



FIND MY PET – CROSS PLATFORM MOBILE APPLICATION

Functional Specification

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Abstract

The purpose of this project is to create a cross platform mobile application (iOS & Android) where the user can post details of lost or found animals in their area. This mobile application will be written using Flutter Technology, an open-source UI software development kit created by Google. The application will present the user with the option to post or view lost and found animals in a selected area. There will be a range of features, such as push notifications if an animal is reported lost in a user's area, searching for posts based on location and communicating with other users via comments.

1. Introduction

The purpose of this functional specification is to document the approach to be taken in the development of the *FindMyPet* mobile application. This will be achieved by covering the following areas.

The application itself, what it is and what it is supposed to do. Listing the different types of functionality the application should offer as well as the non-functional requirements.

Following on from this, the system and individual use cases will be described. Then the target market, who the application should be used by.

The final section of this document will contain the metrics, how the project will be gauged to determine its success.

2. The Application

The mobile application being created during this project is currently named *FindMyPet*. It will be a cross platform mobile application, built using Googles Flutter technology. The development of this project will be carried out in Visual Studio Code, a source code editor developed by Microsoft. Visual Studio Code is the editor of choice as it is lightweight, easy to navigate and provides many extensions to help with Flutter development. For example, syntax highlighting for Dart, code prediction and formatting.

The backend of this project will be built using a multitude of Firebase tools. Firebase being a Backend-as-a-Service (Baas), used for mobile and web app development. The tools that are planned on being used are the real-time database, the authentication and the cloud messaging for push notifications.

2.1 Functionality

Functionality refers to the features on offer within the application. This is divided between core functionality, the essential features to be implemented for the application to carry out its objective. Also, secondary functionality, which consists of non-essentials features that help support the core functionality and make for a better, more usable application.

2.1.1 Core Functionality

2.1.1.1 Authentication

The ability for a user to login via their email and password. The application should connect to the backed in order to authenticate user's credentials.

Also, the ability for a user to create an account. Allowing a user to enter their email and password. The application should connect to the backed to create authenticated credentials for that user and ensure there is no existing account with those details.

2.1.1.2 Adding a post

The ability for a user to create a post for their lost or found pet. As part of this functionality the user should be able to upload details of the pet, its location and an image of the pet. All of which will then be stored in the database.

2.1.1.3 Displaying posts by radius

The posts added by users must also be displayed to other users. Not only this, but a major factor of this project is that only posts within a short radius of a user's location should be shown. It can be suggested that this makes it easier for a user to find or spot a missing pet.

2.1.1.4 Push notification

The feature which will arguably have the most impact is the push notifications. Even if a user does not actively use the application, simply having it on their phone will allow them to receive notifications which can make an impact.

2.1.2 Secondary Functionality

2.1.2.1 Contact

A way for one user to contact another if they have details relating to a lost pet. Contact information could be entered in the post's description, but a standalone way could possibly make for a better user experience. Possible implementations could be private messaging, commenting system or an information window about the user.

2.1.2.2 Map

An interactive map of the country that the users could navigate and see markers where posts are made. Likely to be built using the Google Maps API. It is a way for users to see the scale at which pets are lost throughout the country.

2.1.2.3 Searching

Searching for posts based on a location. Giving the user the ability to search a location and see all the resulting posts for that area.

2.1.2.4 Editing

General editing and deleting of posts. Giving the user the ability to edit an existing post they have made and delete it if it is no longer applicable.

2.2 Usability

Usability refers to the actual user experience of an application. In terms of this project this must be ensured across both Android and iOS platforms. There are three main areas that are important for usability with this mobile application.

One, the navigation of the application. The user must be able to easily navigate throughout the application in a way that is accessible and smooth.

Two, the user interface of the application must be pleasant and appealing. An application can include a wide range of great features but if it does not look or respond nicely for the user it increases the likelihood of it not being used.

Lastly, the responsiveness of the application. Actions carried out by the user that contact the backend must be efficient. Logging into the app should be done within seconds and not return errors. This also applies to creating posts or searching for posts.

An additional element that is important to usability is letting the user know the application is functioning, even when loading or connection is slow. This can be achieved by using loading wheels. Likewise, it is important to let the user know when an action is complete, i.e. when a post is successfully uploaded a pop-up should display to inform the user. This means the user is not left to guess if their action was successful.

