Systems Proposal

Info 361 – Analysis and Design

Section 901

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Catnip Veterinary Practice

Dr. Judy Catnip's Veterinary Practice purpose is to ensure the well being of all the businesses clients pets while also functioning properly from a business standpoint. The practice always takes in new clients, and continues to treat current ones. The practice is currently a small business with one sole location, but is constantly growing its customer base and will be prepared for expansion in the near future.

Catnip's Veterinary offers a range of services for house pets, including but not limited to dogs, cats, and small mammals. They also offer services to certain reptiles including but not limited to chameleons, lizards, and Bearded Dragons The practice uses professional diagnostic equipment to identify the problem that's affecting the client's pet: digital X-ray, ultrasound, and an on-spot laboratory provides for same day results for clients. Veterinarians also offer surgeries, dental, and some laser treatment practices. Finally, Catnip's Veterinary offers senior health care for older pets that may have special needs; including treatment, chiropractic, and diet & supplement recommendations.

In order to run the business effectively, Dr. Catnip needs to have an effective system in place to cover all bases of the business. The veterinary's information system must first install and implement a new software system, Evet Practice to replace the old *pen and paper* system which Dr. Catnip was previously using. This system must be capable of keeping accurate client records, accurately tracking client billing, employee payroll, preparing business reports, inventory management and complying with any government veterinary regulations. Once the new system is installed, Catnip must transfer all current data onto the new system. Finally, the practice needs to train its employees on the newly installed system.

The scope of Dr. Catnip's Veterinary is:

Project Objectives – Install and implement new system, minimize profit loss when installing new system, maximizing profits using the new system, allow the practice room for company growth, and setting the practice up to be able to treat all new and returning clients.

Goals – Minimize profit loss of implementing new system, 60 customers per week for the first year, 15% increase in customers every following year, expansion by year 5, installing an effective information system that satisfies Dr. Catnip's needs, and maximizing profits.

Tasks – Install new system, transfer old data to the new system, grow customer base, satisfy clients, and effectively running the business.

Resources – New software, old data to be transferred, and using other veterinary practices for benchmarking.

Schedule – Dr. Catnip needs the new information system installed, running effectively, and all employees trained on it in a maximum of 3 business days to minimize loss of profit.

Original Case and System Request

The original case scenario: Dr. Judy Catnip's Veterinary Practice is stressed out with all the administrative paperwork, bills, scheduling appointments, and other patient documents that increase on a daily basis. Dr. Judy sees patients and on top of that is responsible for making sure the record keeping and billing is correct. She currently uses a mix of paperwork and a spreadsheet program on her computer. To ensure the cash flow is correct and Dr. Catnip has more time on her hands we propose to invest in the information system called EVet Practice.

This information systems functional requirements will be to keep track of patients and clients, manage appointments, manage the financial aspect of operating the practice, manage inventory, keep track of billing and payments, and prepare business reports. The non-functional requirements for this system is that only the doctors in the office can use this, it will operateon Windows Operating System, it willbe able to connect to all devices, including printers wirelessly, and the system will be able to create and store appointment data within a few seconds.

Feasibility

Technical Feasibility

Training Employees with the new Information System (low risk) - Since the office does not have a software application and just uses papers and a spreadsheet program it might take a few weeks for the employees to be proficient with this information system. Training will take 2 days, however employees getting comfortable with the new system could take weeks depending on the technical skills of the employee. Updating and getting all the current clients and patients will take a day, maybe 2 to enter into the new information system.

Transferring Data from As-Is to To-Be System (high risk) -Dr. Catnip's office keeps records for all her patients including confidential information including addresses, phone numbers, and credit card numbers that must be transferred to correctly to ensure the patients are protected. The accurate data concerning past medical records is imperative for the treatment of the patients to keep track of allergies to certain medications and prior conditions. Keeping these records in tact is extremely important to the successfulness of the business, as well as keeping customers coming back to Dr. Catnip's Veterinary. Data transfer will take an estimated 2 days. Thus this is a high risk task.

Project Size (Moderate) -This project will be on a moderate scale because the office is small, but the scale of information being updated could be medium to large. Updating all the existing information and installing new software to all the devices in the office will take a week max.

Installing the new System (high risk) -Assuming Dr. Catnip doesn't have any experience with Information Systems, a 3rd party will need to install the system for her. This will lead to a loss of profits; loss of potential clients as well as the actual cost paid to the 3rd party for system implementation. Having all the data properly transferred into the new system is essential for success and keeping the client base. Loss of data in the transfer will lead to a loss of profits, customers and overall image of the practice.

Economic Feasibility

The first year of operating the new software, the company is taking one day off (12 patients) for training exercises. Catnip will be hiring a new Veterinarian to keep up with the growing workload, so there will be two doctors in the office which will increase the amount of patients seen on a daily basis. During the training day, the company will miss out on average of 12 patients (6 patients per Doctor).

Due to the training the office will lose around $1080 that day, however training costs $1250, so we will **lose $2330 roughly.**

-Year 1 the company will stay consistent with seeing on average 60 patients per week. We want everyone to get used to the new software system and we do not want to risk any loses. Starting from the Year 2 and onwards we are planning to increase business (patients) by 15% every year.

Tangible Costs and Benefits

- Cost of the system [cost]
- Vendor installation of the new system [cost]
- Revenue lost from system implementation [cost]
- Cost of hardware [cost]
- Cost of software [cost]
- Employee training [cost]
- IT Consultant fees [cost]
- Hiring another Veterinarian [cost]
- Increase revenue from a more efficient system [benefit]
- Increased flow of customers from additional Vet [benefit]
- Total Benefits after 5 years is $1,208,528.59 - 184.01%
- ROI over a 5 year period -Our Net Present Value over a 5 year period with a 3% discount rate is $484,237.08

In the short run, costs greatly outweigh the tangible benefits of the new system. However the investment of the new system will lead to an increase in profits at the end of the second year.

