COMP 3059 – Capstone Project I

Software Requirements Analysis and Design Assignment

1.0 Introduction

1.1 Purpose

Our software is titled PetsNPals. It will allow for users to install our app, register an account with us, and login to their account. Once they have logged in, we will allow the user to enter information about their pet (cat or dog). This information can include any health issues the pet may have (overweight, poor eyesight, stomach issues etc.) along with its age and breed. Once the user has entered this information, we will take it and return a list of suggested items specially tailored for their pet. This list can include food, medicine, toys, treats and any other recreational items the user may be interested in.

1.2 Scope

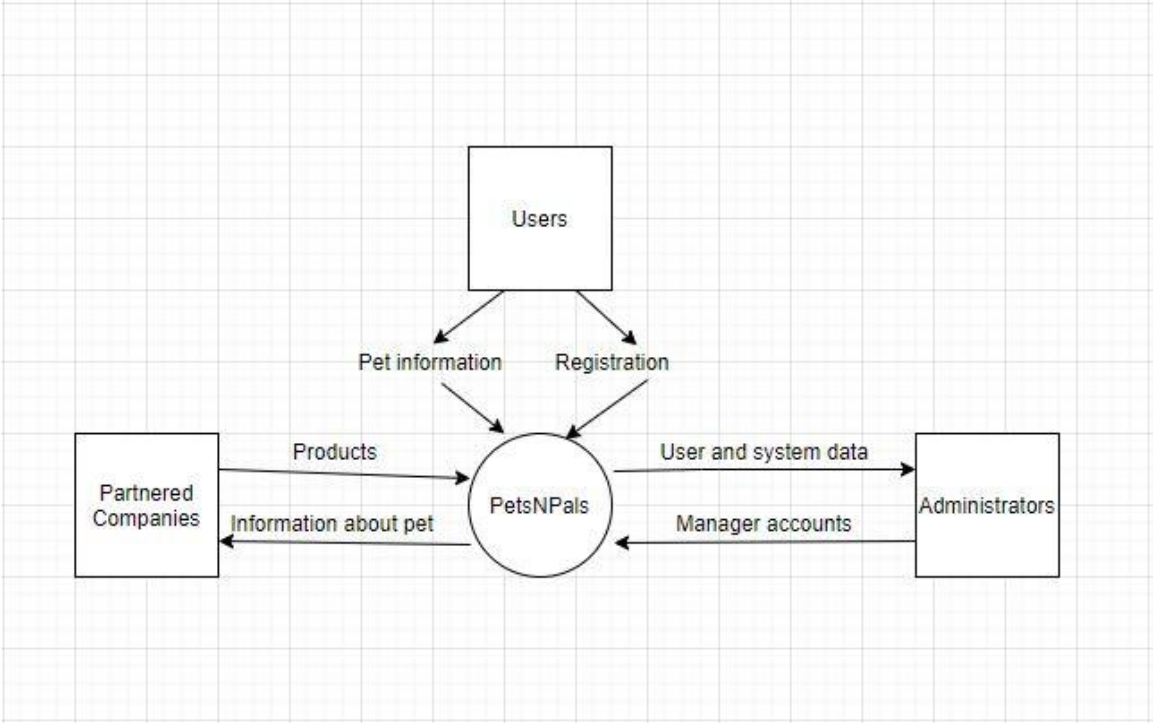
This software system will be a mobile application for our own PetsNPals project. The system will allow for customers to shop online for their dog or cat with customized results tailored for their pets needs. We have decided to only deal with cats and dogs at the moment, by doing this we've given ourselves more flexibility when creating the database, also it allows us to create a more user-friendly UI. We also plan on having a subscription-based service which sends out a monthly PetBox, this box can be upgraded with different tiers, each tier having more content which is custom made for their pet. Moving forward we wish to add different pet types to expand our range of people who will have interest in our service.

2.0 System Overview

2.1 Project Perspective

Everyone can use PetsNPals as it is developed for pet owners who want to learn more about what products to buy for their pets. Users can input information about their pet into the app. Once they have submitted our form, PetsNPals retrieves information from our database, which corelates with their pet. We then suggest items that the customer can buy for their pet. Our system is similar to others. We take customers info they provided, and then match it with suppliers' stock allowing for all parties to be content.

2.2 System Context



2.3 General Constraints

PetsNPals will be developed using Android Studio along with an SQLite database. There will be external packages use for building, maintaining, and testing the app. These constraints include:

- Technologies to implement the additional features that are considered out of scope.
- Abstract concepts and definitions need to be clarified and understood fully.
- Input, mock-up database used in testing phase.
- Documents formatting limitations.
- Resolving problems and adapting regard of new updates in technologies that completely affect most of the program.

