Places Finder

Table of Contents

Introduction

An android application works on Machine Learning to get the list of things available in the images. This applications works to demonstrate the machine learning object detection in the images.

Technologies

- Android SDK
- Java SDK
- Firebase SDK
- Firebase ML KIT SDK

Other Library's

1. Gson – For parsing the json from api response from Firebase ML API

Ethical, social and professional issues

1. Ethical issues: App saves no personal data and no image save to the storages, everthing is safe and secure, email and passwords are encrypted in the firebase authentication.

2. Social issues: App does not uses the third party api to fetch data. Rather it runs the model and generates the data itself, no data will be shared

3. Professional issues: The technologies and other development techniques that were used to create this program are completely free to use. This app also contributes to the open-source ecosystem by promoting open-source developers and free software. This app does not holds any contracts or pricings to any other company/Individual

Professional Tools Used:

- **Android Studios**: Top Level IDE is used to create the Android applications.
- **AVD:** Android virtual device used to moniter the output of app.

Hardware Requirements:

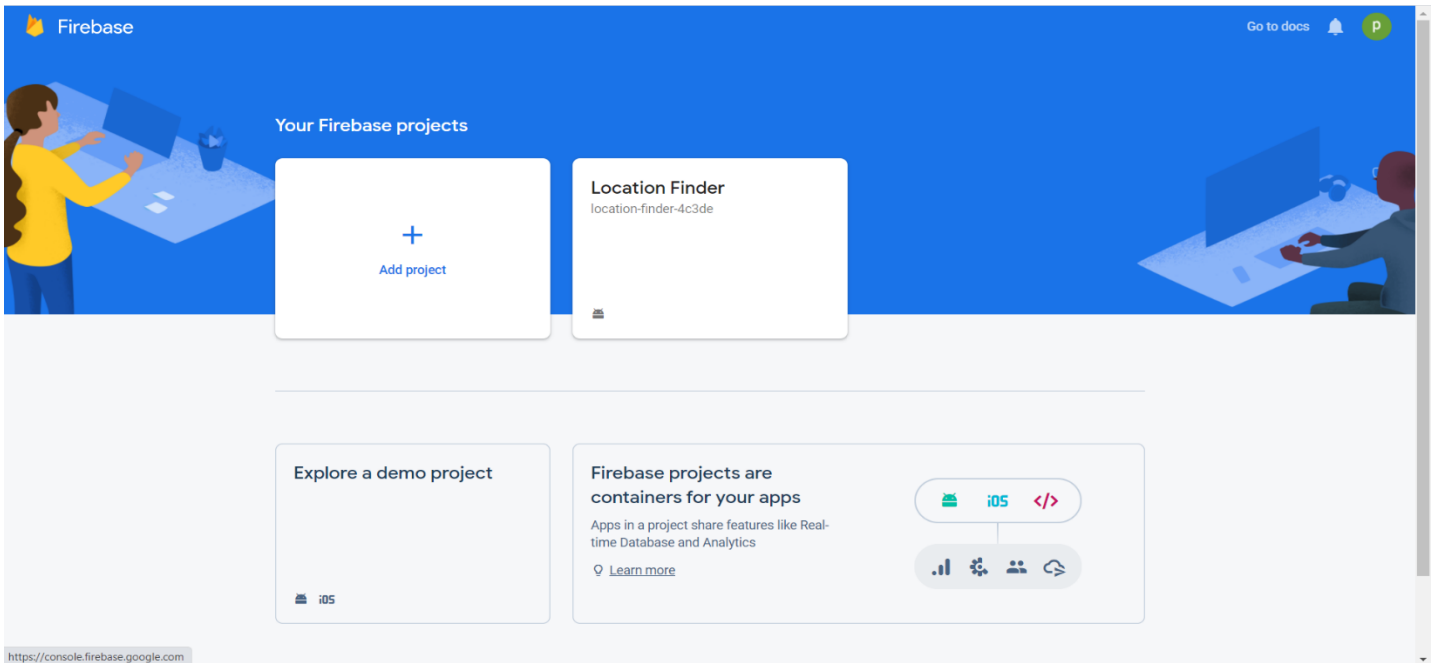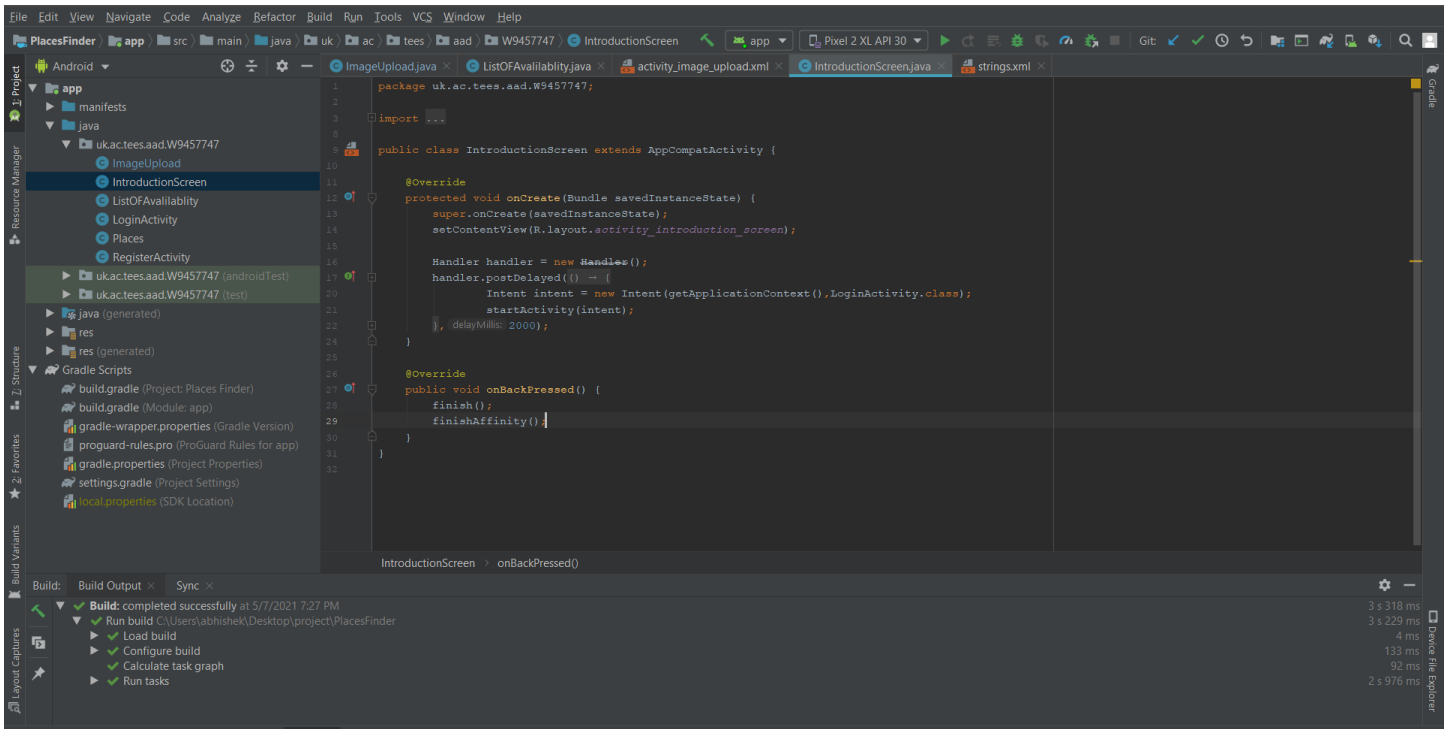- 2GHz processor
- 6 GB RAM
- 500GB Hard Disk

Software Design

- **Data persistance:** Firebase realtime database is used to authenticate the users in the application and managing the state of the users in the applciation.
  Shared Preference: Shared preference is used to transfer the data from one activities to other activities. Data of getting keywords from the ML activity to list of keywords.
- **User Permissions:** Internet and camera permissions are required to access the app features. User must have to allow the permissions to use the app

Project Management (Agile Methodology)

Agile approach is a project management theory. It is a method of managing a software project. We also have many software architecture frameworks to choose from, the most common of which is Agile. Scrum is an Agile methodology system in which tasks are broken down into sprints. These sprints should be established, and epics such as tasks should be assigned to them.

