to access the binding the data values.

3) Array Adapter - Array adapter presents the items in a single list backed by an array.

4) Custom ArrayAdapter - It displays the custom list of an array.



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Simple Adapter:- simple Adapter is an easy adapter to map static data to the view through the xml file.

Custom Simple Adapter:- It displays ~~the~~ a custom mixed list and enables us to access the child data of the list or grid view.

Q10 An activity can be in one of its state. List the activity states. Discuss the way to manage lifecycle methods of an app.

A10 The activity state of an activity depends on its position in the activity stack. Here are some states of activity.

Active:- Activity at the top of the stack

Paused:- Activity does not have focus

Stopped - Activity is not visible

Inactive:- After an activity has been killed

Every android has at least one activity associated with it. When the application begins to execute and runs, there are various state changes that activity goes through.

Different events can cause an activity to do a transition from one state to another.

When a certain event occurs, each activity has to go through different stages of the android lifecycle. The state of activity is managed by the stack, in which new activity is at top of the stack and rest of the activity is below in ~~the~~ stack in order of the time they have been put in the stack.

⇒ There are four stages of an activity

1. If an activity is in foreground of the screen i.e. at the top of the stack, then it is said to be active or running. This is usually the activity that the user is currently interacting with.

2. If an activity has lost focus and a non-full-sized or transparent activity has focused on top of your activity.

In such a case either another activity has a higher position in multi window



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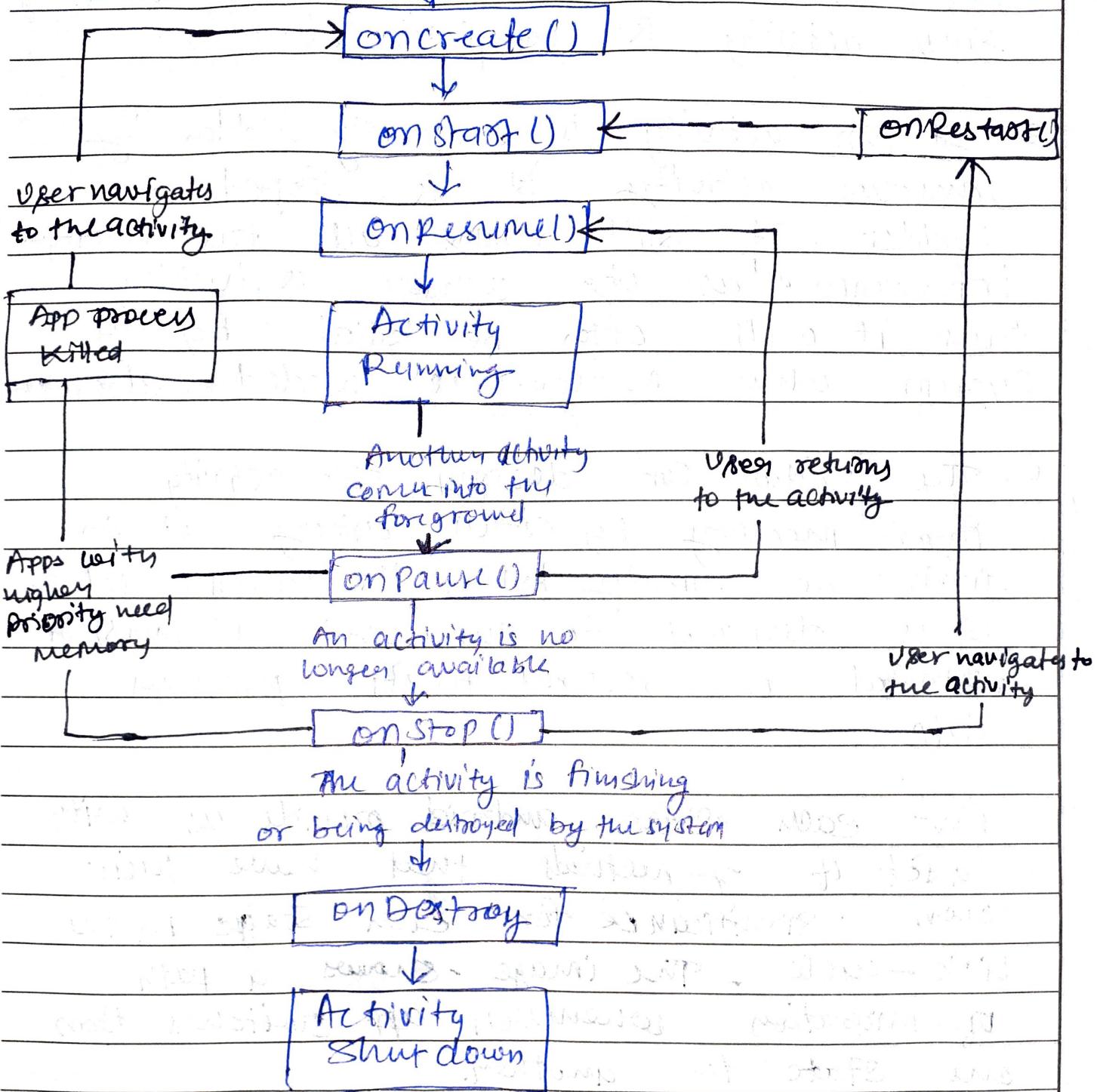
mode or the activity itself is not focusable in the current window mode. Such activity is completely alive.

