Lost and Found App - Technical Documentation

Overview

The Lost and Found app is a mobile application built using **Jetpack Compose** and **Firebase** to help users report, search, and manage lost or found items. It supports geolocation features, image uploads, admin tools, and multilingual support.

Architecture & Tech Stack

- **UI Framework:** Jetpack Compose (Material3)

- **Backend:** Firebase Firestore & Firebase Authentication

- **Storage:** Firebase Storage (for item images)

- **Maps & Location:** Google Maps SDK for Android, FusedLocationProviderClient

- **Language:** Kotlin

- **Other Libraries:**
    - Coil (for image loading)
    - Firebase SDK
    - Navigation Compose
    - CameraX

Features Implemented

Core Functionalities

- **User Authentication:** Sign up, login, and email verification via FirebaseAuth.
- **Report Lost Items:**
    - User can enter item details (title, description, category).
    - Select/upload an image.
    - Automatic location tagging.

- ○ Store in Firebase Firestore & Storage.

- **Search Lost Items:**
  - ○ Filter by category and date.
  - ○ Sort results.
  - ○ View detailed item info.
  - ○ Copy and paste GeoCode location to the map

- **Report Found Items:**
  - ○ Mark a reported item as found.
  - ○ Include confirmation dialog.

- **Location Integration:**
  - ○ Display items on a map.
  - ○ Track user location.
  - ○ Tap a map marker to see item details.

- **Camera Integration (CameraX):**
  - ○ Take pictures directly for item reports.

- **Statistics Screen:**
  - ○ Basic analytics: total, lost, and found item counts.

- **Language Support:**
  - ○ English & Finnish.
  - ○ User can switch languages via in-app dropdown.

- **Lost Item Expiry System:**
  - ○ Items older than 30 days filtered out from map.

- **Admin Panel:**
  - ○ Admins can delete any report.

UI Structure (Screens)

Main Screens

- **LoginScreen.kt**
- **RegisterScreen.kt**
- **LoggedOutScreen.kt**
- **HomeScreen.kt**
- **MapScreen.kt**

- **ReportItemScreen.kt**
- **SearchScreen.kt**
- **SearchOwnReportsScreen.kt**
- **EditOwnReportsScreen.kt**
- **StatisticsScreen.kt**
- **ProfileScreen.kt**
- **AdminPanel.kt**

Firebase Firestore Structure

Collection: items

- `id: String`

- `title: String`

- `description: String`

- `category: String`

- `imageUrl: String`

- `location: GeoPoint`

- `registeredAt: Timestamp`

- `foundAt: Timestamp?`

- `lost: Boolean`

- `reportedBy: String (uid)`

- `foundBy: String?`

- `contactEmail: String`

- `showContactEmail: Boolean`

Future Improvements

- Integration with push notifications for lost/found updates.

- In-app messaging/chat between users.

- Add ability to change profile pictures.

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