14.5.21

What is MultiDex in Android ?

When your app and the libraries it references exceed 65,536 methods, you encounter a build error that indicates your app has reached the limit of the Android build architecture.

 The number 65536 represents the total number of references that can be invoked by the code within a single Dalvik Executable (DEX) bytecode file. This page explains how to move past this limitation by enabling an app configuration known as multidex, which allows your app to build and read multiple DEX files.

About the 64K reference limit :

Android app (APK) files contain executable bytecode files in the form of [Dalvik](https://source.android.com/devices/tech/dalvik/) Executable (DEX) files, which contain the compiled code used to run your app. The Dalvik Executable specification limits the total number of methods that can be referenced within a single DEX file to 65,536—including Android framework methods, library methods, and methods in your own code. In the context of computer science, the term [Kilo, K](https://en.wikipedia.org/wiki/Kilo-), denotes 1024 (or 2^10). Because 65,536 is equal to 64 X 1024, this limit is referred to as the '64K reference limit'.

Multidex support for Android 5.0 and higher:

Android 5.0 (API level 21) and higher uses a runtime called ART which natively supports loading multiple DEX files from APK files. ART performs pre-compilation at app install time which scans for classes**N**.dex files and compiles them into a single .oat file for execution by the Android device. Therefore, if your minSdkVersion is 21 or higher multidex is enabled by default, and you do not need the multidex library.

E/SpannableStringBuilder: SPAN\_EXCLUSIVE\_EXCLUSIVE spans cannot have a zero length

Learnings from Suvichar project :

> Bottom Navigation Bar with Fragments (SuvicharActivity.java).

> Coding in Fragment file (QuotesFragment.java).

> Button click Visibility (GONE/VISIBLE) in QuotesAdapter.java

> In LikedAdapter.java, following things to refresh the LikedSuvicharList :

**LikedSuvicharList**.remove(position);  
notifyItemRemoved(position);  
notifyItemRangeChanged(position, **LikedSuvicharList**.size());

19.5.21

How to print ArrayList in Logcat in Android ?

Make use of [toString()](http://docs.oracle.com/javase/7/docs/api/java/util/AbstractCollection.html" \l "toString%28%29) method which is available for most common data structures:

Log.d("list", list.toString());

Above statement will give you the expected result if you declare your List/Collection using [Generic type](https://docs.oracle.com/javase/tutorial/java/generics/types.html) defined in Java. Such as String, Integer, Long etc. Cause, they all have implemented toString() method.

**Custome Generic Type:**

But if you declare the List using your own custom type then you will not get proper output by just calling list.toString(). You need to implement toString() method for your custom type to get expected output.

**For example:**

You have a model class named Dog as below

public class Dog{

String breed;

int ageC

String color;

}

You declared a List using Dog type

List<Dog> dogList = new ArrayList<Dog>();

Now, if you want to print this List in LogCat properly then you need to implement toString() method in Dog class.

public class Dog{

String breed;

int age

String color;

String toString(){

return "Breed : " + breed + "\nAge : " + age + "\nColor : " + color;

}

}

Now, you will get proper result if you call list.toString().

# [Compare all values of arraylist to a string](https://stackoverflow.com/questions/37899388/compare-all-values-of-arraylist-to-a-string)

ArrayList< String > abc = new ArrayList<>();

abc.add("hi");

abc.add("hello Yash");

abc.add("i am Yash");

String x = "Yash";

for(int i=0; i<abc.size(); i++)

{

if(abc.get(i).contains(x))

{

int index = i;

System.out.println(index);

}

}

If ArrayList is of Model class type, then we have to add this method in Model class.

20.5.21

To avoid ArrayList display multiple times on screen:

**public class** liked\_fragment **extends** Fragment {  
  
 DBAdapter **dbAdapter**;  
 Context **ctx**;  
 ArrayList<ModelLikedFragment> **LikedSuvicharList** = **new** ArrayList<ModelLikedFragment>();  
 RecyclerView **rec\_liked**;

@Override  
 **public** View onCreateView(LayoutInflater inflater, ViewGroup container,  
 Bundle savedInstanceState) {  
 View view = inflater.inflate(R.layout.***fragment\_liked\_fragment***, container, **false**);  
 init(view);  
 **LikedSuvicharList** = **new** ArrayList<ModelLikedFragment>(); *// To overcome this- when we click on liked fragment then back, again click then back,  
 // multiple LikedSuvicharList will be seen. To avoid this we should initialize the arraylist again as per above line.* GetLikedDataFromTable();  
 **return** view;  
 }

Learnt- How to see sqlite database tables in PC ? For this we need DB Browser. So it is downloaded.

Tried to learn, how to upload project on github without command line. To do this, Git software downloaded. But at the end, not able to upload project on github.

Date – 5.6.21

AdMob

* Search on google- admob in android.
* Make sure that your mobile & PC is connected with Internet.
* Then open following link :

<https://developers.google.com/admob/android/quick-start>

* Steps to be followed as per above link :

1. Add dependency.

**implementation 'com.google.android.gms:play-services-ads:20.1.0'**

1. Add AppID in AndroidManifest as shown.

We can use AdUnitId with ~ sign as AppID for testing purpose

Also add permissions for Internet & AccessNetworkState in Manifest.

1. Initialize the Mobile Ads SDK : (This step can be skipped).
2. Select an Ad format (Banner, Interstitial, Native, Rewarded etc.)
3. Banner Ad Integration Steps :
4. Insert AdView widget in layout xml file.

* Insert app:adSize and app:adUnitId attributes. On google, it is written as

ads:adSize and ads:adUnitId, but it is showing error in xml file.

* **Note:** The size of the container in which you place your ad must be at least as big as the banner. If your container has padding, that effectively decreases the size of your container. In the event that the container cannot fit the banner ad, the banner will not appear, and you will get this warning in the logs:

1. Load ad :

* As per given code.

## Do hardware acceleration for video ads in Manifest as per given code.

1. Interstitial Ad Integration Steps :

Refer following link :

<https://www.studytonight.com/post/how-to-add-admob-interstitial-ad-in-android-app>

Motivational Quotes

How to add image in button :

*android:drawableLeft="@drawable/imgupload"  
android:paddingHorizontal="80dp"*