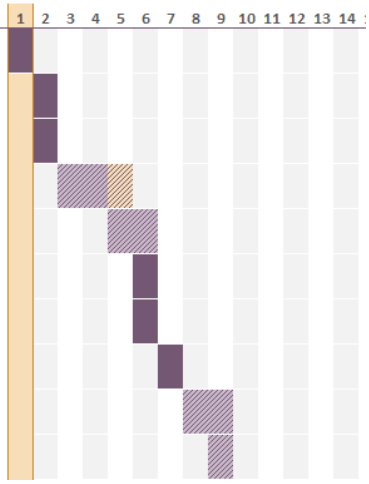
Annual discount rate	3%
Initial Investment	$14,920.43
1st year return	-$7,548.32
2nd year return	$62,864.54
3rd year return	$110,902.34
4th year return	$166,145.81
5th year return	$229,675.80
NPV	**$484,237.08**

Dr. Catnip Veterinary Information System

Duritation is scaled by days. I.E. a duritation of 1 = 1 day

Period Highlight: 1 | Plan Duration | Actual Start

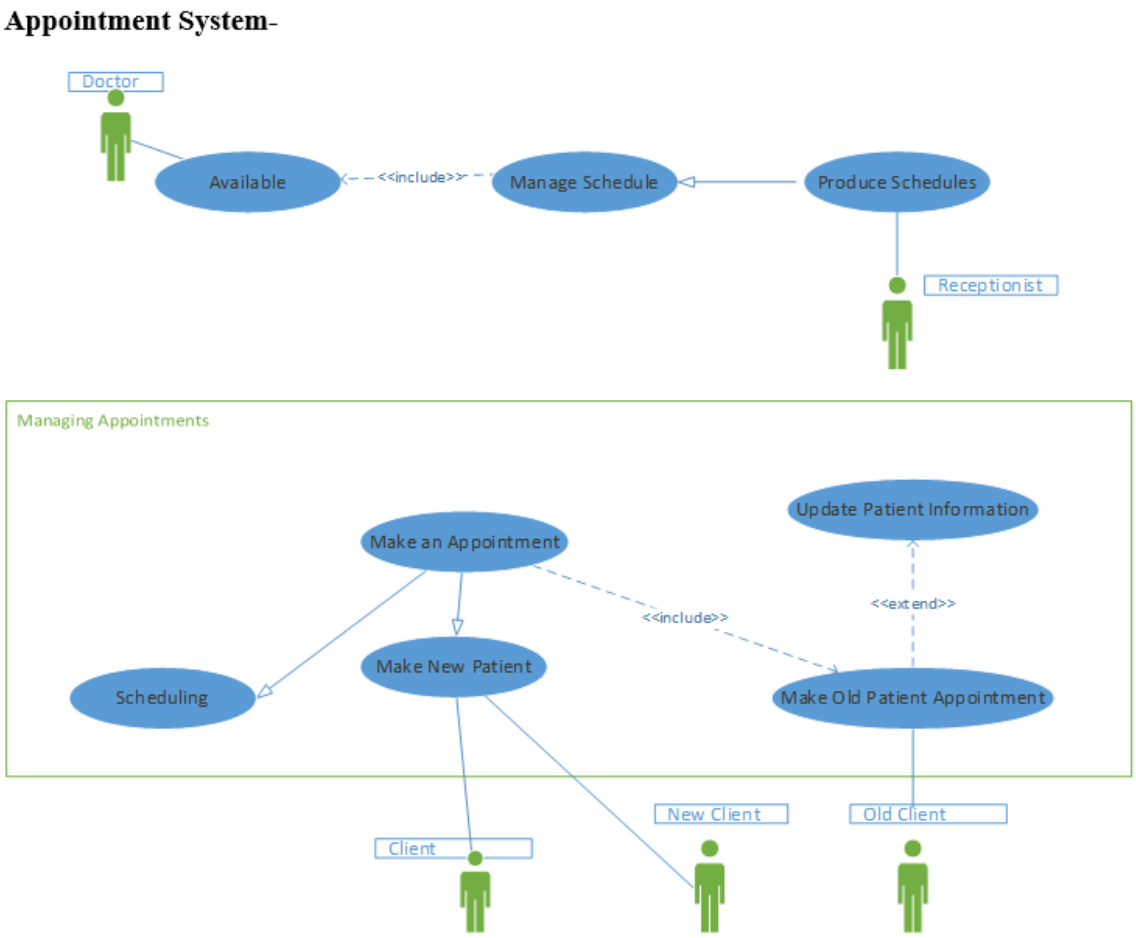
ACTIVITY	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
Cost Estimation	1	1	1	1	100%
Fessibility Analysis	2	1	2	1	100%
Economic Analysis	2	1	2	1	100%
Data Transfer	3	2	3	3	0%
Employee Training	5	2	5	2	0%
Case Scenerio Analysis	6	1	6	1	100%
Use Case Analysis	6	1	6	1	100%
Class Diagram Analysis	7	1	7	1	100%
User Interface Prototyping	8	2	8	2	0%
Interface Usability Testing	9	1	9	1	0%



The Gantt Chart above shows what has been done with the implementation of the new Information System and what will be done if this proposal is approved.

Tasks with 100% have been completed and those with 0% will be completed upon approval.

