ELECTRICAL SAFETY ANDROID APPLICATION "MAHASURAKSHA"

Zambare Ashish , Shirwadkar Vishakha, Dabhade Swamini,Avaghade Sanika

Guide –Prof. Y. A. Makandar

ABSTRACT

In today's world, people using android phones have increased rapidly, and hence, an android phone can be used efficiently for personal security or various other protection purposes. The heinous incident that outraged the entire nation have wakened us to go for the electrical safety issues and so a host of new apps have been developed to provide security systems to people via their phones, an Android Application for the "MAHASURAKSHA" and this app can be activated this app very useful for a farmer.

when you see the open live wire, open transformer, etc. in that case you have to only take pictures of that scenario and send them immediately action will be taken on that situation to avoid an electrical accident. Then quickly solve the problem and save the lives of people. The unique feature is GPS location add on it so when you send a picture then automatically captured the location.

It is very easy to use or we can say it is user friendly. Anyone can use it cause there we have provided guidelines on how to use it and also can provide electrical safety tips as per your demand no issue with that. but looking towards future app will definitely help to everyone saves the life from an electrical accident which is a major issue today.

INTRODUCTION

Electrical shock can only occur when a part of the body completes a circuit between a conductor and another conductor or a grounding source. Death or injury is not caused by the voltage ; the damage is done by the amount of current that flows through the body

Effects of electrical shock depend mainly on the total amount of current flow and the path of the current through the victim's body. To prevent electrical shock ,which can cause several types of injuries, make sure that your body cannot become part of the electrical flow and the path of the current. Water reduces resistance and allows electricity to flow into wet areas, hands, arms, your body. Electricity and water are a bad mix.

Problem in supply causes disturbance because of weather conditions, thunder, storm.so many times light not available for 2-3 days so Farmer or any person faces many problems in their irrigation, industry, household system and loss in production takes place.

People which are illitetrate are not able to handle such problem and not get supply proper help from electricity board. There is not proper way to resolve faults in transmission system with giving proper application and it will take much time for making application and accepting from board & resolving it.

Hazard it may be any type can cause fetal also, So people first should know the electrical equipment handling carefully . Because Everyone in world can mercy except electricity. So we taught to add basic electrical equipment handling and there photograph, animation and cartoons in this form. So user will start to read them and work according to these ways

Our idea to solve this problem by using latest technology advancement. Now a days everyone has smart phones so, electrical faults happening in locality which observed are snatched through camera along with GPS location are send to electrical board. So, company can call technical person for giving help. That number and primary help or provision made by using call. And there must resolution of fault in required specific time. And connection or power to electrical equipment will restored in t

IMPLEMENTATION

Flash Screen

In this project, we are using Android studio to complete the app. The app is designed as the first Layout of Flash Screen is designed. Flash screen is a screen which appears for 5 seconds when the opening of the app the background image of the app is added in imageView of screen layout for all screen. And a builder is designed and after 5-sec Intent is added which passes that activity to the mainactivity.

Main Activity of Sign In-

In the main activity we get permission to Use a Camera, Internet, And Storage the button Check Permission is added with the program to Check and create a dialogue box of various permission. If permission is not given it show dialog "Give all type of permission for the proper working of App". And Sign in button also there to give Sign in using Google Account. And Builder of Google Account showing doesn't open until all permission is allowed. And permitting all Google sign-in work and pass Main Activity to Safety Tips Activity.

The code for requesting Google Sign Inbox for new users is building the GoogleSignIn Options builder. Once signed in it will verify the previous user.

```
GoogleSignInOptionsgso = new GoogleSignInOptions
    .Builder(GoogleSignInOptions.DEFAULT_SIGN_IN)
    .requestIdToken(getString(R.string.default_web_client_id))
    .requestEmail()
    .build();
mGoogleSignInClient= GoogleSignIn.getClient(this,
gso); FirebaseUsercurrentUser =
mAuth.getCurrentUser()
```

The Override method onActivityResult is assigned for further opening new Activity once verification is done.

```
@Override
public void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
 if (requestCode == RC_SIGN_IN) { Task<GoogleSignInAccount> task =
        GoogleSignIn.getSignedInAccountFromIntent(data);

        handleSignInResult(task);
          }
        }
 private void handleSignInResult(Task<GoogleSignInAccount>completedTask) {
try {
        GoogleSignInAccount account =
        completedTask.getResult(ApiException.class); FirebaseUsercurrentUser =
        mAuth.getCurrentUser();
          Intent intent = new
        Intent(getApplicationContext(),login.class); startActivity(intent);

          }
```

Safety Tips-

Safety tip activity is with the button " Safety Tips" it also has an image view of Safety image photo. Covered with Intent of passing that Activity to Safety TipsSafety tips have Images of Electrical safety tips. An image changing program is provided to change the image on pressing Next image And Back image user can read safety tips and understand how Electrical equipment handled with care. The skip button is also given to jump to the complaint page in a hurry. By skip button, this Activity passed to Complaint Activity.