2.4 Assumptions and Dependencies

Assumptions:

- The web-app will be deployed successfully on localhost before deploying on any domain
- Any updates in technologies will affect the projects

- Team members understand requirements and concepts fully before getting into building web-app.
- Basic requirements and features are top priority before any additional feature is added
- Environment should be installed successfully on developer's system

Dependencies:

- Android Studio 4.0 or newer
- SQLite 3.33 or newer (non-relational database)
- IE (Internet Explore) 8.0 or higher
- External resources agreed during the setting up phase.

3.0 Functional Requirements

3.1 <Functional Requirement or Feature #1>

Introduction

1. Users will need to register for a profile.
2. Having registered, users will need to log in using information provided during registration.
3. Users will submit their fill out a pet information form
4. Users will choose if they want to subscribe to any service.

Inputs

1. User registration information (username, password, email, etc.)
2. User pet information (breed, any health issues, weight etc.)
3. User profile information (payment, address, subscription type)

Processing

1. Registration will add user to system.
2. Login will validate the user to use the rest of the system.
3. Adding pet information will send data to database and return purchasing options.

Outputs

1. Initial set up user account on registration
2. Login verification
3. Subscription type
4. Pet products for specific pet

3.2 Use Cases

Application User Use Cases

This section is to layout the functional requirements needed for the enjoyable user experience while using the "Pets N Pals" mobile application.

6.1 Use Case: Sign Up

Users shall be able to enter first and last name, username, password, pet description being height, weight, age and breed. Upon all fields being correctly filled the user must check a captcha verifying of being human.

6.2 Use Case: Log in

User enters their username and password correctly and successfully logs into the system.

6.3 Use Case: Log out

The user shall have the ability to log out of the system from the trigger of a button until signed back in.

6.4 Use Case: Edit Profile

Users shall contain the ability to edit and adjust their profiles to reflect the most accurate information of themselves and their pets.

6.5 Use Case: Add Item(s) To Cart

Users shall be able to add single or multiple items to their cart when browsing the system's shop.

6.6 Use Case: Remove Item From Cart

Users will be able to remove items from their shopping carts in single quantities to multiple.

6.7 Use Case: Delete account

The user shall be able to delete their account through the account settings module where they'll have to provide the accounts password as confirmation for complete deletion.

6.8 Use Case: Subscribe to Product Supplier

Users shall be able to choose from multiple levels of subscription for one or multiple product suppliers for the latest notifications on product, news, specials and more.

6.9 Use Case: Search Items

Users shall be able to browse items by name and see a returned result providing a description, price, quantity and picture.

6.1.1 Use Case: Browse Catalogues

Users shall be able to browse product supplier catalogues for items through an interface that presents photos for each item.

6.1.2 Use Case: Purchase Item

Users shall be able to purchase items once placed in their carts and having quantity in stock.

6.1.3 Use Case: Purchase Item

Users shall be able to purchase items once placed in their carts and having quantity in stock.

6.1.4 Use Case: View Orders

Users shall be able to view a transaction record of all orders present and past for their profiles.

6.1.5 Use Case: Add Pet

Users shall be able to add a pet to their profile.

6.1.6 Use Case: Cancel Subscription

Users shall be able to cancel their subscription.