Use Case Diagrams

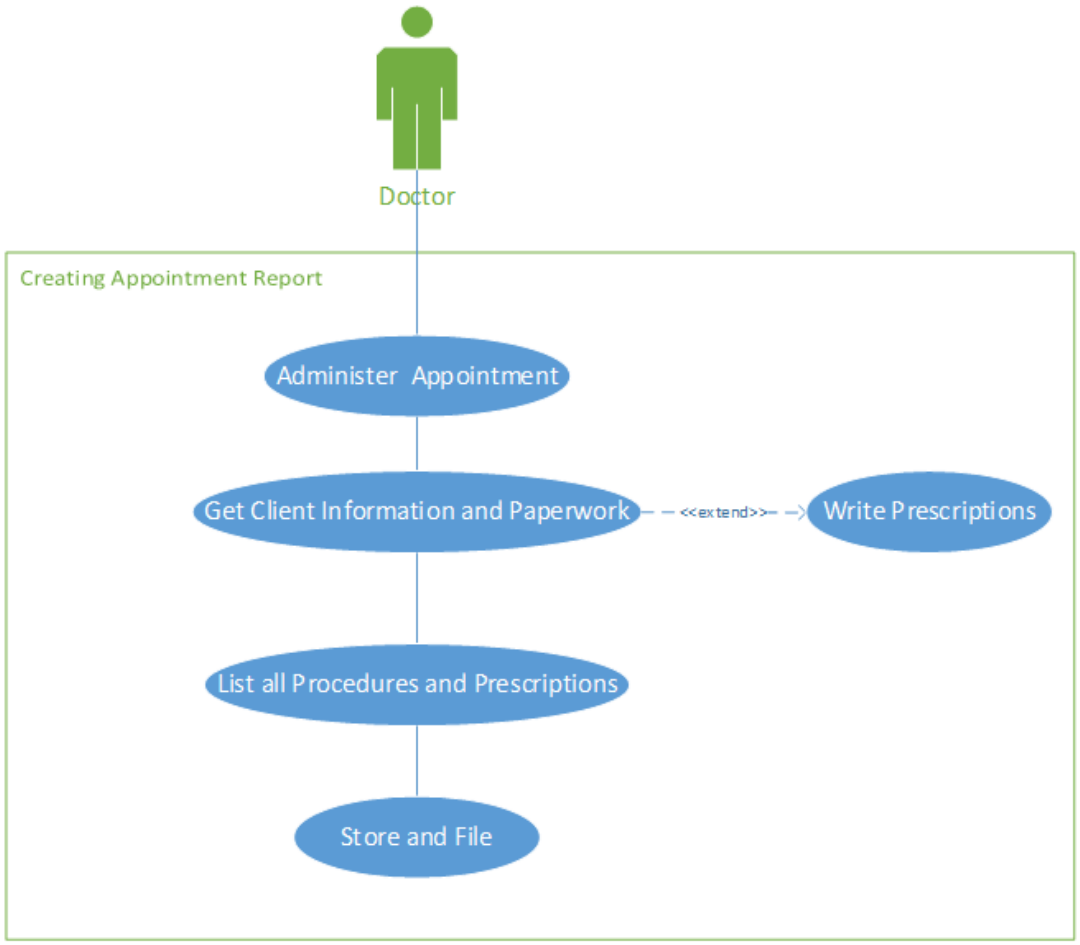


Appointment System use case: Interaction among actors when scheduling appointments with new or returning clients. Patient calls office to set, cancel, or reschedule an appointment.

Normal Flow of Events:

1. The Patient contacts the office regarding an appointment.
2. The patient provides the Receptionist with his or her name, address and Insurance.
3. Update the Patient Information if it has changed.
4. Receptionist sees whether the client is making a new appointment, rescheduling, or canceling.

Appointment Report-

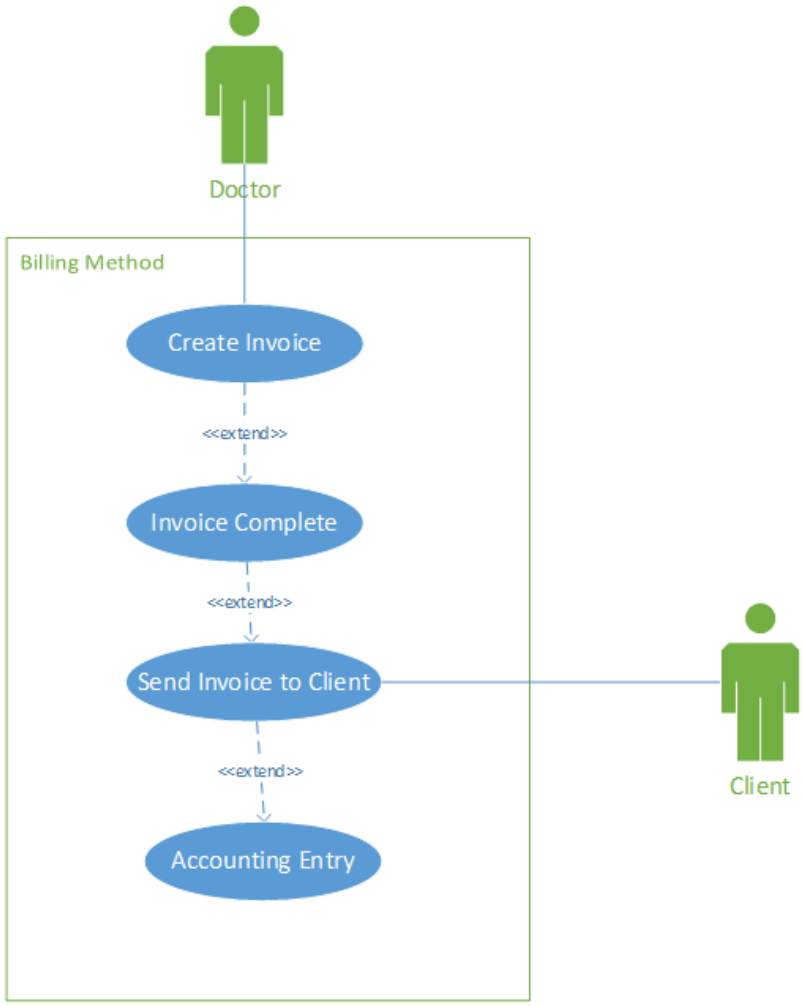


Appointment Report use case: The process of how to prepare and store a business report. Doctor undergoes appointment and records information.

Normal Flow of Events:

1. Doctor Administers appointment
2. Doctor collects information
    a. If need be, Doctor writes prescription
3. Doctor lists out all procedures and prescriptions that were administered
4. Doctor stores and fills report.

Billing Method-



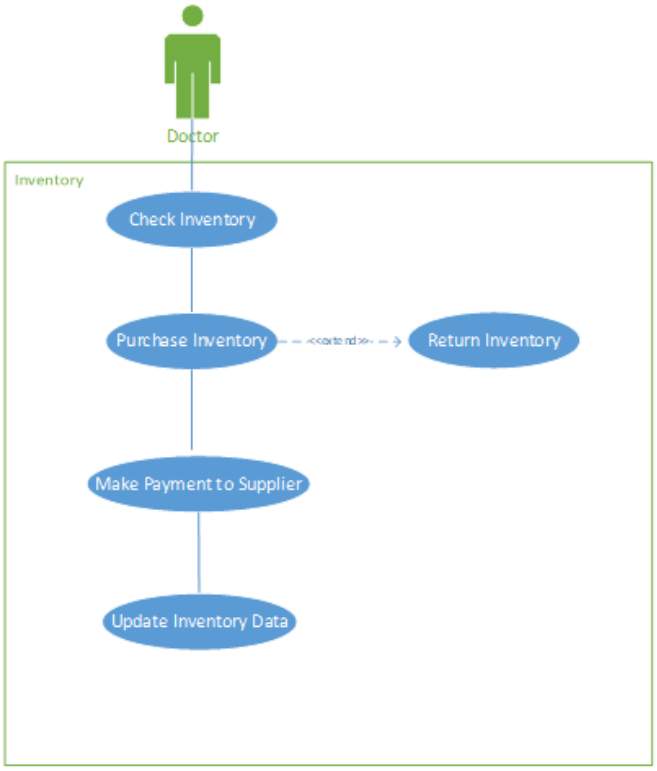
Billing Method use case: Doctor completes necessary work on the clients pet. Doctor bills client for the appointment, client pays accordingly.