Complaint Page-

The Layout of Complaint page is first in imageView the photo is present below that two buttons are there as Camera and Upload. The camera button is for "Action image Capture" by using a camera photo of Electrical fault or circuit is clicked and deleting it appears in imageView. And after it pressing Upload the image is getting the upload to Firebase Storage and Toast appears " Photo received and we will take action soon". And the photo gets received at Firebasestorage.

The code for camera opening and Capturing photo, is like requestCode == resultCode then captured image replaces bitmap image present on screen.

```
@Override
protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent
data) {
super.onActivityResult(requestCode, resultCode, data);
if(requestCode==0 &&resultCode==RESULT_OK) {
myimage=(Bitmap)data.getExtras().get("data");
photo.setImageBitmap(myimage);
}

}
```

For Uploading image made in format of JPEG, and compressed And StorageReference with child ”image/ ” is given. And randomUUID() is assigned to Captured image Once uploaded user get the Toast “Photo received your complaint get registered will contact soon.” And User data submission page open.

```
public void upload(){
final ProgressBar p= findViewById(R.id.p);
p.setVisibility(View.VISIBLE);
getWindow().addFlags(
WindowManager.LayoutParams.FLAG_NOT_TOUCHABLE);
ByteArrayOutputStream stream = new ByteArrayOutputStream();
myimage.compress(Bitmap.CompressFormat.JPEG, 100, stream=stream); final
String random = UUID.randomUUID().toString(); StorageReferenceimageRef =
mStorageRef.child("image/"+random);
byte[] b = stream.toByteArray();
imageRef.putBytes(b)
.addOnSuccessListener(new
OnSuccessListener<UploadTask.TaskSnapshot>() {
@Override
public void onSuccess(UploadTask.TaskSnapshottaskSnapshot) {
Toast.makeText(Camera.this,"Photorecieved your compaint get registerd will contact
soon",Toast.LENGTH_LONG).show();;

getWindow().clearFlags(WindowManager.LayoutParams.FLAG_NOT_TOUCHABL E);

taskSnapshot.getMetadata().getReference().getDownloadUrl().addOnSuccessListener (new
OnSuccessListener<Uri>() {public void onSuccess(Uri uri) {
Uri downloadUri = uri;
Intent intent = new Intent(Camera.this,MainActivity2.class);
startActivity(intent);
```

```
}
});
}
})
```

Data Submission-

And lastly the page with Layout having EditTextof Person name, Phone number, Address is there. And checkbox for getting Latitude and Longitude is there to get the latest Latitude and Longitude location there. And a person can type complaint there in short about Photo. And Submit button is pressed and all data is added to the Firebase database. With appearing " We received a complaint". And this activity again comes to safety tips activity. So the user can read thetip.

The data is submitted with help of a new class taken as UserHelperClass in which all values of personName, phone, address, extralong, and complaint are stored and DatabaseReferance of reference the value of all data with child of value of personName are set to Firebase Storage.

```
DatabaseReference reference;
reference = FirebaseDatabase.getInstance().getReference("server/saving-data/fireblog");
```

```
UserHelperClasshelperClass = new UserHelperClass(personName, phone, address,
textLatLong, complaint);
reference.child(personName).setValue(helperClass);
Toast.makeText(MainActivity2.this,"Your Complaint get
Registered",Toast.LENGTH_LONG).show();
```

Firebase Database-

The data uploaded is seen on Firebase Database. The Firebase is opened and a new project selected and Named MAHASURAKSHA and App is added from Firebase to Android studio. In that real-time database is continued and fire blog created to save data from the user. The SH1 key is added from the studio to the Firebase Database.

```
implementation 'com.google.android.gms:play-services-maps:17.0.0'
androidTestImplementation'com.android.support.test:runner:1.0.1'
implementation 'com.google.firebase:firebase-database:19.7.0'

implementation 'com.google.firebase:firebase-auth:20.0.3'
implementation 'com.google.android.gms:play-services-location:15.0.1'
```

Then For G-mail authentication, Authentication is selected and E-mail is Enabled with it. In Google developer options the Email Verification for MAHASURAKSHA app is turned On. And App from Android studio Graddle Strips is turned on and synchronized.

