**Report**

**Introduction:**

The application that I have made is called the PhotoSnap.I have used the Kotlin Programming Language in the application. The application main purpose is to use the idea of Reverse Image Search. So according to this idea the PhotoSnap application is used to find out the related images on the top 3 Search Engines API’s as given in the document. And the after searching we can view the related images that came from the server and can also download and save it into database for offline usage in the app. We can choose the image either from the gallery or the camera for searching purposes. There is also an option for deleting the images from the database. The application has modern and attractive design of which any user can use the application without any difficulties.

**Coding Structure:**

First, the application main architecture is based on MVVM (Model View ViewModel), the recommended architecture provided by the android community. And then after that I have arranged the code in packages or component wise so that every related functionality should be in the same directory. I have made the 5 packages and below are their names

1. Data
2. Home
3. Reverse Image Result
4. Saved result
5. Util

* **Packages:**

The data package hold all the database, network and model related code. The Home package has the main screen which is visible to the user first time after the splash screen. The Reverse Image Result package is used to search the result from the 3 provided search engines by uploading the image URL and then it will show the result images related to the uploaded image as the main purpose of Reverse Image Result. The Saved Result package is for displaying the all the image that are saved into the database and use can view the image as a pop up screen for bigger view. The last Util package is used for all the utilities used in the app like permission, toast, etc.

* **Architecture Components**

I have used the latest libraries like navigation, Extension function, Databinding in the application because they provide us a lot of simplicity and it is very few lines to code and easy to understand. For getting data from the network/API’s I have used the Retrofit Library as it is very popular and easy to use and its annotation are very interesting that make our task very simple by using its annotations.

* **3rd Party Libraries:**

I have use 3 – 4 third party libraries in the application . I have used the Glide library for image viewing purposes . I have also use the Croppy Library for cropping the Image into different sizes purposes. I have use the Image PopUp library for viewing the image in a pop up dialogue as bigger complete images.

* **Background/Long Running Tasks**

For heavy or long running operations I have used the ViewModel Scope and Global Scope of Coroutine scope to make the Mani UI thread safe from hanging the screen. The coroutine has make our long running operations easy to use by using the suspend keyword so that they run in separate thread and then continue to the next code in the coroutine block. For Updating the UI I have use the Dispatchers.Main to update the UI from the coroutine scope.

* **Designing Component:**

For designing the User interface, I have used the Constraint Layout as it is Rich layout with a lot of features and functionalities. The drag and drop-in android studio help us to design the User Interface very easily. I have also made custom Dialogue box for notification purposes and for choosing between the camera and gallery to redirect the user accordingly.

Here are the screens design attached below

A person holding a phone

Description automatically generated with low confidence Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated Graphical user interface, website

Description automatically generated

**Conclusion:**

There are lot of application usage of Reverse Image Search in the daily life. As We have use Reverse Image search idea in our PhotoSnap Application whose main purpose is to find out the related images from the 3 main search engines. We can also extend the app functionality in such a way that user can download the images into their gallery for using them as a wallpaper or later purposes but we had only limited used in the application only. If we get a next chance then we will improve it to make similar to wallpaper App like Zedge and also for finding the related things and theirs source over the internet.

The technique i have used in application is latest and recommended by the android community because the main UI thread is safe and no long running operations like image downloading are done on main thread. So our app is main safe which means user friendly.