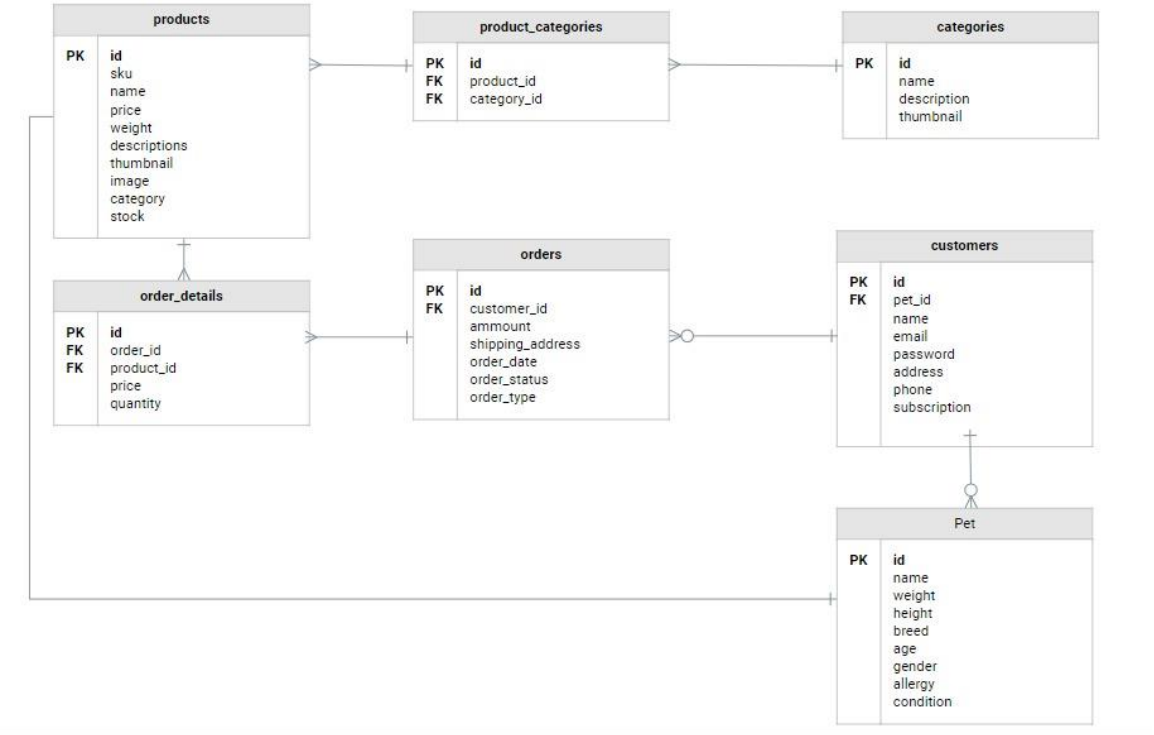
6.1.7 Use Case: Cancel Order

Users shall be able to cancel an order that is yet to be shipped.