Sprint 1: (10-04-2021)

- Integrating FirebaseAuth with login and register activities to manage user login status with cloud.
- Planning android app concepts and number of activities according to ideas
- Created the Android app with the main and intro layouts
- Designed the XML login with constrainLayout.
- Implemented the firebase setup into the app.

```java
package uk.ac.tees.aad.W9457747;

import ...

public class IntroductionScreen extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_introduction_screen);

        Handler handler = new Handler();
        handler.postDelayed(() -> {
            Intent intent = new Intent(getApplicationContext(),LoginActivity.class);
            startActivity(intent);
        }, delayMillis: 2000);
    }

    @Override
    public void onBackPressed() {
        finish();
        finishAffinity();
    }
}
```

Project Overview

Build

Authentication
Firestore Database
Realtime Database
Storage
Hosting
Functions
Machine Learning

Release & Monitor
Crashlytics, Performance, Test La...

Analytics
Dashboard, Realtime, Events, Conv...

Engage

Extensions

Spark
Free $0/month   Upgrade

Location Finder

Go to docs

Authentication

Users   Sign-in method   Templates   Usage

Prototype and test end-to-end with the Local Emulator Suite, now with Firebase Authentication   Get started

Search by email address, phone number, or user UID   Add user

Identifier	Providers	Created	Signed In	User UID ↑
sowmya@gmail.com	✉	May 7, 2021	May 7, 2021	1P8ssuDG1DV98AcgR1yDyAk3W...

Rows per page: 50   1 – 1 of 1

Boards   Jump to...

Trello

Board ⌄   **Places API**   HomeFixer Free   Workspace visible   Invite

Butler   Slack   ··· Show menu

Backlog

Designing the login and register pages

Designing upload image Activity and introduction screen

Setting up permissions to users and asking user for camera permissions to capture the image

Creating workable upload image and saving as bitmap

Adding ML packages to app

Calling ML functions to extract the places and things in the image

Designing the list view on pages

Adding ML packages to app

fixing bugs and adding logout

Enter a title for this card...

Add card ✕   ···

Sprint Backlog

+ Add a card

In Progress

Integrating FirebaseAuth with login and register activities to manage user login status with cloud.

