BILKENT UNIVERSITY

DEPARTMENT OF COMPUTER ENGINEERING

Senior Design Project

Petriam

Project Specification Report
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Table Of Contents

1. Introduction

Animal domestication is nearly as old as the history of humans that have been ongoing for nearly 10,000 years [1]. Although the reason behind domestication of the first animals and pet ownership of today is not the same, it is undeniable that animals and humans have been in a close relationship between each other for a considerable amount of time. This relationship between pets and humans have become more intimate as people started to own pets for social purposes that created an industry for this purpose. Studies show that pet ownership in the USA has increased from 56% to 70% percent in the last 30 years [2]. It is also important to note that this industry has a market size of $103.6 billion as of 2020 [3].

With the technological developments of the last decades, travelling has become so convenient that it is possible for a person to travel around the world in less than a week. This advancement in transportation has affected the lives of the people that make them travel more and more whether it is for business purposes or for fun. The problem begins when people with pets need to travel as travel companies have strict rules against pet luggage. Although it is possible for pet owners to travel with their pets, it is not always healthy for the pets to travel for such long distances. For this reason, places such as pet hotels have been founded to provide shelter for the pets while their owners are gone. However, not that those hotels are expensive, they are not available in every city.

What makes pet ownership hard is the financial requirements to buy the necessary equipment such as litter box, toys, scratching tools and combs. As soon as the necessary tools are bought then it becomes a matter of choice to choose how many pets will be taken care of. For example, the listed equipment can be shared among 3 different cats. Knowing that pet owners can have more pets in their homes without having to buy additional

equipment. This availability of homes can be used as a supply to the demand of pet hotels in a cheaper manner while making hosts earn money and pet owners safely travel without worrying about their pets. This report briefly introduces the application Petriam which is planned to be implemented in order to address this issue.

1.1 Description

Petriam is a mobile application to serve the people with pets while they are unable to take care of their pets during their time outside their homes. The project aims to favor both sides of its target group which are hosts and clients. Using Petriam, clients who are pet owners could list the possible temporary homes for their pets while hosts who may or may not be pet owners can earn money by taking care of the pets of their clients.

Petriam will be focusing on the specific service of pet accommodations for the time being to accurately deliver a solution to the problem. In the application, a client could reserve a date for their pet, get in contact with the host, ask their questions and rate them at the end of their stay. On the other hand, hosts could accept or reject a reservation depending on the client and describe their services to the clients. In simpler words, Petriam will be a free marketplace for people who are looking for hosts and people who want to earn money by taking care of pets. Surely, the host registration process will have extra verification steps than the user registration process in order to create a trusting environment in the application. What makes Petriam an investment worthy application is that Petriam is only the middleman in this process. While correctly solving the issue, Petriam will not own any pets or pet homes to minimize expenditures. The main difference between Petriam and other pet care applications is that Petriam is the only mobile application that solely addresses this issue.

Moreover, by not relying on pet hotels, less waste is created by using Petriam since Petriam favors the principle of sharing rather than buying new equipment for pets. Pet hotels are expensive to maintain in terms of resources such as electricity. water and gas which are used in much higher amounts compared to a regular house. Thanks to Petriam, leaving pets during travels will be cheaper, environmentally safer and economically sustainable.

1.2 Constraints

1.2.1 Implementation

- Trello will be used to organize workload and create an agile environment for development.
- Git will be used as a version control system and GitHub is the online platform for storing the code of the project.
- For the implementation of the project, React Native will be used to produce cross platform applications for both App Store and Google Play Store in one code base.
- Adobe XD will be used for designing and prototyping the application.
- For the backend, RESTful APIs will be used and Nodejs is the framework.
- The application will follow recent software engineering practices like OOP.
- The database of the application will be one of the NoSQL databases.

1.2.2 Economic

- The application will be free to download and use in Google Play Store and App Store.
- Google Play Store, App Store and some services such as databases will require a fee for development.

- Users who use the application as pet hosts can gain extra money on this platform by hosting people's pets for a certain amount of time.
- Users who want to find a place for their pets pay less money compared to the alternative places like animal hotels.

1.2.3 Social

- There will be a relationship based on trust between both hosts and pet owners since pet owners give the pet and hosts keep their animals safe.
- There is a rating system that pet owners rate hosts based on the service and care that hosts provide.