Normal Flow of Events:

1. Doctor creates invoice for client after work is complete
2. Invoice is complete
3. Invoice is sent to client
    a. Client receives invoice

Revenue is recorded in the businesses Accounting System

Inventory-

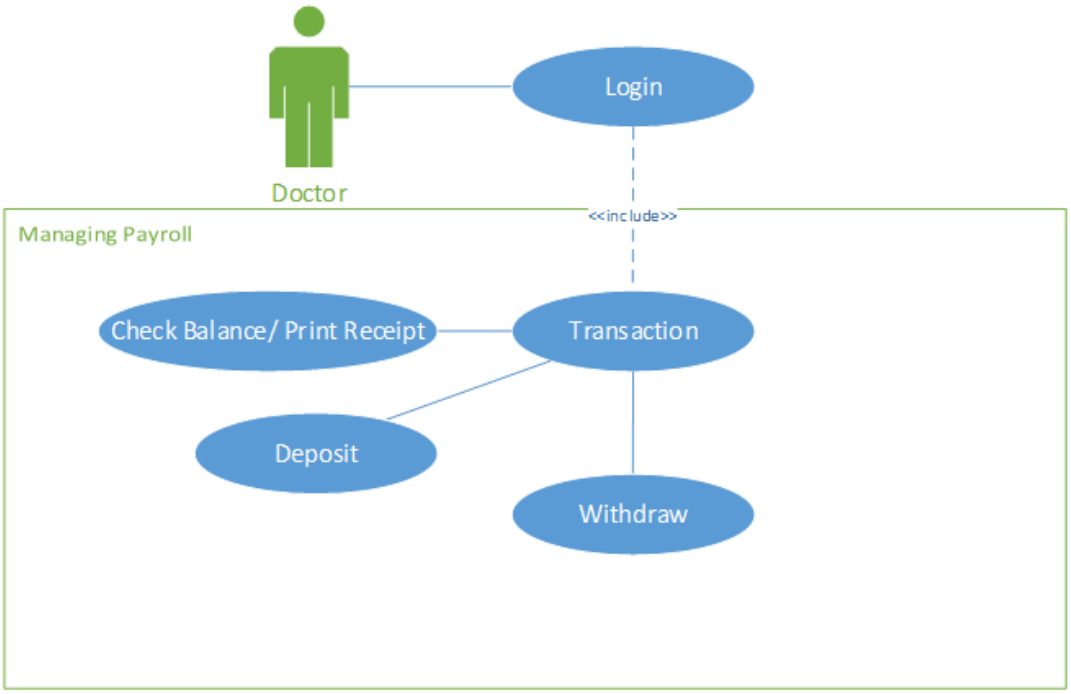


Payroll use case: Describes how inventory is managed. Inventory items are used for Vet practices and office functions, each of which have a usage lifespan.

Normal Flow of Events:

1. Doctor checks inventory status
2. Doctor purchases necessary inventory
    a. Doctor reviews inventory purchased, if any errors are found products are returned to the supplier
3. Actual payment is made to supplier
4. Inventory is updated accordingly

Payroll-



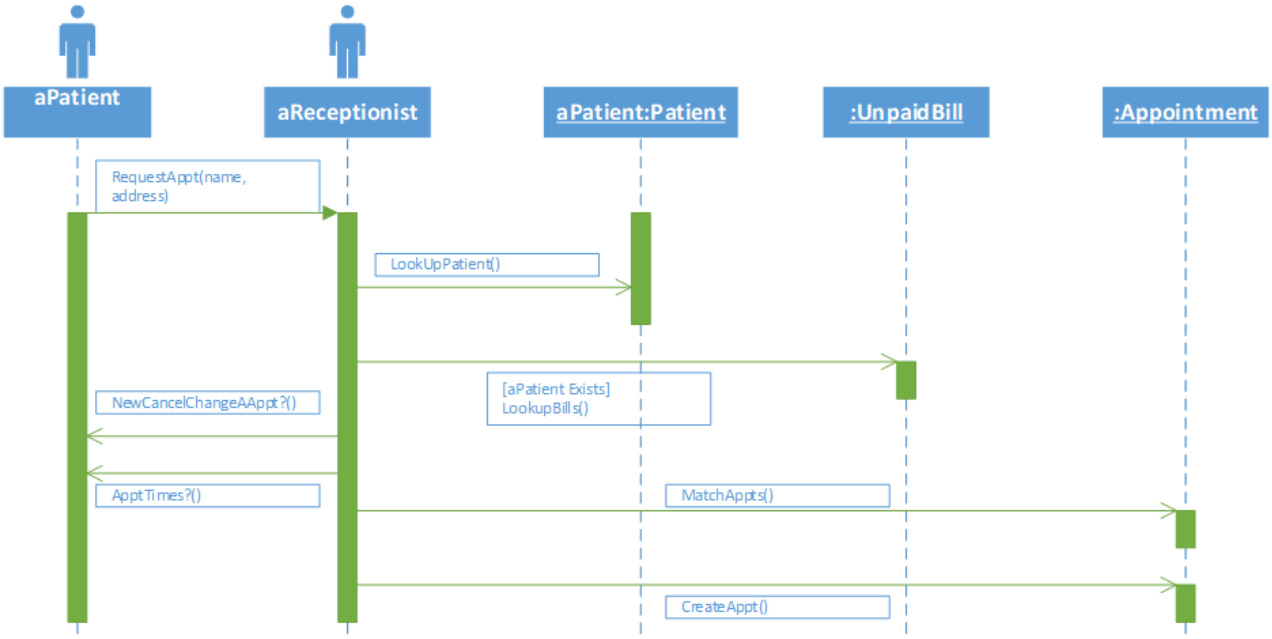
Payroll use case: Doctor reviews employee hours worked and distributes company funds accordingly.