3 If an activity is completely hidden by another activity, it is stopped or hidden. It still retains all the information and as its window is hidden thus it will often be killed by the system when memory is needed elsewhere.

4. The system can destroy the activity from memory by either asking it to finish or simply killing its process. When it is displayed to the user it must be restarted or restored to its previous state.

for each stage, android provide us with a set of 7 methods that have their own significance for each stage in the life-cycle. The image shows a path of migration whenever app switches from one state to another.

## Activity launched



Android activity lifecycle



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Q.11 Give the name of ~~the~~ the class that manages the creation and update of the database.

Ans The android.database.sqlite.SQLiteOpenHelper class is used for database creation and version management. For performing any database operation, you have to provide implementation of onCreate() and onUpgrade() methods of "SQLiteOpenHelper" class.

"SQLiteOpenHelper" allows changing the database schema.

Q.12 List the states of a MediaPlayer object.

Ans From the moment the media player instance is created to the moment it is terminated, this instance transitions from one state to the next.

Here are possible states:

- 1) IDLE
- 2) INITIALIZING
- 3) INITIALIZED
- 4) PREPARING
- 5) PLAYING
- 6) PAUSED
- 7) SEEKING
- 8) COMPLETE
- 9) ERROR
- 10) RELEASED

Q13 Create an object of cursor for fetching the data from a table named "Student Information".

Any - Cursor class is an instance using which you can invoke methods that execute SQLite Statements, fetch data from the resultsets of the queries.

You can create "cursor" Object using the "cursor()" method of the Connection object/ class fetching data from database using cursor.

- 1) Declare the cursor using the declare Statement.
- 2) Declare variables and conditions.
- 3) Open the declared cursor using the OPEN statement.
- 4) Retrieve the desired record from a table using the FETCH statement.
- 5) Finally close the cursor using the CLOSE statement.



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Q.14 Describe the SQLite database in brief and differentiate it with other database like SQL / MySQL server. SQLite database is preferred than these kind of database. Justify the statement.

Ans - SQLite :- SQLite is an embedded, server-less relational database management system.

It is an in memory open-source library with zero configuration and does not require any installation. Also it is very convenient as it is less than 500KB in size, which is significantly lesser than other database management systems.

SQLite engine is not a standalone process like other databases, you can link it statically or dynamically as per your requirement with your application. SQLite access its storage files directly.

## SQL

1. SQL is Structured query language used to query relational database system. It is written in C language.

## SQLite

1. SQLite is an Relational database Management system which is written in ANSI-C

## SQL

## SQLite

① SQL is standard which specifies how relational schema is created, data is inserted or updated in relations.	② SQLite is file based. It is different from other SQL databases because unlike most other SQL databases, SQLite does not have separate server process.
③ Main components of SQL are Data definition Language (DDL), Data manipulation Language (DML), Data control language (DCL)	③ SQLite supports many features of SQL and has high performance but does not support stored procedures.
④ SQL is query language which is used by other SQL databases. It is not database itself.	④ SQLite is relational database management system itself which uses SQL.

