

Information Technology

I.T PAT Phase 1

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1) Scenario: Definition of Task

My role is to design software and implement features to make the SPCA staff's shift to digital computing easier. As the COVID 19 Pandemic has caused much struggle for many Non-Profit Organizations, management and daily tasks within these organizations are trying to move from hard copy paperwork to digitized documents as focus on computing has increased because of the 'Work from Home' strategy. The spread of the Virus can also be halted as multiple people will no longer need to reference the same physical documents.

1.1) Problem Identification and Possible Solutions

The SPCA is constantly rescuing and sheltering animals, as well as providing services to those who have pets. Because of the Pandemic, we need to bring human interaction to a minimum, so a software solution must be designed to accomplish any task that can be done through software.

Studies have shown that the SPCA takes in hundreds of animals every month. It is also common for the organization to run out of space to keep these animals. Having decreased funding doesn't make it any easier. Interviews with volunteers show that the work pace at the SPCA is incredibly fast as you are constantly keeping up with animals, phones, and paperwork. There is also a difficulty in gaining volunteers, so any process that can be automated must be automated.

Lots of information must be stored. This can range from medical info about the animals and their identity to contact information of owners who have kept their pets in the SPCA's Kennel. This information must be accurate, so users must ensure it is correct. The vets at the facility need this information to perform any operations that the injured may need, and potential adopters will want to know as much of their new companion as possible. If any information is missing or unavailable this obviously poses a problem, so storing everything in a database seems like a suitable solution. Password protection measures will be utilized so that no information can be edited by third parties. In case of emergency, a duplicate database will also be produced.

2) User Requirements and Capabilities

This Program will feature 2 users, each having their own modes: The Volunteer User and the Admin Staff User. The admin mode will be granted elevated privileges to the database and settings.

Function	Volunteer	Admin
Log in	✓	✓
View Database	✓	✓
Interact with Database (Add, Select, Edit, Delete)	×	✓
View animal IDs	×	✓
Change UI Theme	×	✓
Change Kennel Prices	×	✓
View Application Documentation	✓	✓
Print files from application	✓	✓

3) Design the Database

The database consists of 3 tables. One to handle all the animals and information related to them. The other for animals that occupy the kennels, and one more for the shop in the SPCA. The following screenshots show the design of my database:

tblKennel		tblAnimals	
Field Name	Data Type	Description (Optional)	
AnimalID	AutoNumber	The Animal ID used to identify an animal.	
AnimalName	Short Text	Contains the animal's name.	
AnimalNeutered	Yes/No	Determine's whether animal is neutered or not.	
AnimalDescription	Long Text	Contains short paragraph about Animal's visual appearance.	
AnimalMedical	Long Text	Contains short paragraph about Animal's medical history.	
AnimalAge	Number	Stores the animal's age.	
AnimalType	Short Text	Store's what kind of animal the animal is.	
AnimalFound	Date/Time	The date the animal was found/rescued.	
AnimalGender	Short Text	Stores the animals gender.	
AnimalHasOwner	Yes/No	Determines if animal has an owner.	

1- This shows the design for the table concerning animals.

tblAnimals		tblKennel		tblShop		tblStaff	
Field Name		Data Type		Description (Optional)			
ID	AutoNumber	Stores the Shelter ID					
KennelType	Short Text	Determine's the kind of kennel. (Eg: Standard, Deluxe)					
KennelPrice	Currency	Determine's the price of a kennel.					
AnimalInKennel	Short Text	Determine's whether the kennel is occupied or not.					

2- This shows the design for the table concerning Kennel Types.

tblAnimals

tblKennel

tblShop

tblStaff

	Field Name	Data Type	Description (Optional)
	ID	AutoNumber	Stores the Object's ID.
	Item	Short Text	Stores the Items name.
	ItemValue	Number	Stores the Items value.
	SecondHand	Yes/No	Determins wheter the item was second hand or not.