Normal Flow of Events:

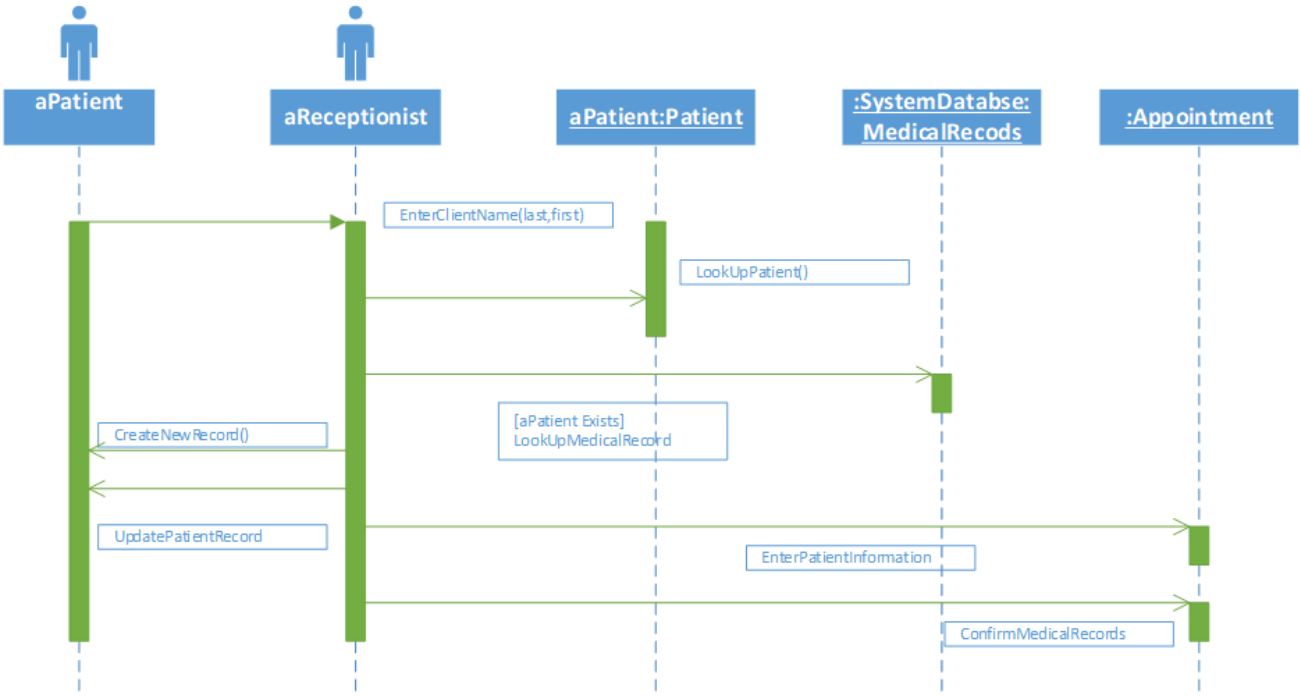
1. Doctor logs into admin system
    a. Hour sheets are reviewed
    b. Funds are transferred from business account to respective employee
    c. Check is printed/ Receipt is printed
    d. Money is withdrawn

Sequence Diagrams

Make Appointment



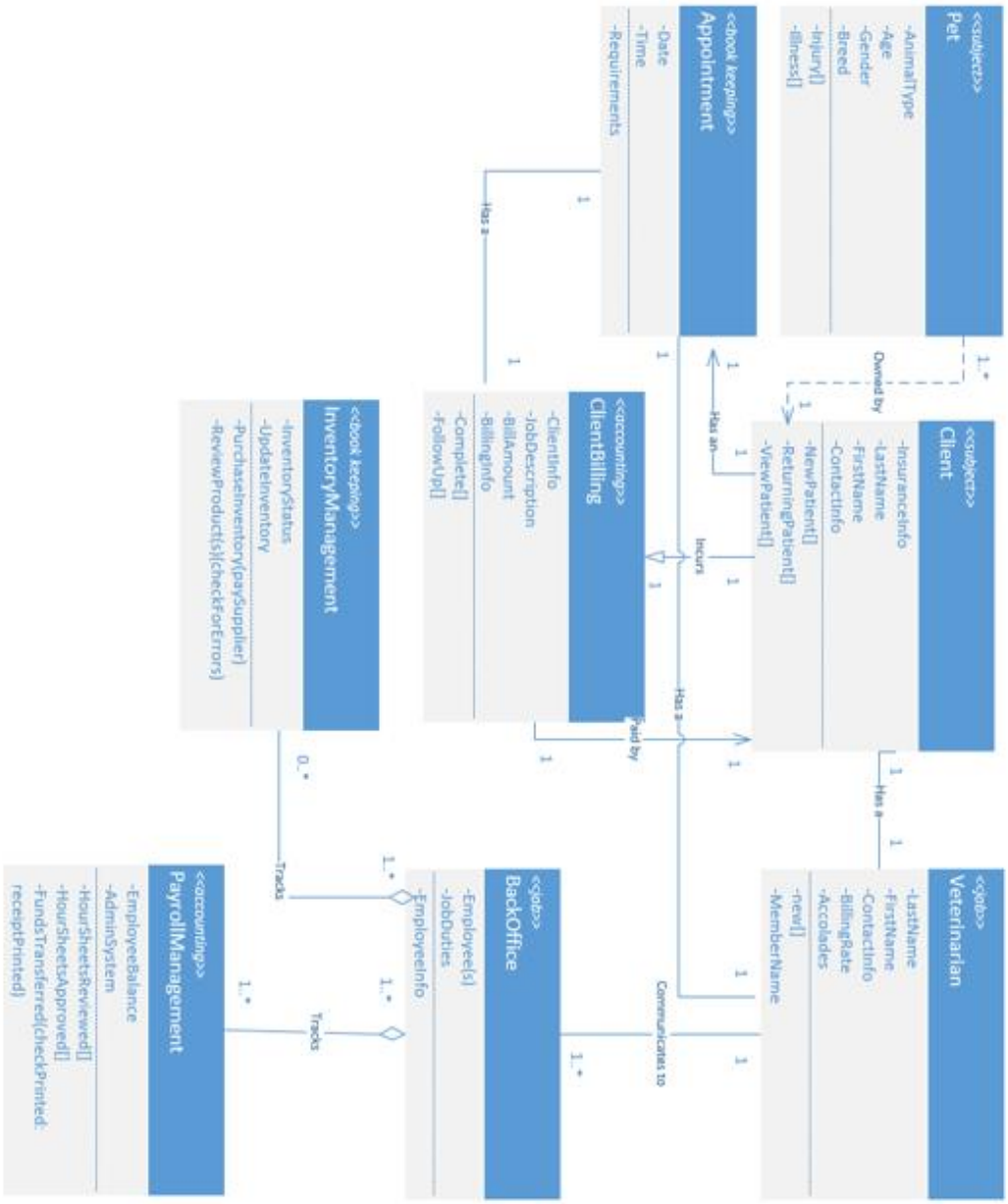
Update Medical Records



Sequence Diagram Description

The first sequence diagram was how the new software would make an appointment to a new patient or a current patient already in or system. There are a few basic steps, the first was the patient interacts with our receptionist and our employee gets their name and address. The receptionist then checks our system to see if the patient is there. If the patient exists in the system, the receptionist will look up the bills. Once that is done, they will match the appointments and then an appointment is created. In our sequence diagram, the patient can cancel or change the appointment and change the time before meeting with the receptionist in the office. Our receptionist will confirm the appointment by clicking the 'confirmation' button on the application and then close the appointments screen by clicking 'Return to Main Menu' option.