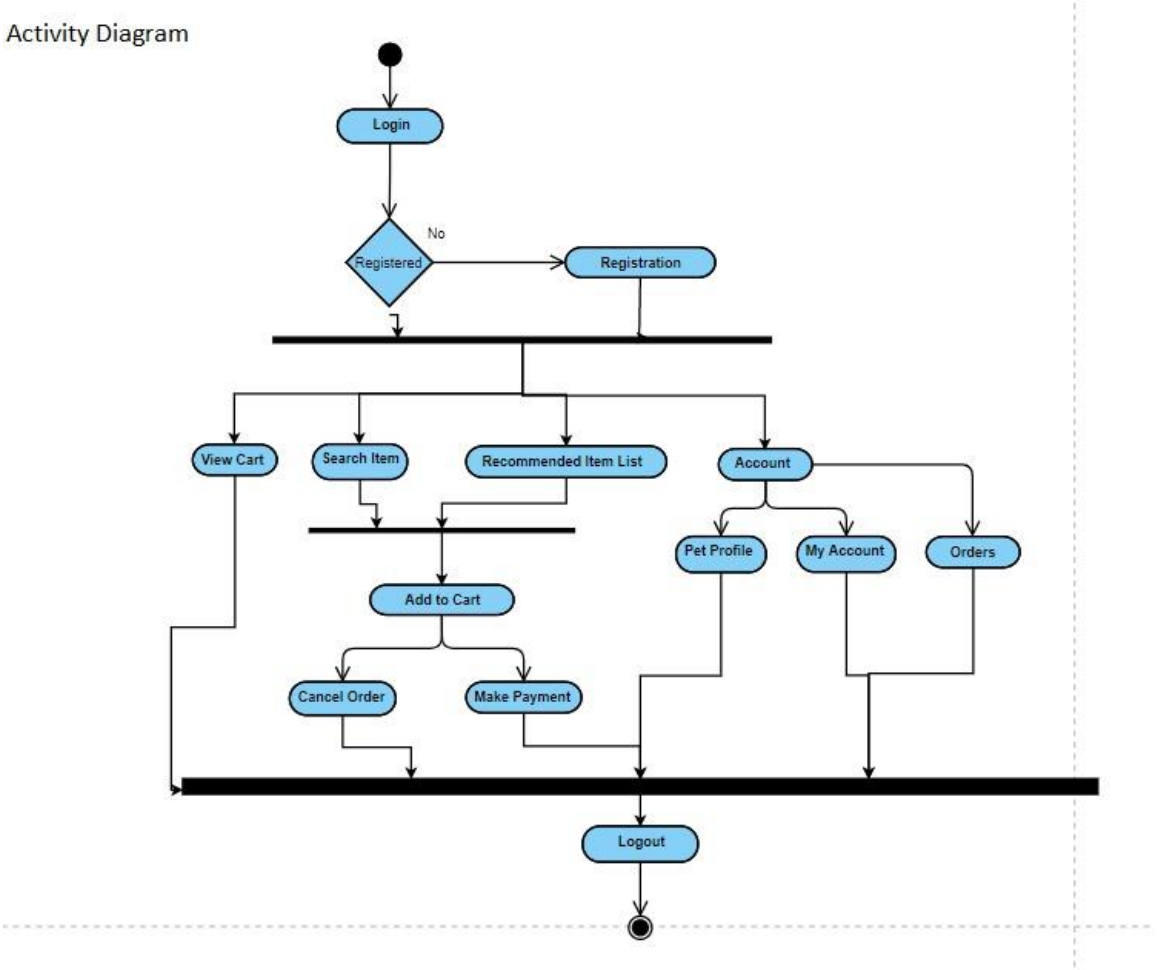
3.3 Data Modelling and Analysis

- Normalized Data Model Diagram

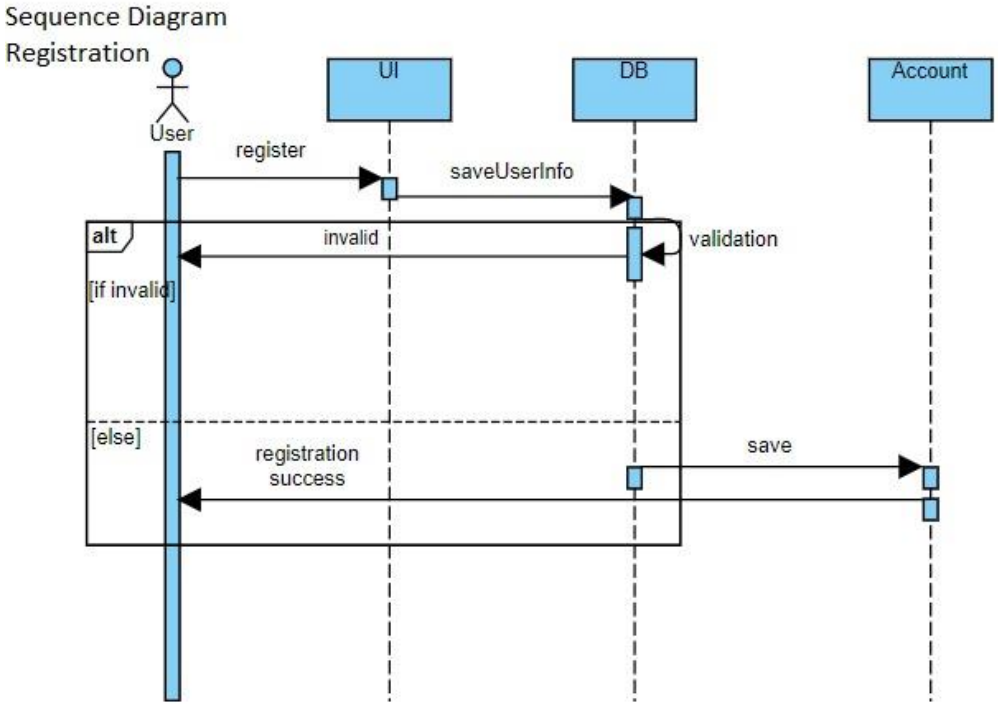
Normalized Data Model