+ Add another card

10.04.2021 Sprint 1 - Complete

Planning android app concepts and number of activities according to ides

+ Add another card

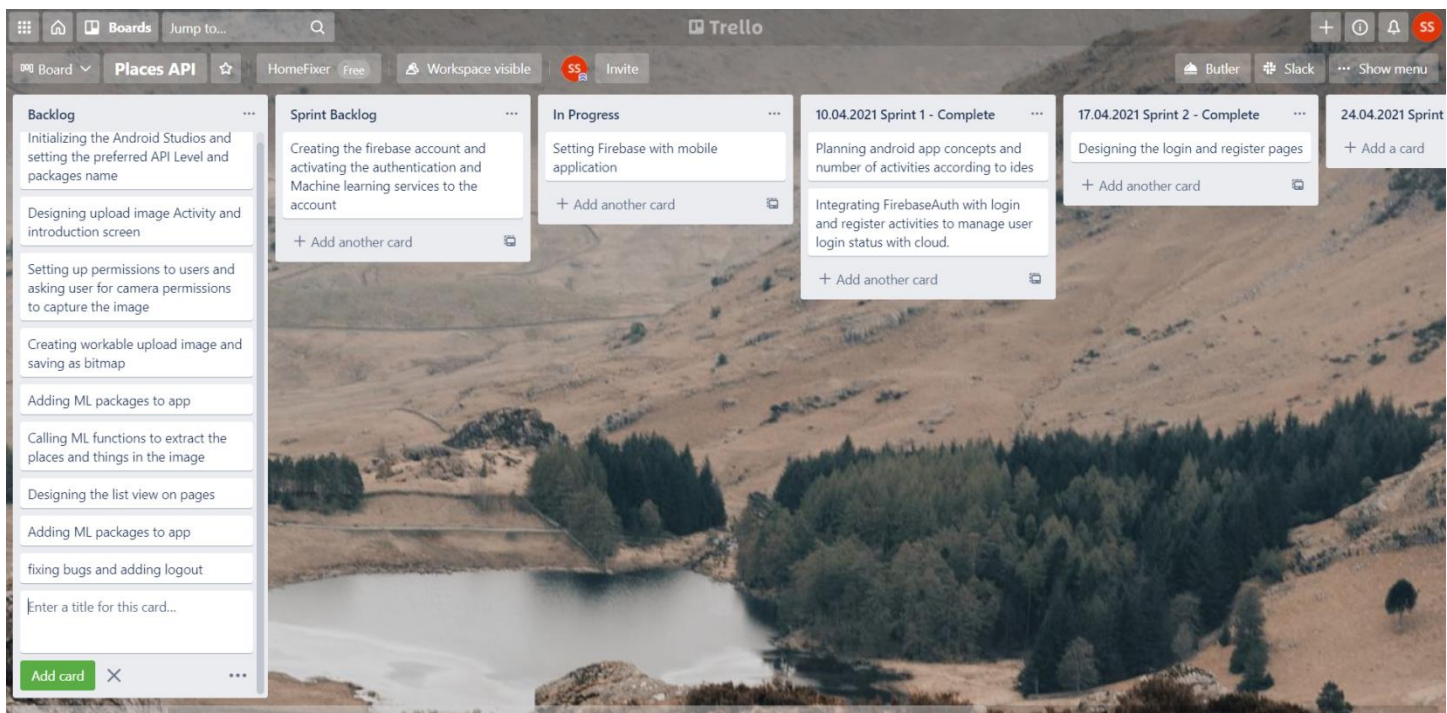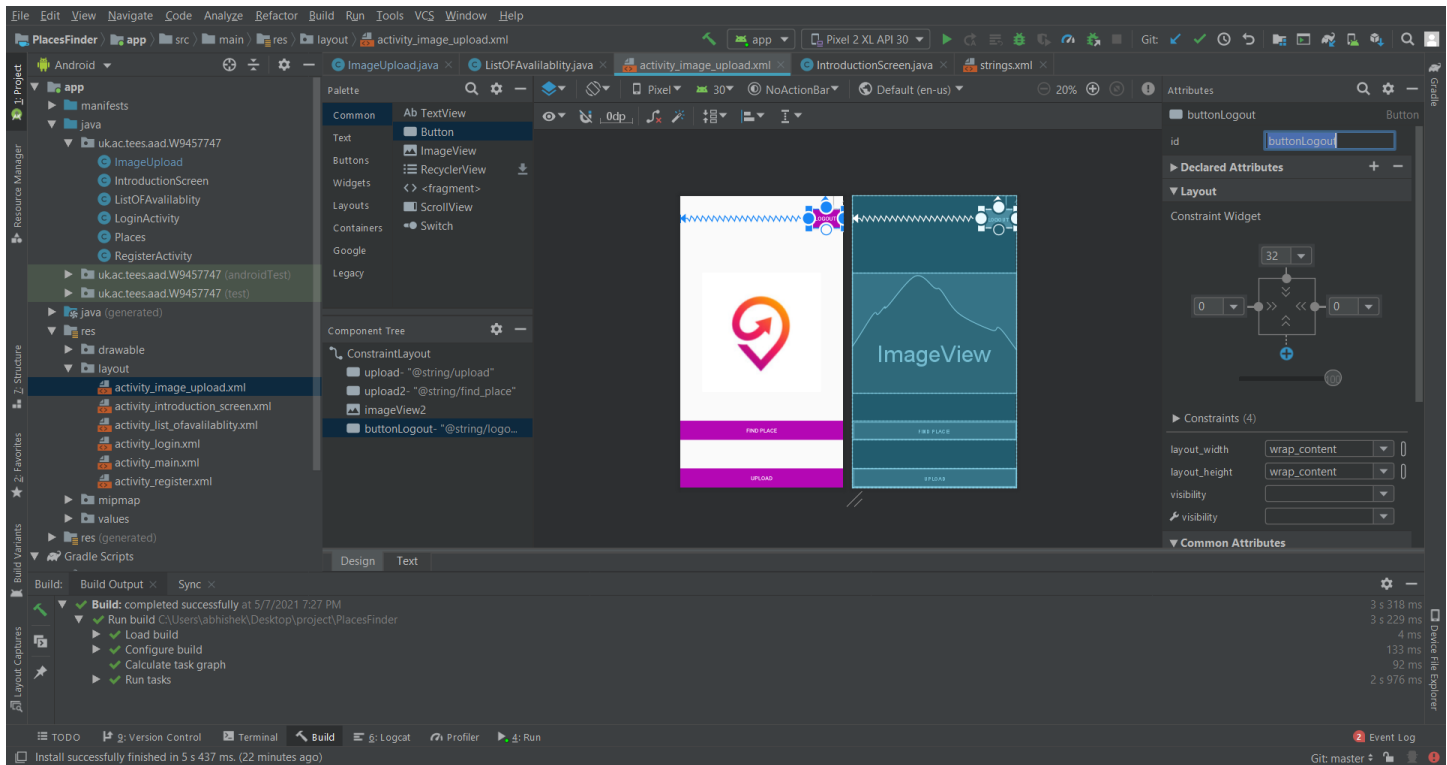**17.04.2021 Sprint 2 - Complete**