2.3 Reliability

Steps taken to ensure the mobile application is reliable will include error handling. Ensuring that anything that goes wrong behind the scenes does not cause the application to crash. Also, when things do go wrong, display to the user that the action was not carried out and request them to try again. As opposed to reloading the screen with no new information.

2.4 Performance

Performance should be a strength of this application. As creating it via Flutter means that across both mobile platforms, iOS and Android, it will achieve native application speeds. It also allows for 60 frames per seconds when using the application. This means any transitions between pages will look seamless.

The backend tooling of this project are all Firebase tools. Using one mobile development platform for the essential tooling means that they will work together smoothly and have faster interaction times. Moreover, Firebase is designed to keep data in sync across all devices and to easily handle scale.

2.5 Supportability

This application will be flexible as the backend tooling allows for it to scale. It also has sufficient compatibility as it is built using one codebase and will work on both Android and iOS.

In terms of maintainability the application will be well commented and documented throughout the process. Additionally, steps will be taken to ensure features are stand alone, meaning adding or removing one does not affect others.

As this is a non-profit application, once finished it will be made available as open source code. Therefore, supportability is a priority.

3. Project Use Case

3.1 Use Case Diagram

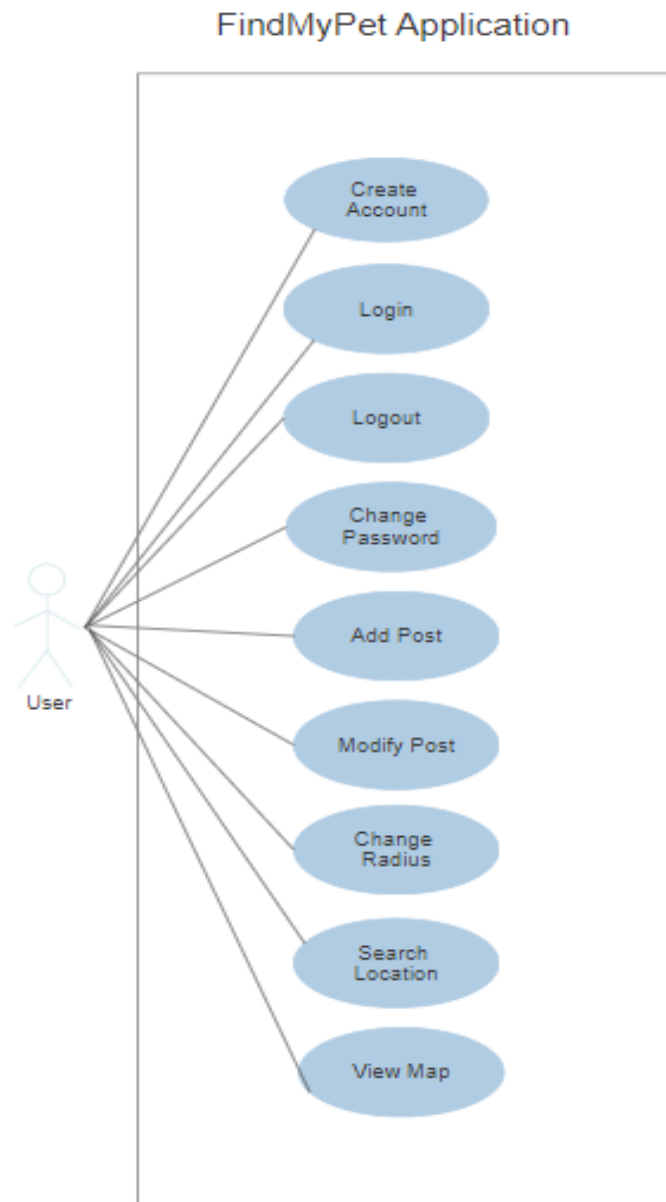


Figure 1 FindMyPet System Use Case

3.2 Use cases

3.2.1 Description

Section	Case
Actors	Entity interacting with the application.
Preconditions	What must be true on start.
Success Guarantee	What must be true on successful completion.
Main Success Scenario	A typical path scenario of success.