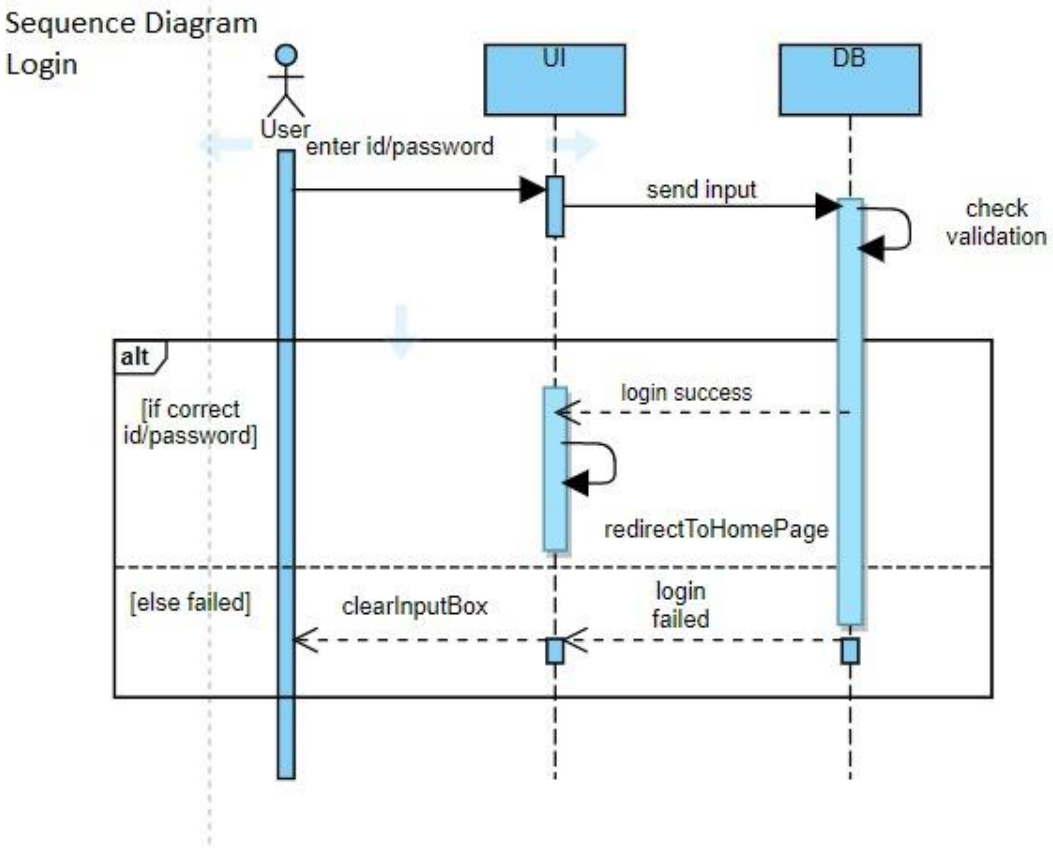


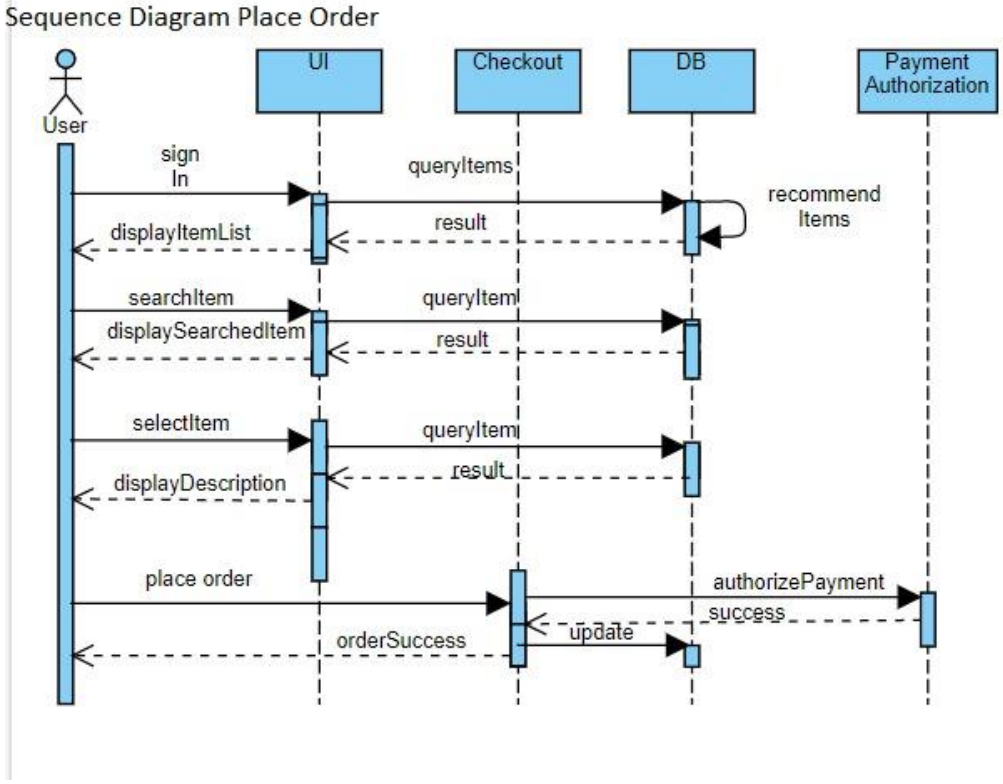
- Activity Diagrams



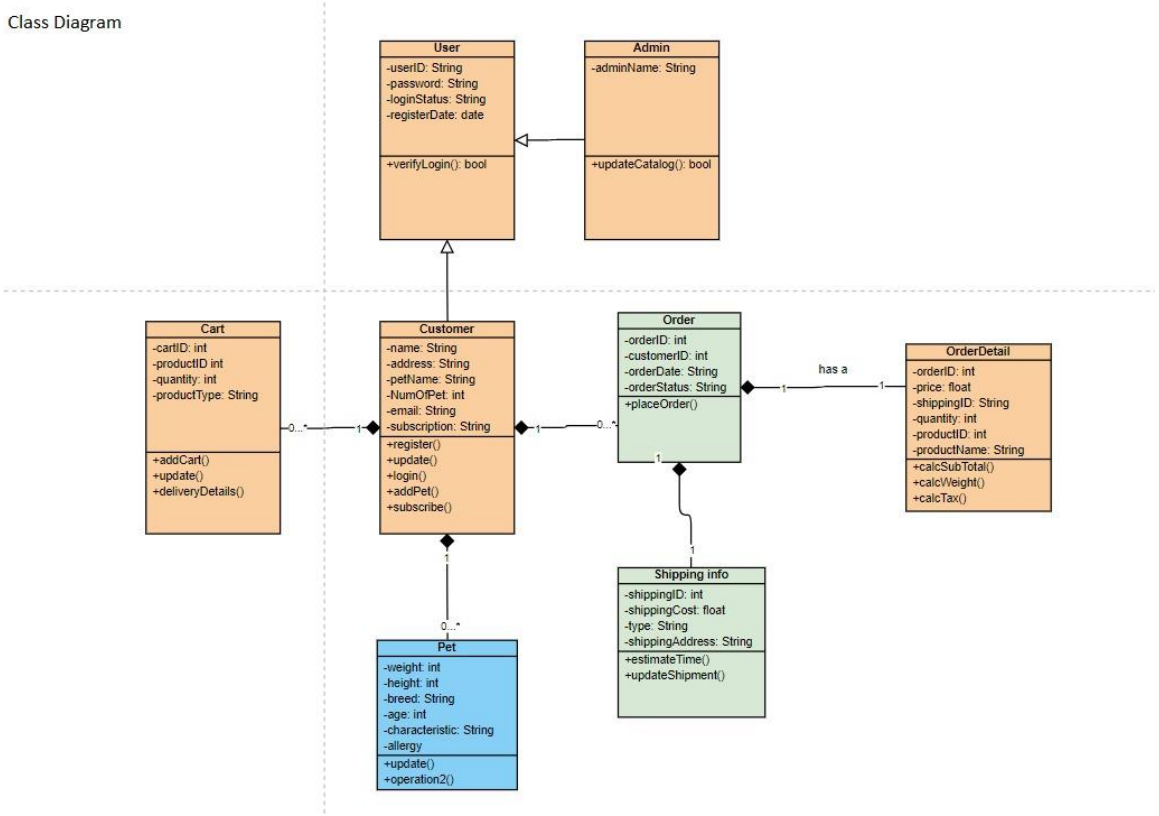
- Sequence Diagrams




Sequence Diagram
Login
User
UI
DB
enter id/password
send input
check validation
alt
[if correct id/password]
login success
redirectToHomePage
[else failed]
clearInputBox
login failed