+ Add a card

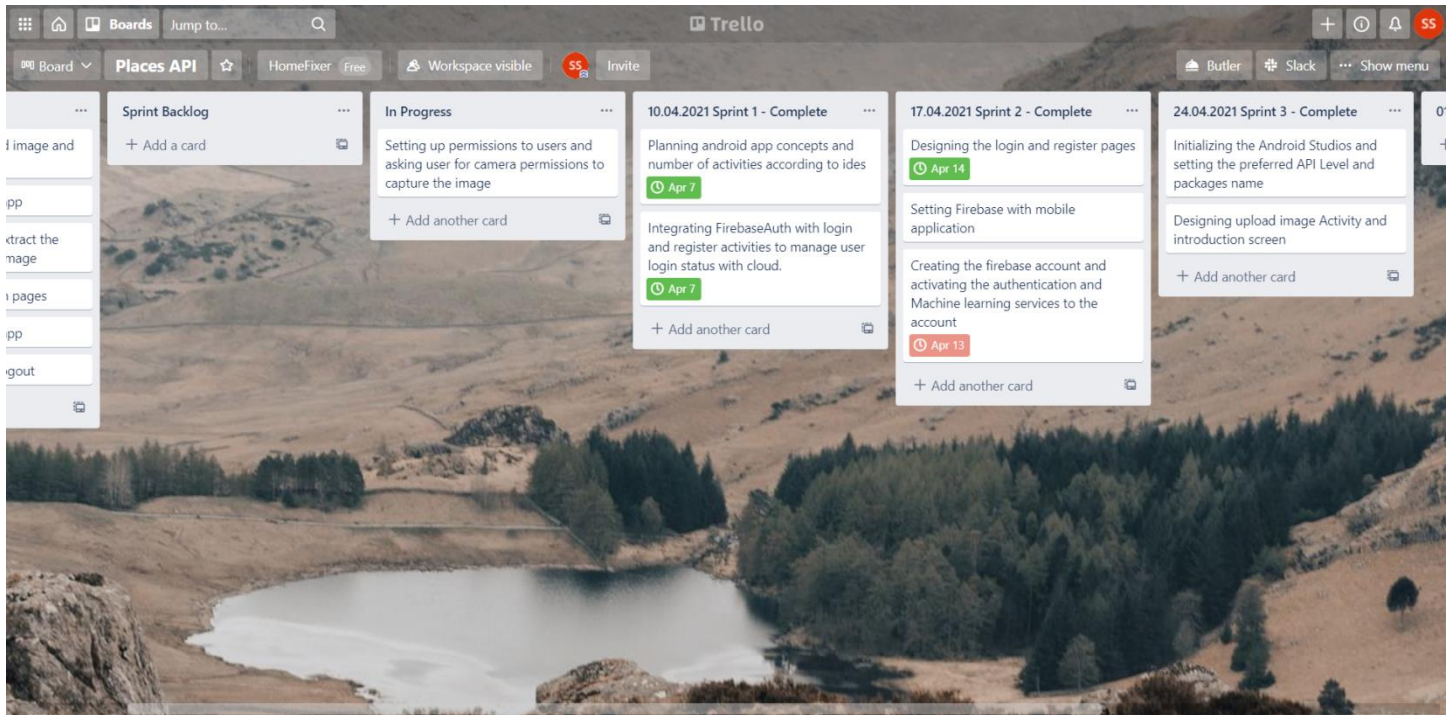**24.04.2021 Sprint**

+ Add a card

Sprint 2: (17-04-2021)

- Creating the firebase account and activating the authentication and Machine learning services to the account
- Setting Firebase with mobile application. Importing dependencies and imorting configurations file
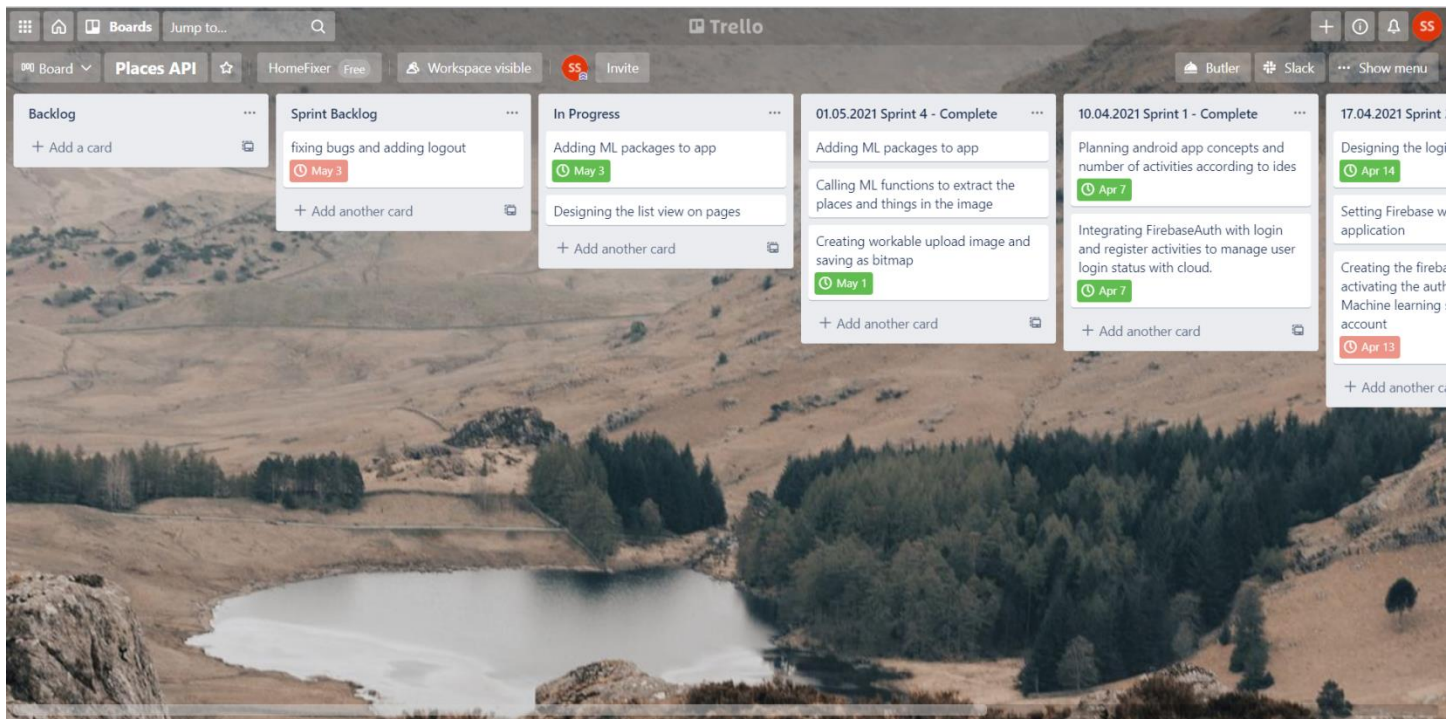- Setting the Firebase ML functions so that app will be ready to use.