Firebase Storage-

The image of faulty equipment is get at Firebase storage the storage is enabled and app is synchronized. With adding dependencies.

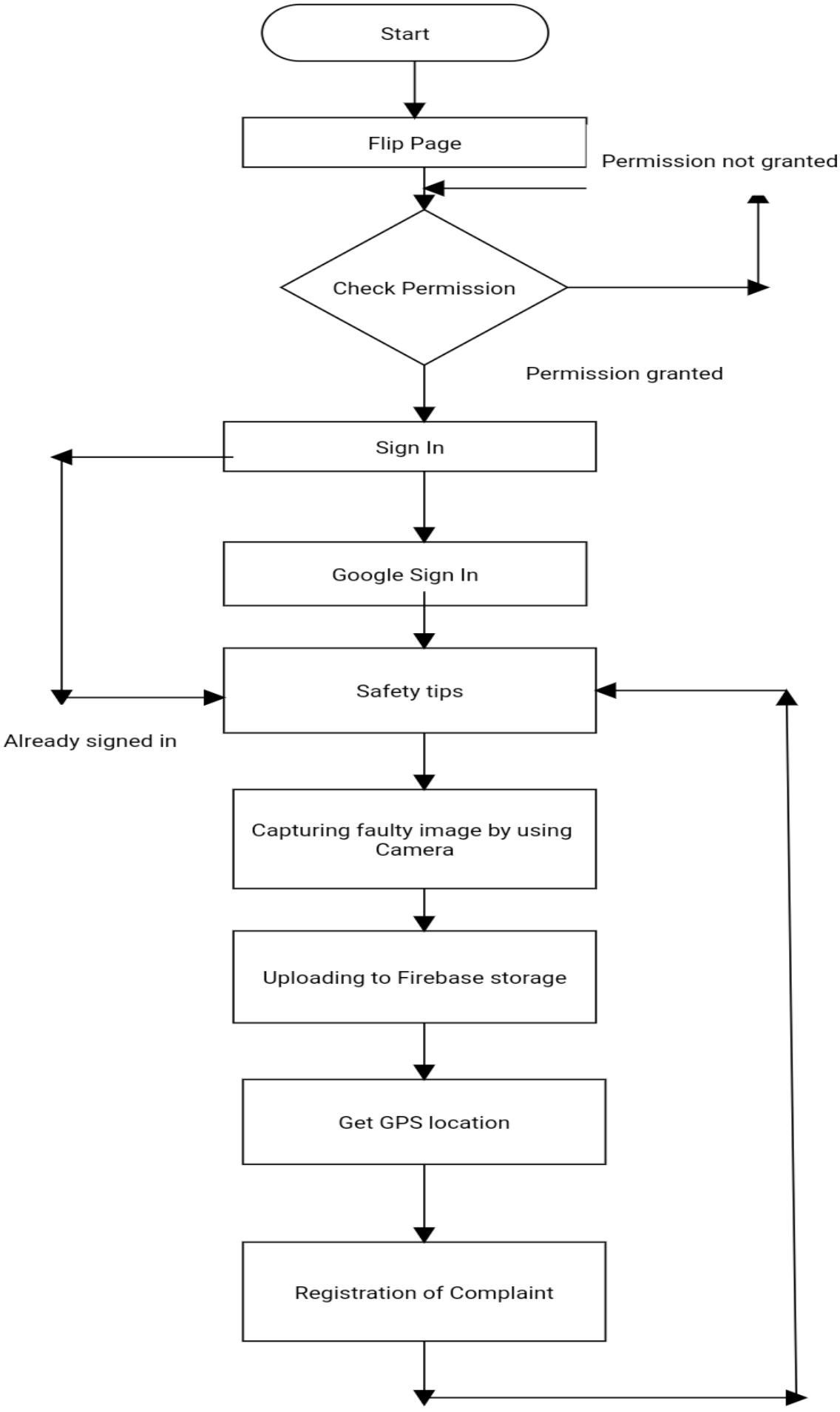
```
implementation 'com.google.firebase:firebase-auth:20.0.3'
implementation 'com.google.firebase:firebase-storage:19.2.1'
```

implementation platform('**com.google.firebase:firebase-bom:26.3.0**')

androidTestImplementation'**androidx.test.ext:junit:1.1.2**'

androidTestImplementation'**androidx.test.espresso:espresso-core:3.3.0**'