The second sequence diagram deals with the process of updating medical records for out patients. Our patient will come into the office and tell the receptionist their first and last name. The receptionist will look up the patient information in our new system. If it is a current patient the information should be in the system, if not the receptionist will create a new record for them. After meeting with Dr. Catnip, the patient will talk with the receptionist and she/he will update their medical records and then confirm it by clicking the 'confirmation'. The receptionist will save the patient's medical record screen by selecting 'Return to medical records' option.


<<subject>>
Pet
-AnimalType
-Age
-Gender
-Breed
-Injury[]
-Illness[]
1..*
Owned by
1
<<subject>>
Client
-InsuranceInfo
-LastName
-FirstName
-ContactInfo
-NewPatient[]
-ReturningPatient[]
-ViewPatient[]
1
Has a
1
<<job>>
Veterinarian
-LastName
-FirstName
-ContactInfo
-BillingRate
-Accolades
-newJ[]
-MemberName
1
Communicates to
1..*
<<book keeping>>
Appointment
-Date
-Time
-Requirements
1
Has a
1
1
Has an
1
Incurs
1
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ClientBilling
-ClientInfo
-JobDescription
-BillAmount
-BillingInfo
-Complete[]
-FollowUp[]
1
Has a
1
Paid by
1
<<job>>
BackOffice
-Employee(s)
-JobDuties
-EmployeeInfo
1..*
Tracks
1..*
<<book keeping>>
InventoryManagement
-InventoryStatus
-UpdateInventory
-PurchaseInventory(paySupplier)
-ReviewProduct(s)(checkForErrors)
0..*
Tracks
1..*
<<accounting>>
PayrollManagement
-EmployeeBalance
-AdminSystem
-HourSheetsReviewed[]
-HourSheetsApproved[]
-FundsTransferred(checkPrinted:
receiptPrinted)

Class Diagram Descriptions

Pet

The Pet class is the subject which the Veterinarian is performing their job on. Pets are described by its animal, age, gender, and breed. They are taken into the Vet because of an injury or illness, or both.

Client

The client is the actor who seeks out the Veterinary practice for the well being of their pet(s). Clients have basic information relative to the Vet practice including; Insurance information, first and last name, and contact information. The client is either new, or returning.

Veterinarian

The Veterinarian is the actor who is performing the job on a clients pet. Veterinarian's are identified by first and last name, contact info, billing rates, and their respective accolades.

Appointment

Appointment class is simply the date and time of the appointment for a clients pet with the Veterinarian. There are certain requirements for each appointment to carry out the job, such as Vet equipment.

Client Billing

The client billing class is the bill incurred by the client for the Veterinarians work on their pet. The client bill is paid by the client, and contains information describing the job; as well as if a follow-up appointment is needed.

Back Office

The back office communicates with the veterinarian regarding their specific jobs for book keeping purposes. 'Back' office isn't necessarily in the back of the building, for instance it may be the receptionist. It is simply called Back Office to define its internal business functionality.

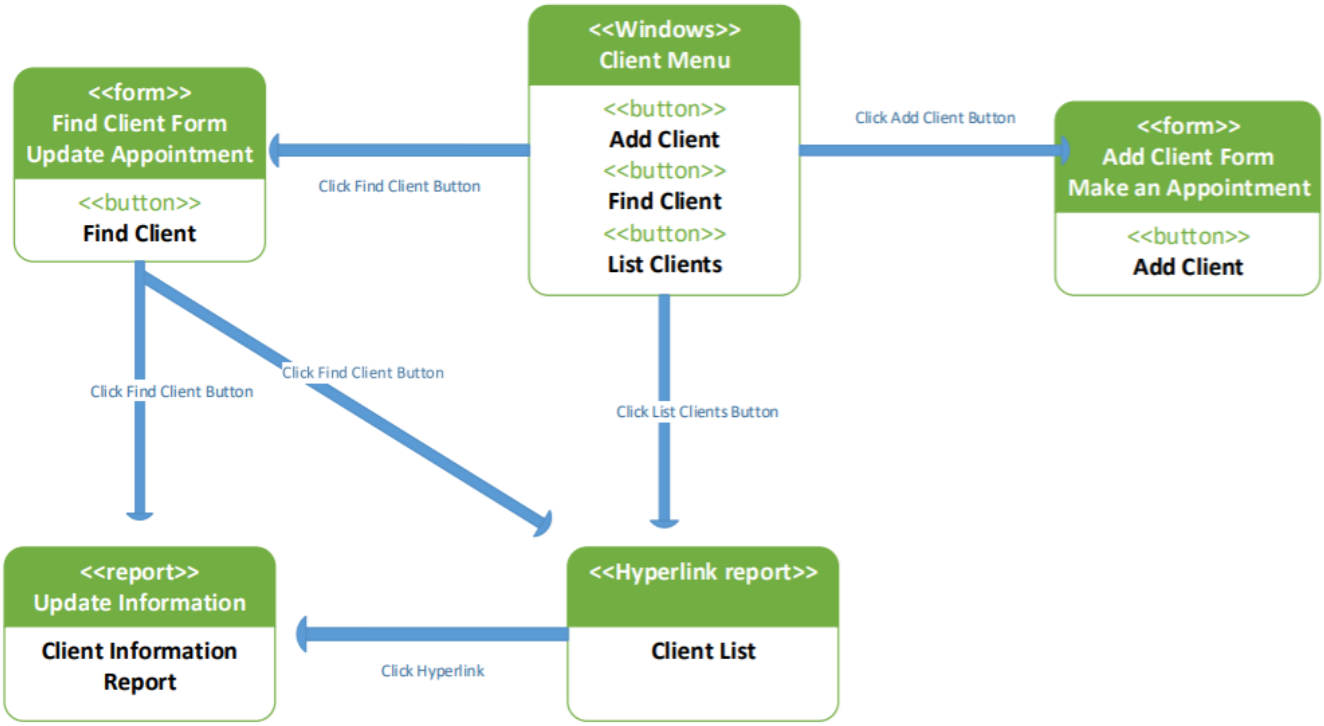
Inventory Management

The inventory management class is aggregated with the Back Office class. The back office is in charge of keeping track of inventory to make sure that all business functions can be carried out properly. Inventory is checked, updated, and purchased directly from a supplier if necessary. Once inventory is received, it is reviewed by the back office to ensure all ordered inventory has been delivered.