Sprint 3: (24-04-2021)

- Setting up permissions to users and asking user for camera permissions to capture the image
- Designing upload image Activity and introduction screen
- Initializing the Android Studios and setting the preferred API Level and packages name
- Asking the permissions at the runtime, New API Level need to ask at the run time to for security reason.

Sprint 4: (01-05-2021)

- Creating workable upload image and saving as bitmap. After getting the bitmap images that will used to send the data to machine learning functions, Although the functions supports various suppotrs Bitmap is used as primary
- Calling ML functions to extract the places and things in the image, the ML functions gives the text keyword outpus and that will beconverted into string and send to the next activity
- Adding ML packages to app importing and implementing the object
- Implemented the logout future on adding a button.
- Creating the ListOfAvailablity to display the list of keyword in the images.

Software version control (GIT)

- GitHub's core features are available for free. Commercial providers are available for the more specialized specialist and business services. Open-source projects are often hosted on free GitHub accounts.
- Github is Version control source code.
- Made the 7 commits to the repository on completing the project
- Every commit has been updated with the new feature

Class Diagram

MainActivity

+ plumbing : Button
+ ele : Button
+ gradening : Button
+ cleaning : button
+ logout : Button
+ bookings : Button

+ onCreate(Bundle):void
+ onClick(View v) : void
+ onBackPressed() : void

CreateAccount

+ firebaseAuth : FirebaseAuth
+ firebaseUser : firebaseUser
+ password : EditText
+ email : EditText

+ onCreate(Bundle):void
+ onClick(View v) : void
+ onSuccess(authResult): void
+ onFailure() : void
+ onStart() : void

BookingConfirm

+ firebaseAuth : FirebaseAuth
+ firebaseUser : firebaseUser
+ fibaseDatabase : FirebaseDatabase

+ onCreate(Bundle):void
+ onBackPressed() : void

ShowBookings

+ firebaseAuth : FirebaseAuth
+ firebaseUser : firebaseUser
+ listObj : ArrayList

+ onCreate(Bundle):void
+ onChildAdded(snapshot,previousChildName) : void
+ onChildChanged(snapshot,previousChildName) : void
+ onChildRemoved(snapshot) : void
+ onChildMoved(snapshot,previousChildName) : void
+ onChildCancelled(snapshot) : void
+ onBackPressed() : void

LocationActivity

- mMap : GoogleMap
- latLng : LatLng

+ onCreate(Bundle):void
+ onClick(View v) : void
+ onMapReady(googleMap) : void
+ onSuccess(locationj) : void
+ onBackPressed() : void

LoginActivity

+ firebaseAuth : FirebaseAuth
+ firebaseUser : firebaseUser
+ password : EditText
+ email : EditText

+ onCreate(Bundle):void
+ onClick(View v) : void
+ onSuccess(authResult) : void
+ onFailure() : void
+ onStart() : void
+ onBackPressed() : void

BookingModel

+ lat : float
+ lng : float
+ image : String
+ data : String
+ type : String

AddImage

+ firebaseAuth : FirebaseAuth
+ firebaseUser : FirebaseUser
+ img : ImageView
+ imageFileName : String
+ continuBtn : Button
+ progressBar : ProgressBar
-CAMERA_PERM_CODE : int

+ onCreate(Bundle):void
+ onClick(View v) : void
+ onRequestPermissionsResult(requestCode,permissions,grantResults) : void
+ onActivityResult(requestCode,resultCode,data) : void
+ onSuccess(uri) : void
+ onBackPressed() : void