FLOWCHART


Start
Flip Page
Permission not granted
Check Permission
Permission granted
Sign In
Google Sign In
Safety tips
Already signed in
Capturing faulty image by using Camera
Uploading to Firebase storage
Get GPS location
Registration of Complaint

General Flowchart

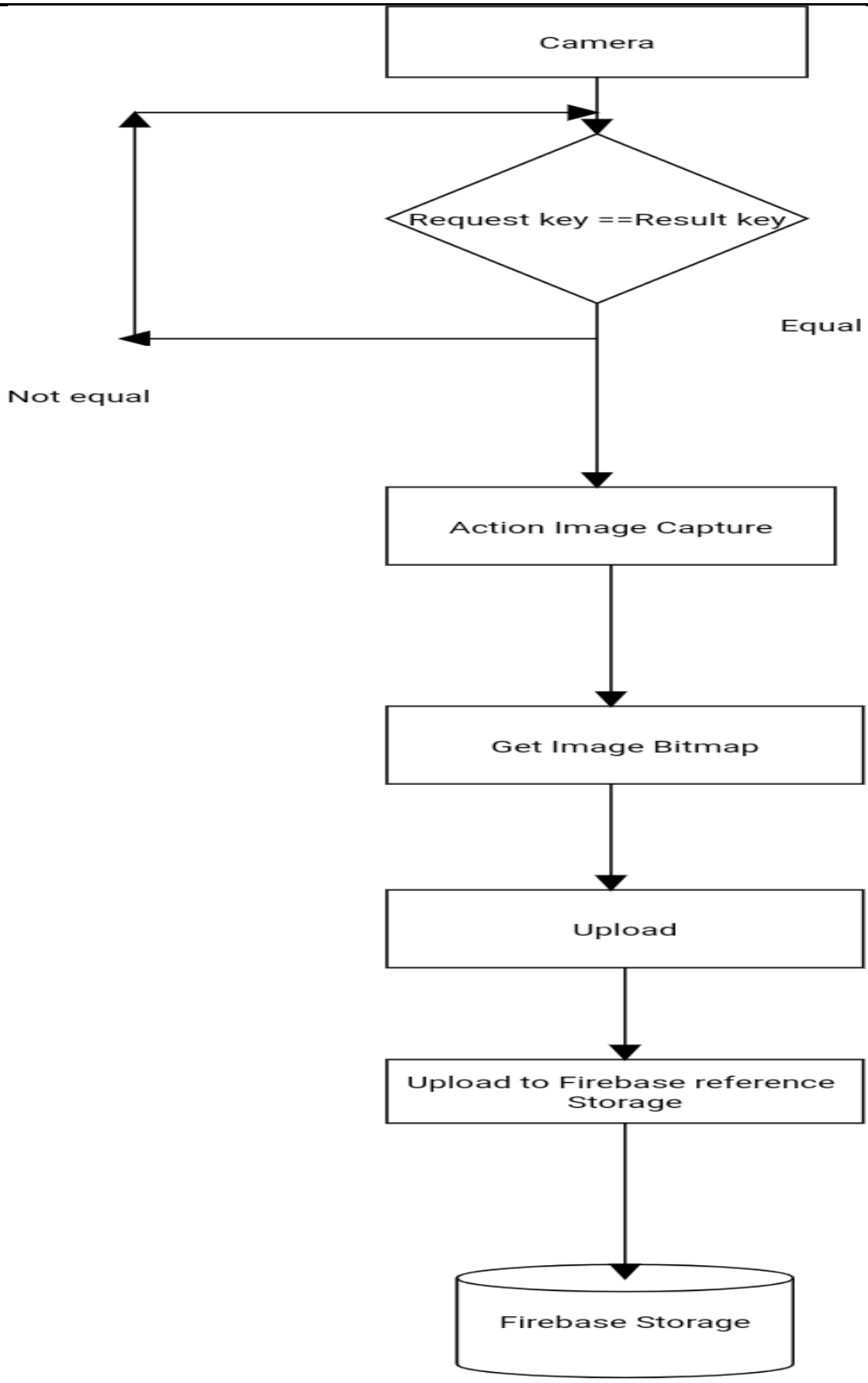
First Starting the process it enters to flip Page or starting page and after it Main Activity of getting permission opens.