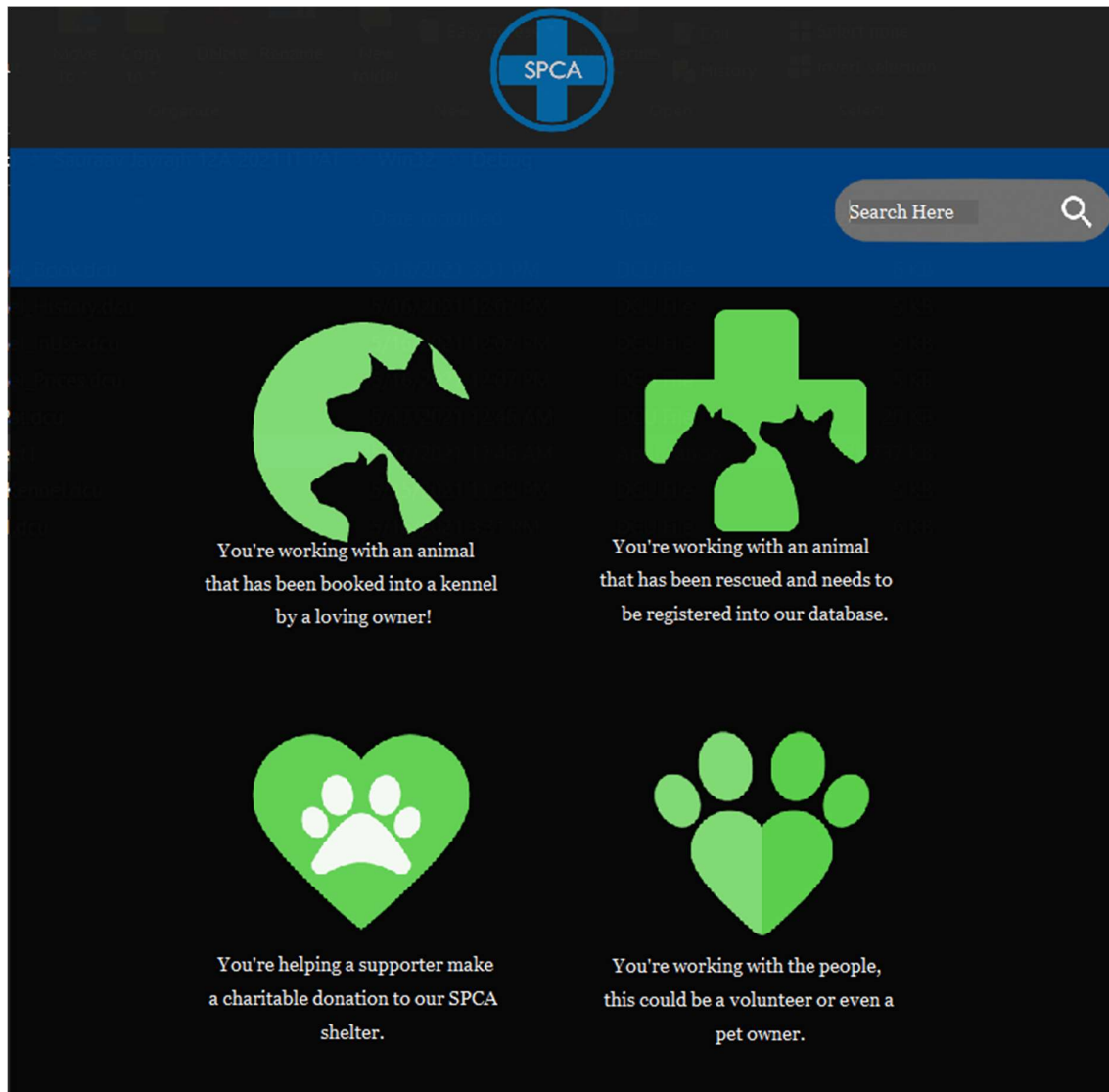
4- This shows the design for the table concerning items in the Charity Shop.

tblAnimals		tblKennel		tblShop		tblStaff	
	Field Name	Data Type	Description (Optional)				
	ID	AutoNumber	Stores Staff Member ID.				
	EmployeeName	Short Text	Stores Staff Member's Name.				
	Age	Number	Stores Staff Member's Age.				
	Date Joined	Date/Time	Stores the date Staff Member joined.				
	Birthday	Date/Time	Stores Staff Member's birthday.				
	Picture	Attachment	Stores image of Staff Member.				
	Gender	Short Text	Stores Gender of Staff Member.				

3- This shows the design for the table concerning the SPCA Workers.