3.2.2 Create Account

Section	Create Account
Actors	User.
Preconditions	User must have opened the application.
Success Guarantee	User will have an account they can log into.
Main Success Scenario	User enters valid email, password and confirmation password. Credentials are then generated in the backend and user is added to the database.

3.2.3 Login

Section	Login
Actors	User.
Preconditions	User must have previously created an account.
Success Guarantee	User gets access to the application.
Main Success Scenario	User enters a valid email and password combination on the authentication screen.

3.2.4 Logout

Section	Logout
Actors	User.
Preconditions	User must be logged into the system.
Success Guarantee	User is redirected to the authentication screen and session is removed.
Main Success Scenario	User taps the logout button.

3.2.5 Change Password

Section	Change Password
Actors	User.
Preconditions	User must have an authenticated account.
Success Guarantee	User will be sent an email where they can reset their password.
Main Success Scenario	User taps the change password option. Enters an email address associated with an authenticated account. Then follows the instructions in the email sent to them.

3.2.6 Add Post

Section	Add Post
Actors	User.
Preconditions	User must be logged into the system.
Success Guarantee	Post must be stored in database and presented on the home screen.
Main Success Scenario	User chose the add post option. Fills out the details form and taps the post button.

3.2.7 Modify Post

Section	Modify Post
Actors	User.
Preconditions	<ol style="list-style-type: none">1. User must be logged into the system.2. User must have a live post.
Success Guarantee	Changes made to the post must be reflected in the database and home screen.
Main Success Scenario	User chooses the edit post option. Applies their changes and taps save.

3.2.8 Change Radius

Section	Change Radius
Actors	User.
Preconditions	User must be logged into the system.
Success Guarantee	When the users select their radius, only posts from within that radius are displayed on their home screen.
Main Success Scenario	User chooses a radius option from a list of options.

3.2.9 Search Location

Section	Search Location
Actors	User.
Preconditions	User must be logged into the system.
Success Guarantee	All posts that match the users search query are shown.
Main Success Scenario	User must enter a full or partial location name and tap search.

3.2.10 View Map

Section	View Map
Actors	User.
Preconditions	User must be logged into the system.
Success Guarantee	User gets a view of the map that displays where each post is located via markers.
Main Success Scenario	User taps the map button to be navigated to the map.

4. User Group

The initial user group is likely to be pet owners, as they are the group that will see the benefits of the application. Following on from this the next group is likely to be good Samaritans, people who see a lost pet and mind it in hopes of finding its owner. There is functionality in this app for users to post details of found pets that they could use.

Ideally the user group will consist of all people within the country who are willing to play a small part in helping return lost pets to their owners. They do not have to be active users of the application but simply having an account with the application will ensure they receive notification when a pet is lost in their area. The effectiveness of this applications goal grows as more users join.

5. Metrics

The metrics used to gauge if this project is successful are as follows:

- Users can successfully create and login to their account securely.
- The application uses the devices GPS to access location information.
- The application has access to the device's camera and gallery.
- Users can add, edit and delete posts.
- Posts displayed to users are based on a location algorithm.
- Push notification are displayed to users based on proximity to a post's location.
- The application works on both Android and iOS devices.

6. Precedent

As shown throughout the research manual, it can be argued that the existing methods of helping owners find their lost pets are not as effective as they can be. Real time notifications are not common and oftentimes the location is not relevant to the user as the service encompasses a wide area. This project idea came about in the hopes of addressing these downfalls. It is hoped that it can make a genuine and positive impact on the lives of the users and the lost pets.

It can be suggested that the likelihood of a lost pet being returned home is increased if an image and description of the animal is made available to the public in that area. It is common to see dogs wandering the streets without an owner in Ireland and is difficult to gauge if they are lost. Ideally the app will spread awareness of lost animals in the area. In turn, this will help users make a connection between the lost pet listed on the app and the animal they spot on the street.

Plagiarism Declaration

Declaration

- I declare that all material in this submission e.g. thesis/essay/project/assignment is entirely my/our own work except where duly acknowledged.
- I have cited the sources of all quotations, paraphrases, summaries of information, tables, diagrams or other material; including software and other electronic media in which intellectual property rights may reside.
- I have provided a complete bibliography of all works and sources used in the preparation of this submission.
- I understand that failure to comply with the Institute's regulations governing plagiarism constitutes a serious offense.

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Date: 20/04/2020