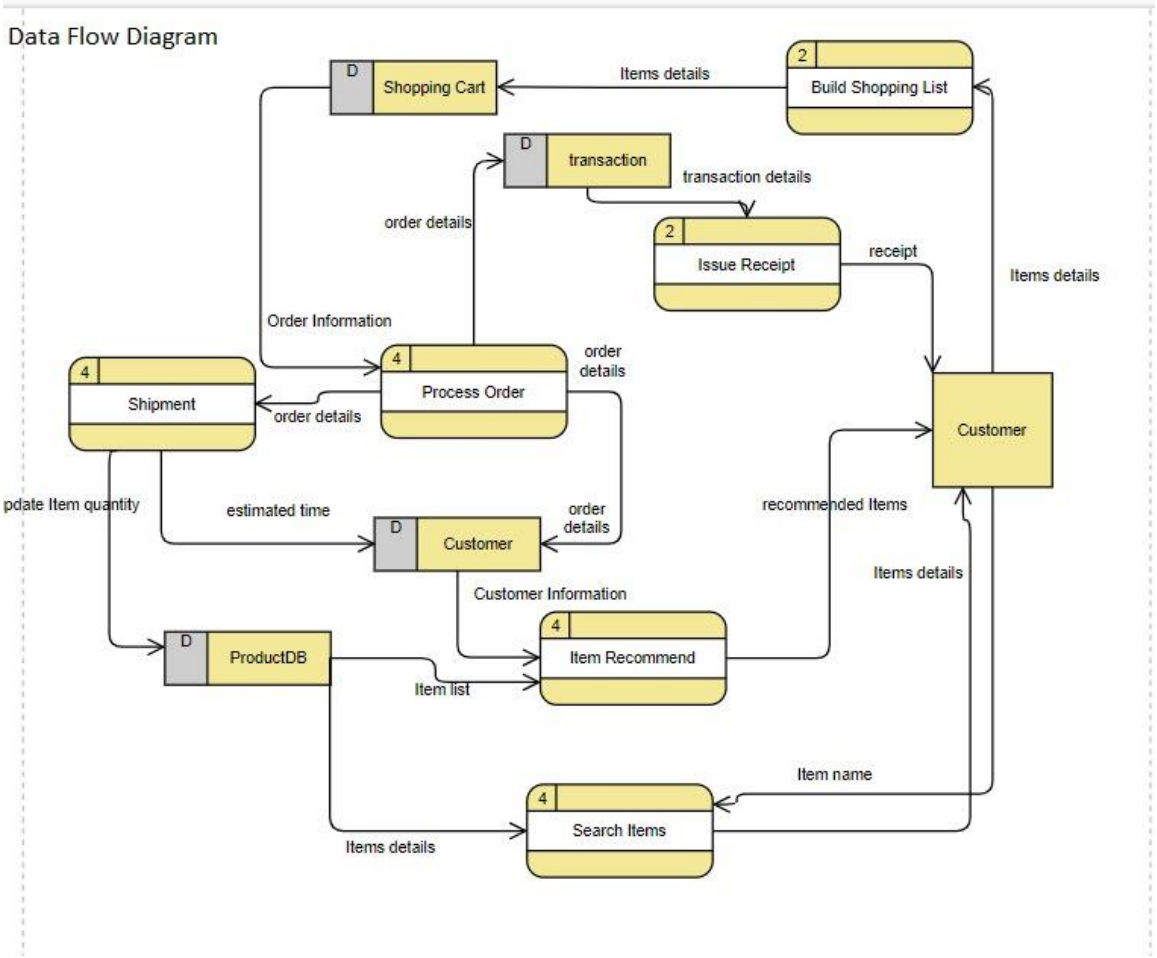

Sequence Diagram Place Order
User
UI
Checkout
DB
Payment Authorization
sign In
queryItems
recommend Items
result
displayItemList
searchItem
queryItem
displaySearchedItem
result
selectItem
queryItem
result
displayDescription
place order
authorizePayment
success
update
orderSuccess

- UML Class Diagram



3.4 Process Modelling

- Data Flow Diagram



4.0 Non-Functional Requirements

PETS 'N PALS

This document is produced l
order to describe the non-fu
mobile application's system.

Requirment ID	Requirment Statement	Must/Want
	Availability	
A-NF001	The system shall not be down more than 2 minutes	Must
A-NF002	The app must be able to run on Android devices	Must
	Security	
S-NF003	All communications between the mobile device and database must be secure	Must
S-NF004	The system shall be backed up at least daily	Must
S-NF005	Each unsuccessfull login attempt shall be recorded for auditing	Must
S-NF006	The app should verify that accounts registering are legit users and not bots	Must
S-NF007	The system must meet the Privacy Commissioners of Canada and Canada's privacy laws guidelines	Must
	Scalability	
SC-NF008	The system should be able to accomidate the majority of Canada	Want
SC-NF009	The system's resources should be scale along with the upsize of registered users	Must
SC-NF010	The performance of the system should grow with user's growing demands	Must
	Maintainability	
M-NF011	Updates should be performed overnight to assure minimum system downtime	Want
M-NF012	The system mustt backup the database on a sheduled basis	Must
M-NF013	The system must generate user activity logs	Must
M-NF014	The system should analyze logs generated from user data	Want
M-NF015	The system must process data in realtime	
	Performance	
P-NF016	The system should track and frequently update user's locations	Must
P-NF017	The system must be able to accomadate 600 to 1200 user operations every second	Must

P-NF018	The system must be able to multiple user transactions every second	Must

5.0 Logical Database Requirements

Pets N Pals

Summary

Revision History

Date	Version	Description	Author
2020/11/10	A	Jack standalone version	Jack Stamcos
2020/11/15	B	Everyone's content added version	All

3.0 System Overview

Pets 'N Pals goal is to create a mobile user platform offering a place for all pet needs aggregated in one place eliminating otherwise lengthy web searches for those seeking products, care tips and more for their pets. In order to perform said tasks the Pets 'N Pal team will utilize relational database management storage to store and retrieve various

pieces of data. This document further goes on to examine and describe the logic and methods to be used.