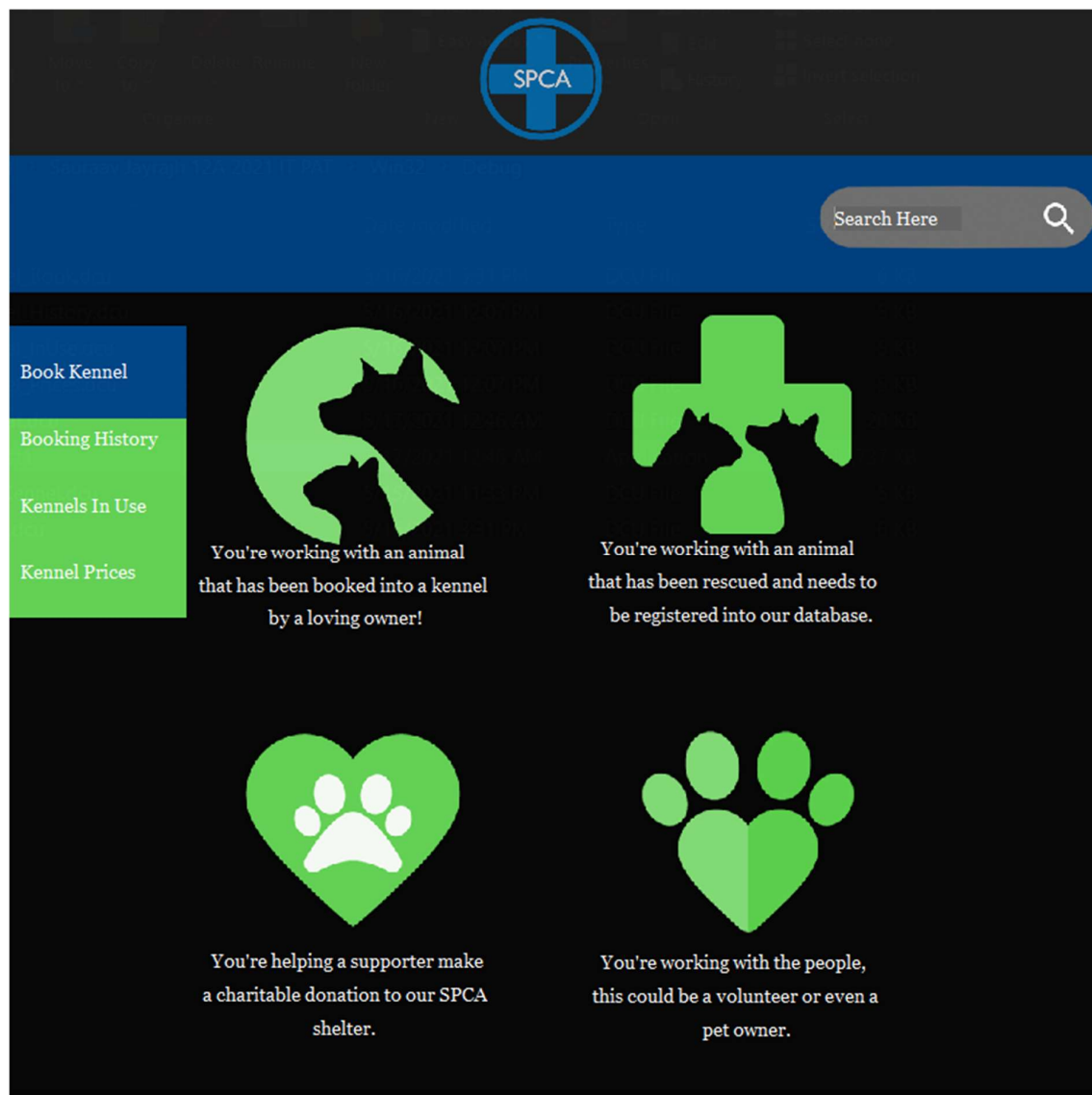
4) Design the GUI

The color scheme for the UI is directly related to the color scheme from the SPCA Website. A dark mode aesthetic has been set up for comfort of the viewers eyes, as they will be expected to spend most of their day looking at their screen. The User can see the 4 main categories that the application will branch of into.