Payroll Management

The payroll management class is aggregated with the Back Office class. The back office class is in charge of managing employee balance, such as hour sheets and jobs completed. Hour sheets are reviewed and approved by the back office. Once approved, funds are transferred into employee's respective bank accounts accordingly, and a receipt is printed for book keeping purposes.

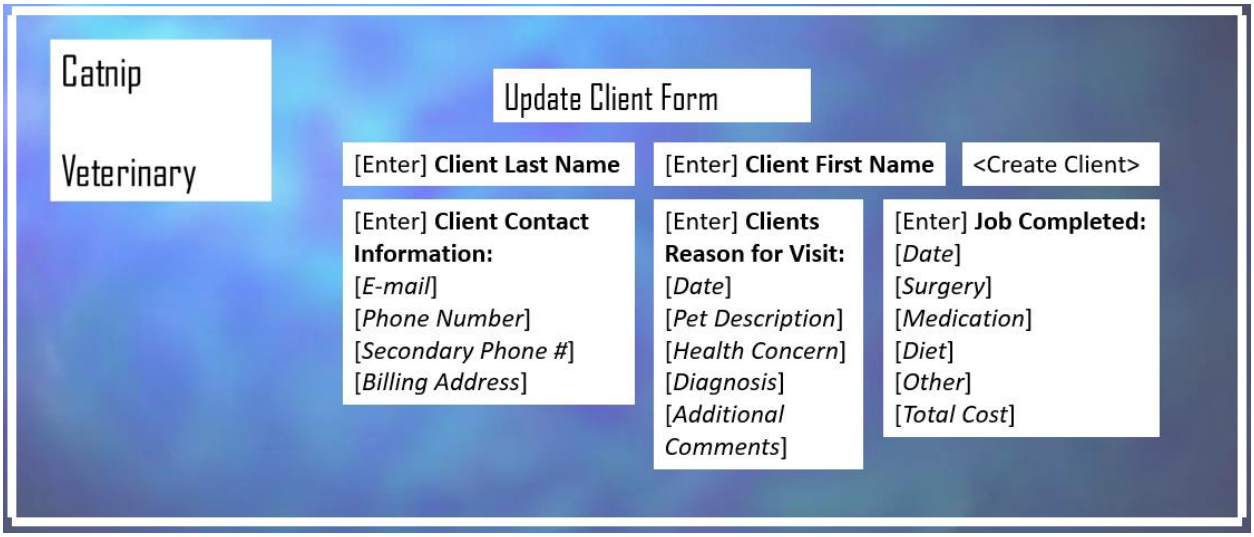
Windows Navigation Diagram



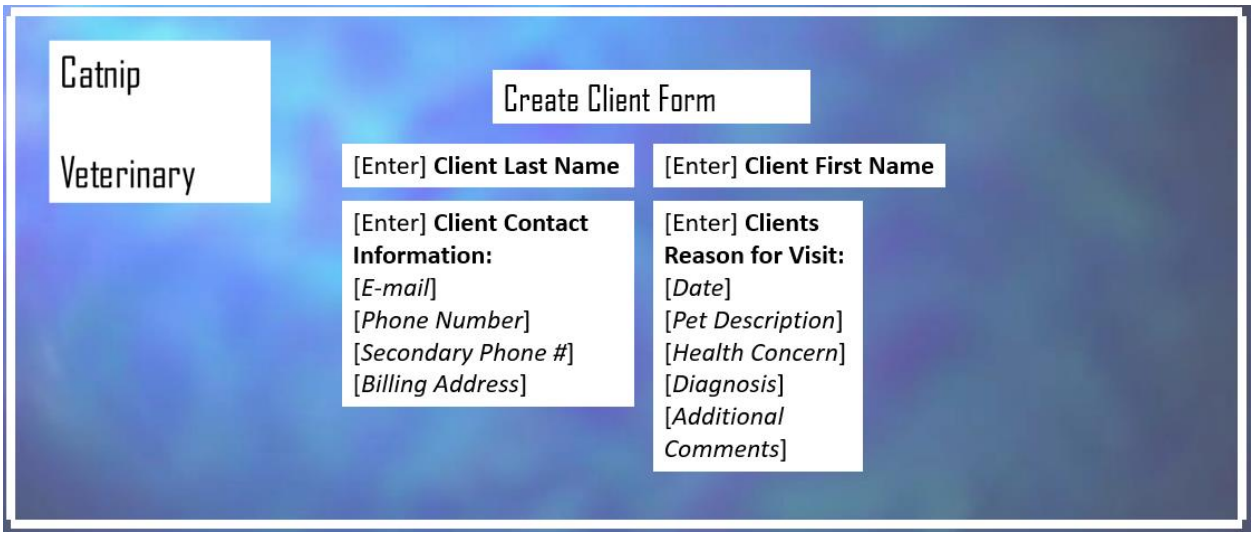
User Interface Prototypes

Main Menu

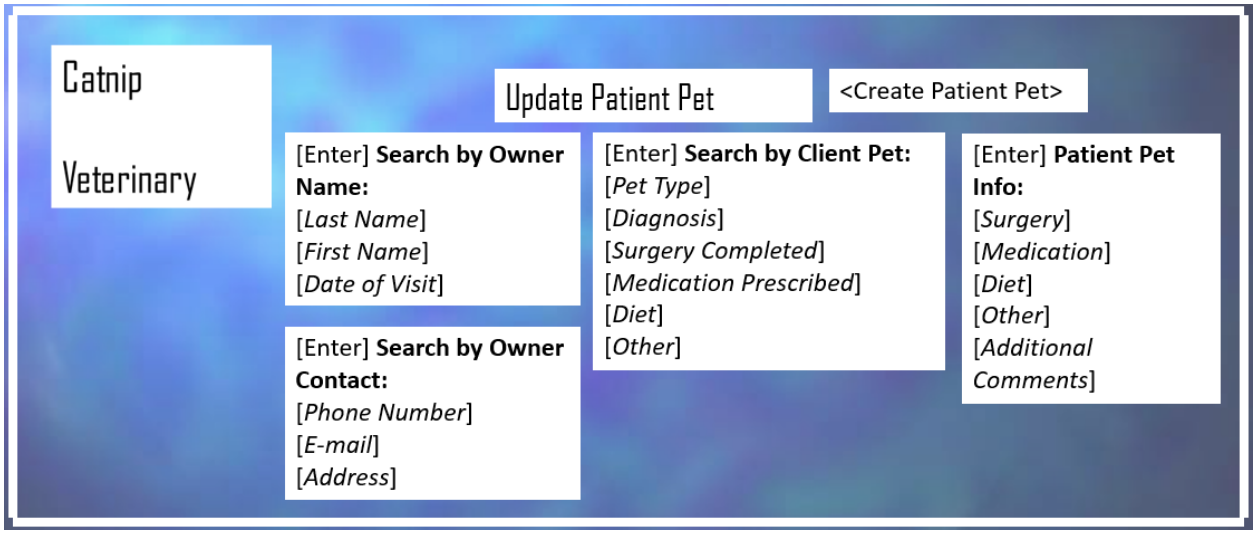
Update Client



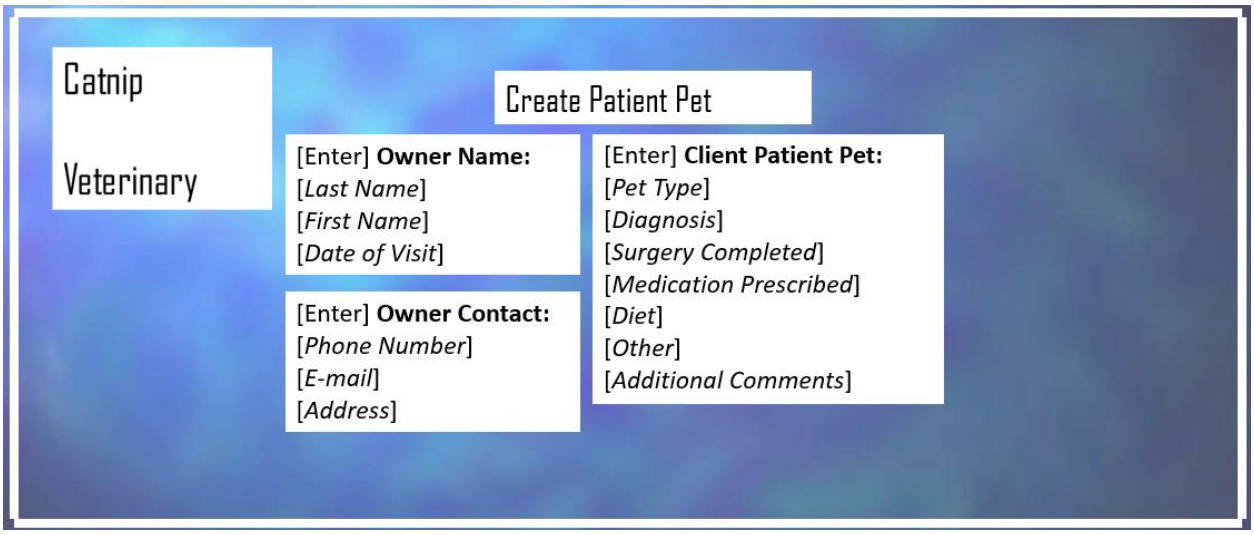
Create Client



Update Patient Pet



Create Patient Pet



Make Appointment

Client Report

Usability Test Report

Upon first opening up the program, the user is forwarded to the 'main menu' on the main menu the user chooses between 4 options within the program, some of which have extensions to other forms and reports. The 4 options to choose from are: *Update Client, Update Patient Pet, Make Appointment, & Client Report.* The 'Update Client' form is used for recording the changing of information of a current client who has visited the veterinary before. Within this window, the user can select the 'Create Client' extension. The user will then be directed to a new window where a new client is recorded, taking down the necessary information such as name and contact information. The 'Update Patient Pet' form is used for changing information of a current patient pet. This is used usually after surgeries, prescribing medication, and after follow up appointments. Within this window, the user can select the 'Create Patient Pet' extension. Here the user enters a new patient pet information, such as the breed and age; as well as the reason for visit. The 'Client Report' window is a display window of client information. Information from the fore-mentioned windows is automatically transferred to the Client Report window. No editing is done in this window. Finally, the 'Make Appointment' window is used when a client makes an appointment with one of the veterinaries for their patient pet. Necessary information is recorded such as client information, patient pet information, reason for visit, and initial diagnosis.

We got two people and they asked questions about how their experience using and navigating through our web pages. We took their information down, the two individuals we got were Surabhi Swarup and Gabe Ryan. We told them what our website was about and told asked them to discuss what we could do to make our website easier to use, more appealing, and if our web pages had all the necessary components for a client. As a result, we got good feedback on how our web pages were laid out and how easy it was to navigate them.

Surabhi and Gabe both said that the colors should be more neutral so we changed that part of the web pages. Before it was a bright red/orange color scheme but we switched it to neutral colors so it is easier to read. They said it was easy to navigate through our pages and simple to edit an appointment.