## MySQL

① Developed in C and C++.	① Only C.
② Handles multiple connections simultaneously.	② It can handle only one connection at a time.
③ It can handle large volume of data efficiently.	③ It can handle only small set of data, performance degrades.
④ Supports XML formats.	④ Does not support XML.
⑤ Supports multi-user environment.	⑤ Not supported.



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Q.15 Give the steps to install a third party (APK) file on an android mobile.

Ans follow the following steps to install the APK file on your android device

- 1) Find the APK you want to install and download it from browser
- 2) Initiate the installation either through the download notification or a file browser.
- 3) You will receive a warning at the bottom of the phone letting you know that you need to give that app permission to install the file.
- 4) Tap the setting button to proceed.
- 5) On the next page, find the app from the previous steps and toggle it on.
- 6) A prompt should pop up, giving you the option to install the app.  
Go ahead and follow the instruction to install.

Q. 1<sup>b</sup> Illustrate name the interface used to create a notification object.

Ans Interfaces used to create a notification object depends on the specific programming language or platform being used. However here are some examples

1. In Android, you can create a notification object using the `NotificationCompat.Builder` class.
2. In iOS, you can create a notification object using the `UNMutableNotificationContent` class.
3. In JavaScript, you can create a notification object using the `Notification()` constructor.
- 4) In Python, you can create a notification object using the `player.notification.notify()` function from the `player` library.



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Q 1<sup>st</sup> outline the tools used in development of an app for android devices.

Ans Here is a general outline of some of the tools that can be used in the development of an app for android devices.

1- IDE - Integrated development environment is a software application that provides a comprehensive environment for developing, testing and debugging android apps.

Some popular Android IDEs include Android Studio, Eclipse, IntelliJ IDEA.

2. SDK - Software development kit provides the necessary tools, libraries and API required for developing android apps. The SDK include tools such as the Android debug Bridge (ADB), Android Asset Packaging Tool (AAPT), and Android Emulator.

3. Programming language:- The programming language used to develop an android app can vary, but the most commonly used languages are Java and Kotlin.

4) Android development Libraries: There are several Android development libraries available that can be used to speed up the development process, such as Android Support Library and android architecture components.

5) Version Control: Version control is an important part of the development process and helps developers manage changes to code and collaborate effectively. Popular version control tools include Git and Subversion (SVN).

6) User Interface (UI) designing Tools: Designing a user-friendly and visually appealing UI is important for creating a successful app. There are several design tools like Sketch, Adobe XD, and Figma, which can help create UI designs and mockups.

7) Testing tools: Testing is a critical part of development process and there are several ~~develop~~ testing tools available for android app, such as android debug bridge (ADB), and emulators and third party testing tool series Appium, Robotium.



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Q.18 Describe about view that display web pages inside your application.

Any View? - The view that displays web pages inside a application is commonly referred to as a web view. A web view is essentially a component of an application that allows users to browse web pages directly from within the application itself.

This is achieved by embedding a browser engine within the application that can render web content in a way that is optimized for mobile devices.

Web view are commonly used in mobile applications to display content such as help pages, term of services and login screens.

There are several popular methods, frameworks and libraries available for implementing web view in mobile application.

Here, are some methods defined in web view class.

1. Can Go Back() - this method specifies the webview has a back history item

~~2D can go~~

(2) CanGoForward() :- This method specifies that webview has a forward history item.

(3) ClearHistory() - This method will clear the forward and backward history.

(4) Destroy() - This method destroy the internal state of web view.

(5) GetProgress() :- This method gets the progress of the current page.

(6) GetTitle() :- This method returns the title of current page.

(7) GetURL() :- URL of current page

(8) findAllSync(String find) :- This method finds all instances of string and highlight them.

→ overall webview are a powerful tool for enhancing the user experience of mobile applications by allowing users to access web content directly within the app, without switching different application.