As the user give all permission the button sign in work else it will not work and show a message to give all permission

After it passes to Electrical Safety Tips on clicking it the Safety tips get to the user. And can skip it and go to the complaint page. On the Complaint page, the camera button clicks the photo. And upload the photo and simultaneously next Complaint submission get open. All data of user-entered and submitting all data to Firebase the entry again comes to reverse to Electrical Safety Tips.

Capturing Image and Uploading-

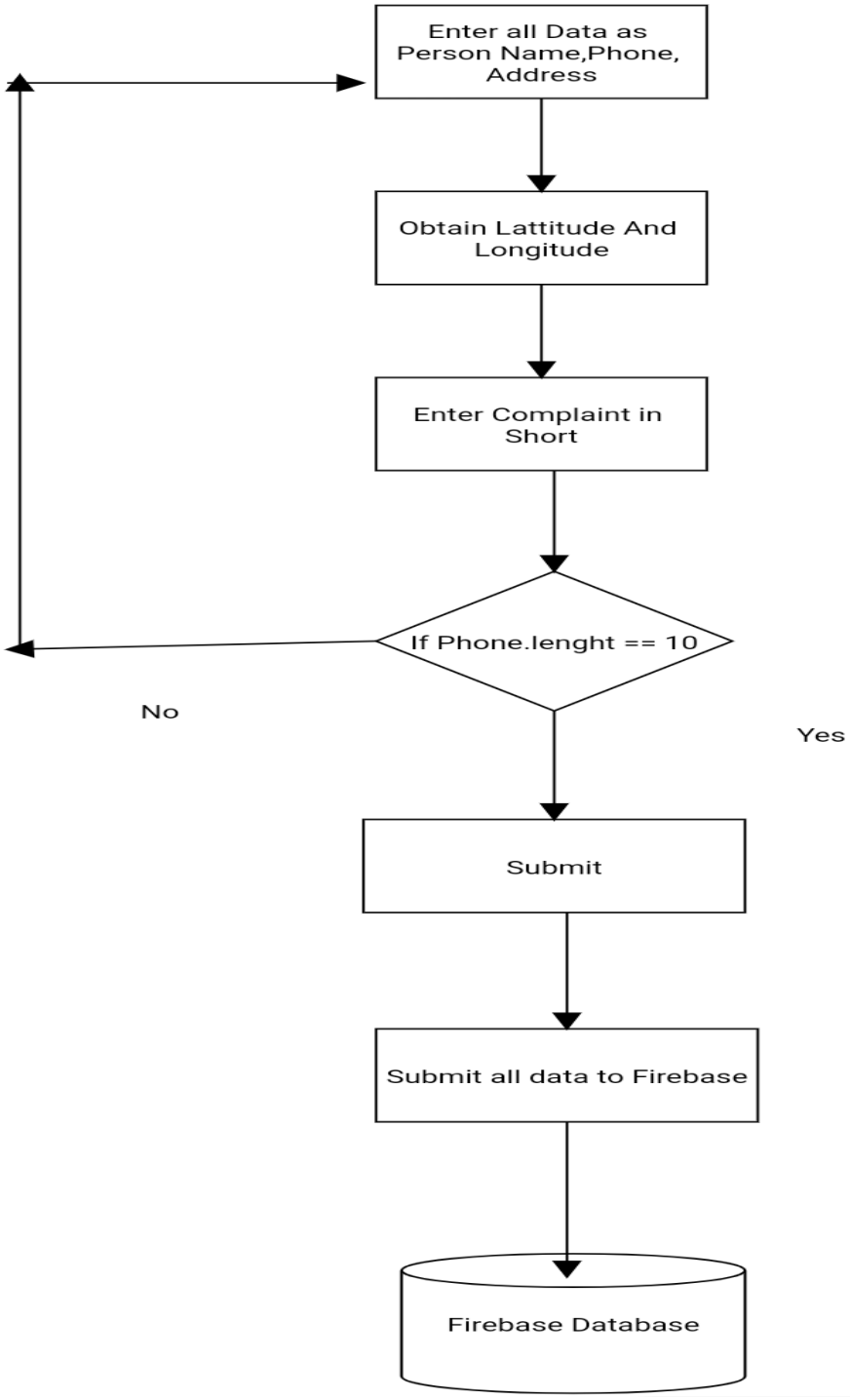
The flowchart of Activity Camera is entered when the camera clicked, when the request code of camera opening is equal to the result in code then Camera opens and Action of Image Capture takes place. Selecting appropriate Electrical faulty image. Lastly Uploading the image got stored in Firebase storage. And next Activity opens simultaneously.