They said our web pages were very unique and sophisticated and it goes really well with our business.

A few things they told us to change was the color scheme as we mentioned before, but they also said to keep our Home Page simpler, and have our navigation icons the main point of attraction for that page. We got positive remarks on how

easy it was for them to use, and it saves a lot of time rather than calling the office, being on hold, and changing the appointment or making a payment.

Overall, we got great feedback from the few people we asked to review our web pages. The minor details and changes that they suggested, we had made changes to the prototype to create our final web pages. Also, they really liked the how the format was of our web pages and how it went step by step. The content was perfect amount, where it did not fill the page too much. Finally, we got good compliments on how consistent our web pages were and how they followed the same color scheme and format for all.

Executive Summary

Dr. Catnips Veterinary Practice has the opportunity to grow as a business and of course increase profits along with it. Investing in this new information system will increase employee satisfaction, customer base, profit, and overall productivity. The proposed system will require the transfer of data from the old pen-and-paper 'database' and into the new computerized professional database. This will create ease of access when accessing company internal functions and customer information. The new software system will make the practice more efficient, allowing for more client pets to be treated, and an increase in customer base. We estimate that the new system will see a steady increase of roughly 15% in profits each year, and allow for expansion to another location by year 5.

In a broad scope, the project has 3 simple steps: Installing the new system → Transferring data from the as-is system onto the new database → and training employees on the new information system. The new system lays out the process of making appointments, updating medical records, billing, and inventory and payroll management. All necessary functions for the success of the veterinary practice. The new interface will be simple and easy for the back office to learn. It includes a main menu with 4 simple options of navigation: update client, update patient pet, make appointment, and client report. Extensions on the update client and update patient pet are create client and create patient pet.

If the new system is approved, we will need to install the new system and transfer the existing data onto the new system. Following that we will need to train employees on the new system so they can efficiently use it. Training employees on the new system will cost the company roughly $2,330 in revenues due to loss of potential profits and the actual cost of the training. Throughout the first year we can expect about 60 patients per week, increasing 15% yearly in customers. The NPV of this project factoring in all costs and benefits is $484,237.08 over a 5 year period. The system will allow the company to expand to another location in 5 years.