System Overview	Details
System name	Pets N Pals
System type	Mobile User Application
Operational status	In development
Database name	Pets N Pals Database

Budget

The budget required to implement the system with respect to the timeline is non-existent as the Pets' N Pal team will manage the task in-house.

4.0Database Specifications & Utilities

Pets N Pals will store user and vendor data for retrieval and analyzing in a non outsourced database, allowing the database to be customized to our system's specific needs. SQLite proved to be a secure lightweight relational database management system selected.

Vendor	Product	Version	Comments
N/A	SQLite	3.33.0	Relational Database Management System

4.1 Architecture

Pets N Pals will maintain a three tier system backed by a multi table database containing multiple entities. This lightweight database we plan to produce will be

implemented into the Pets N Pals mobile application providing consistent and fast operations. Advantages we plan to utilize implementing a three tier architecture are:

1. High security
2. Scalability
3. High reliability
4. Maintainability
5. Low maintenance

And more…

4.2 Data Entities

Data Object	Description
Customer	Customers will interact with the UI performing actions that will ultimately create a data entity for storage being a record and piece of data for future data analysis if needed. **Attributes:** pets, address, email, subscription type and name

Data Object	Description
Admin	Admin will perform operations on the databases entities and provide upkeep. **Attributes:** Admin Name

Data Object	Description

Order Details	Order details will be created once confirmation of payment success has gone through. **Attributes:** Order ID, Price, Shipping, quantity, product ID and product name

Data Object	Description
Order	Order data objects will be created once confirmation of payment success has gone through. **Attributes:** Order ID, Customer ID, Order Date and Order Status

Data Object	Description
User	The user data object comes into existence once a successful register is performed. **Attributes:** User Id, Password, Login Status and Register Date

Data Object	Description
Shipping Info	Shipping info is stored in the database for future user operations or analytics. **Attributes:** ID, cost, type, address and estimate time

Data Object	Description

Pet	The pet data object is generated by the user thats registered. With the attributes inputted by the user Pets and Pals system can better tailor content to individuals and their pets. **Attributes:** weight, height, age, breed, characteristics and allergy

Data Object	**Description**
Cart	With storing the user cart our system has the ability of retrieving previously packed items, therefore given the items are still in stock the system is able to offer them. Furthermore, our system can perform analytics on the kind of items in demand and adjust content provided. **Attributes:** ID, product ID, quantity and product type

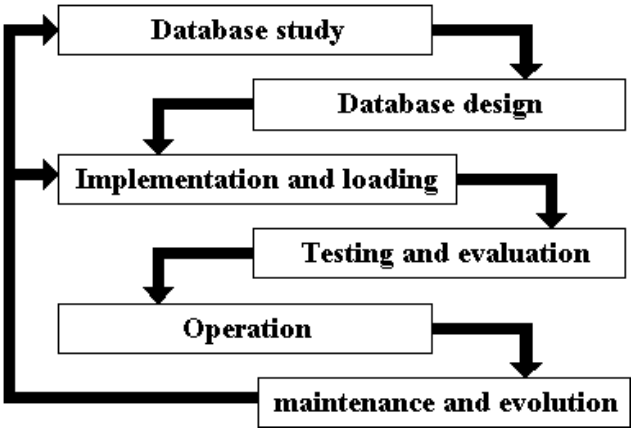
5.0 Planning

The system development team consists of three individuals listed in the table below. Database operations and maintainability will be performed between all three team members. With SQLite being the chosen system its team benefit as all members have past experience working with traditional SQL queries.

Name	**Student ID**	**Title/Occupation**
Isaiah Sylester	100859973	Developer
Hyeonjun Yoon	101211330	Developer
Jack Stamcos	101225743	Developer

6.0 Analysing of Data

Pets N Pals plans to utilize clean stored data to further optimize the systems tools catered to users once seeing growth. Some key attributes to this ability is the user's pet information, with use of functions and other tools used on user given info of they're pet such as: weight, height and breed Pets N Pals team can present each individual user with a uniquely tailored product, treatment, diet and more.



Conclusion

This document is produced by the Pets N Pals team as a guideline to manufacturing the Pets N Pals backend database system to required specifications while also describing the systems logical requirements prior to build.

6.0 Other Requirements

Additional requirements, if any.

7.0 Approval

The signatures below indicate their approval of the contents of this document.

Project Role	Name	Signature	Date
Developer	Jack Stamcos	JS	2020/11/15
Developer	Hyeonjun Yoon	HY	2020/11/15
Developer	Isaiah Sylvester	IS	2020/11/15