1.2.4 Ethical

- All members of the project will be abiding by the ethical code of National Society of Professional Engineers [4].
- The data gathered from users will be stored according to the KVKK rules of Turkey.

1.2.5 Safety and Health

- The health and safety of the given pet will be ensured by the host with the predetermined rules. If anything happens to the animal in the scope of the rules, the host will be responsible for the animal.

1.2.6 Sustainability

- Animals will be safe and taken care of with the resources that are currently available such as houses of people, foods of pets in people's houses.
- The application will take commissions from the transactions between pet owners and hosts so that the cost of maintaining the platform will be paid by the users.

1.3. Ethical and Professional Responsibilities

When it comes to realizing this project, there are multiple ethical and professional concerns that need to be addressed. In order to be able to use this project, users need to register to the system and they need to provide some information related to them. Since this kind of data can be personal and sensitive, as a group we will not share or publish provided data by the user with any person, organization or company. We are not going to request any data that is irrelevant or unnecessary to this project from the user. Only the minimum necessary amount of data will be gathered from the user. If a user needs to record sound, video or picture through our project, we are going to ask permission from the user about using the respective component of their device like camera or voice recorder to gather such information from them. These measures are needed to protect the private and sensitive data of the user while using the project.

By using our project, users are going to entrust their pets to other users who are hosts. Since they are entrusting their beloved pets to other people that they met through our project. So, safety of the pets needs to be provided to the user and users who are hosts need to be trustable. To provide a trustworthy environment for the users, review and verification mechanisms will be used. By these mechanisms, safety of the users' pets will be ensured by only allowing users who are verified and have good reviews become hosts. This will help improve the trust between the users and hosts.

2. Requirements

2.1 Functional Requirements

2.1.1 Sign-up Sign-in Capabilities

Sign-up and sign-in capabilities are some of the most important parts of our application. Because the authenticity of the users is playing a key part in strong trust between users who will take care of pets and consign their beloved pets. In Petriam we will require the user to sign-up and sign-in before proceeding to use other functionalities of the application. The overhead of the sign-up/in processes will be minimized for the basic user account in order to have better ease of use of the application. And there will be a host account option that can be directly created in registration or upgraded from a basic user account.

2.1.2 Be Host

Users that have the basic accounts will be able to upgrade their account to a host account which will have the option to be a host that will be listed in the search results of the users that are looking for a host. In order to upgrade a basic account user must supply various information such as location, caregiving price, owned pets, pet types preferred to take care of, user info, etc. And they are also required to verify their real identifiers such as telephone number and identification card by getting through the verification process.

2.1.3 Look for Host

Users will be able to search for hosts based on a lot of varying filter parameters such as auto location or manual address input, price, rating, accepted pet type, pets owned by the host, verification level of host, etc. After filtering the caregiving users according to the given parameters, they will be

listed in a basic detailed manner which will be ordered by their ratings by default. But the user will have the ability to order results by the parameters that they prefer.

2.1.4 Check Details and Start Conversation

After finding the host by filtering the options that are listed as a result of the host search, the user will be able to go to the detail page of the host which has detailed information and introductory text that are not displayed on the listing page. If the user makes his/her final decision on trusting the host with the pet he/she can proceed by starting a conversation with the host using the messaging functionality of the application.

2.1.5 Messaging the Host

The user will contact the host and arrange the rest of the caregiving details by using the messaging section of the application. As a sensitive information, users will not be able to see each other's phone numbers on this messaging section. And messages in this section will be stored in our database as they constitute evidence for the banning decisions and also to prevent false accusations between users. Users will be warned to not use the app as a messaging app and will be encouraged to always use the messaging section for communicating with the host in order to record every action that has taken place between users and stay safe.

2.2 Non-functional Requirements

2.2.1 Usability

The user interface of the system must be simple and user-friendly. The target of the Petriam will be people with pets of all ages. Therefore, it should not require exercise knowledge.

2.2.2 Supportability

The system should be able to work in both Android and iOS devices and compatible with any third-party APIs such as Google Maps.

2.2.3 Reliability

The system must not crash easily and roll-back in case of any failure in the server.

2.2.4 Efficiency

The delay between a user requesting the list of cat hosts and it being listed on the screen should not exceed 5 seconds.

2.2.5 Security

User information must be kept securely with using encryption and must not be accessible to third parties.

2.2.6 Scalability

The system must be able to handle a large number of concurrent users at the same time.

3. References

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