Camera
Request key ==Result key
Equal
Not equal
Action Image Capture
Get Image Bitmap
Upload
Upload to Firebase reference Storage
Firebase Storage

User Data Submitting Process

The chart shows first entering all data like User Name, Address, Phone no. Next on checkbox user Latitude and Longitude location obtained at the text. And finally, need to type Complaint of faulty image Complaint in short. Submit is not work if the phone number length is not equal to10.

If not equal then the activity is gets paused. And submit taking place with opening old activity. and simultaneously uploading data to Firebase Database takes place.



CONCLUSION

Here we can get informed about problems related to electricity from people and the solution will provide them by the respective agency so the respective problem will be solved instantly by them and not necessary to wait for some days. And trust on system will become strong.

And people become aware of electrical equipment handling precautions

By proper care will be taken by those who are using this app before going to troubleshoot

and handle any equipment .So there will be no chance of becoming light hazards.

REFERENCES

[1]Electrical Safety by Design and Maintenance Dennis K. Neitzel, CPE, CESCP AVO Training Institute, Inc. 4271 Bronze Way Dallas, TX/2016 IEEE Pulp, Paper & Forest Industries Conference (PPFIC) /19-23 June 2016 / Austin, TX, USA

[2] C2 - Preprint Proposals for the 2022 Edition of the National Electrical Safety Code (NESC(R)/IEEE publication/ 1 July 2019

[3] SACH: A tool for assisting Secure Android application development/ Aakiel Abernathy; Xiaohong Yuan; Edward Hill; Jinsheng Xu; Kelvin Bryant; Kenneth Williams/ SoutheastCon 2017/30 March-2 April 2017/ IEEE /Concord, NC, USA

[4] Design and Application Development of the Camps Navigation System Based on ArcGIS Runtime SDK for Android -Taking the Yunnan Normal University as an example/Enwei Zhang; Shuangyun Peng; YujieZhai/ 2019 IEEE 4th Advanced Information Technology, Electronic and Automation Control Conference (IAEAC)/20-22 Dec. 2019/Chengdu, China

[5] M.E. Baran, "Trend capture in power quality monitoring" in Power Engineering Society 1999 Winter Meeting, New York, January1999.

[6]Research on Development of Android Applications, Jianye Liu, School of Information Yunnan University of Finance and Economics Kunming, China,2011 Fourth International Conference on Intelligent Networks and Intelligent Systems G.C. Lampley, "Fault detection and location on electrical distribution system" in Proceedings of Rural Electric Power Conference, Colorado Springs, Colorado, May 2002.

[7] Roberts, D. T.; Integrating OHSMS, Risk Management & Electrical Safety; Paper No. ESW2014-38; IEEE IAS 2014E

[8] Backes, M., Bugiel, S., Derr, E., McDaniel, P., Octeau, D., &Weisgerber, S. (2016). On demystifying the android application framework: Re-visiting android permission specificationanalysis. In 25th {USENIX} Security Symposium ({USENIX} Security 16) (pp. 1101-1118).

[9]Cinar, O. (2015). Android Platform. In Android Quick APIs Reference (pp. 1-14). Apress, Berkeley, CA.

[10]Holla, S., &Katti, M. M. (2012). Android based mobile application development and its security. International Journal of Computer Trends and Technology, 3(3), 486-490

[11]Kosmach J, Neff R, Sherwood G, et al. Introduction to the OpenCORE Audio Components Used in the Android

Platform[C]//Audio Engineering Society Conference: 34th International Conference: New Trends in Audio for Mobile and Handheld Devices. Audio Engineering Society, 2008.
[12] Zhaojian M. Android-based Mobile Interlligent Application Development - The Development and Implementation of the Game Lianliankan[D]. Beijing University of Posts and Telecommunications, 2010.