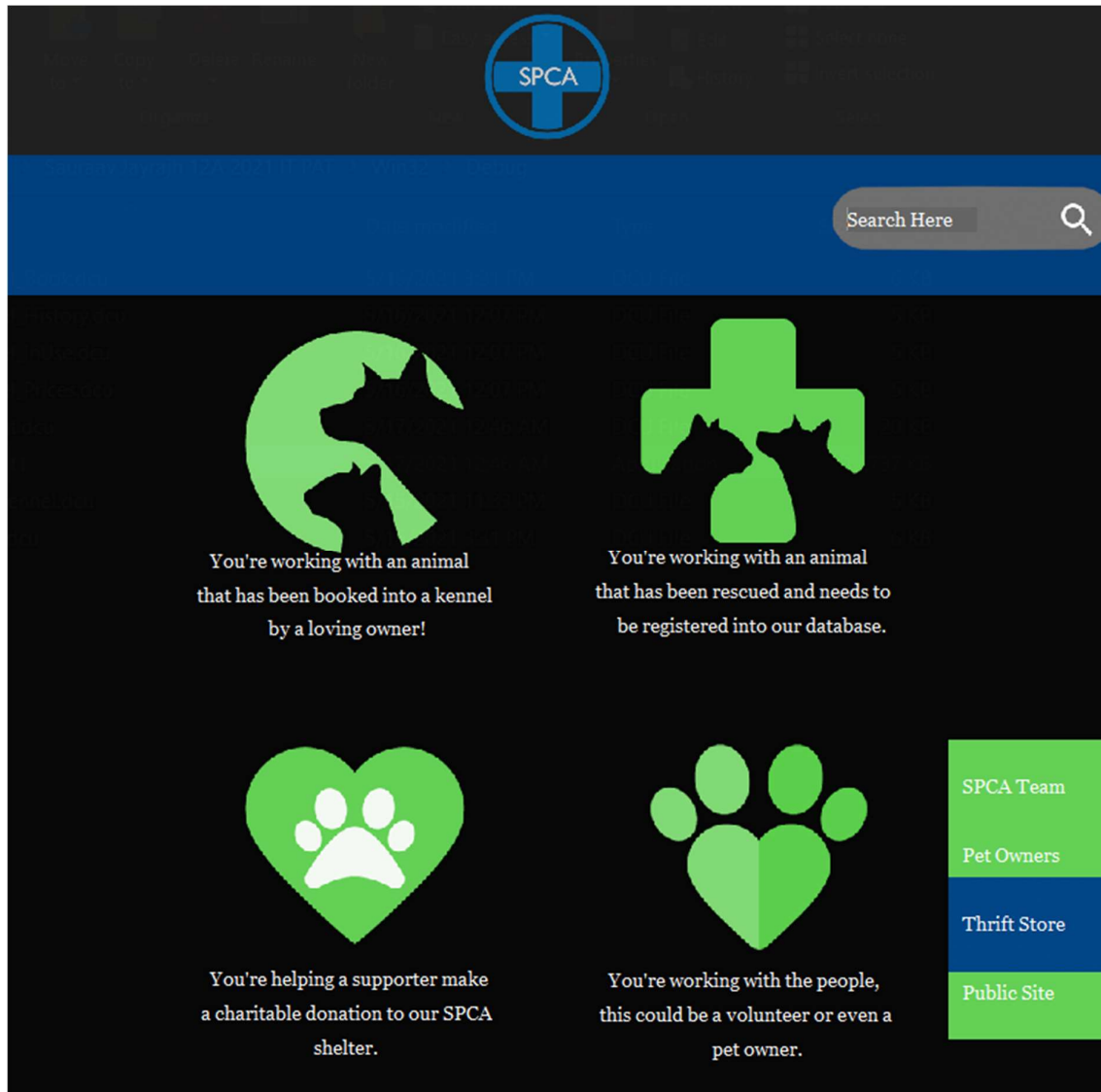


Screenshot 5: The Application Main Form

As the user selects a category, a ‘side sliding’ menu will smoothly make its way out to allow the user to specify what they want to do next. These are another 4 options that change on the side sliding menu according to what category is initially selected. (Note in Screenshot 2, when the ‘Kennel’ category is selected, the sliding menu options are: ‘Book Kennel’, ‘Booking History’, ‘Kennels in Use’ and ‘Kennel Prices’. In Screenshot 3, after clicking on the ‘Community’ category initially, the sliding menu options have now become: ‘SPCA Team’, ‘Pet Owners’, ‘Thrift Store’, and ‘Public Site’.). The labels are different for every category.

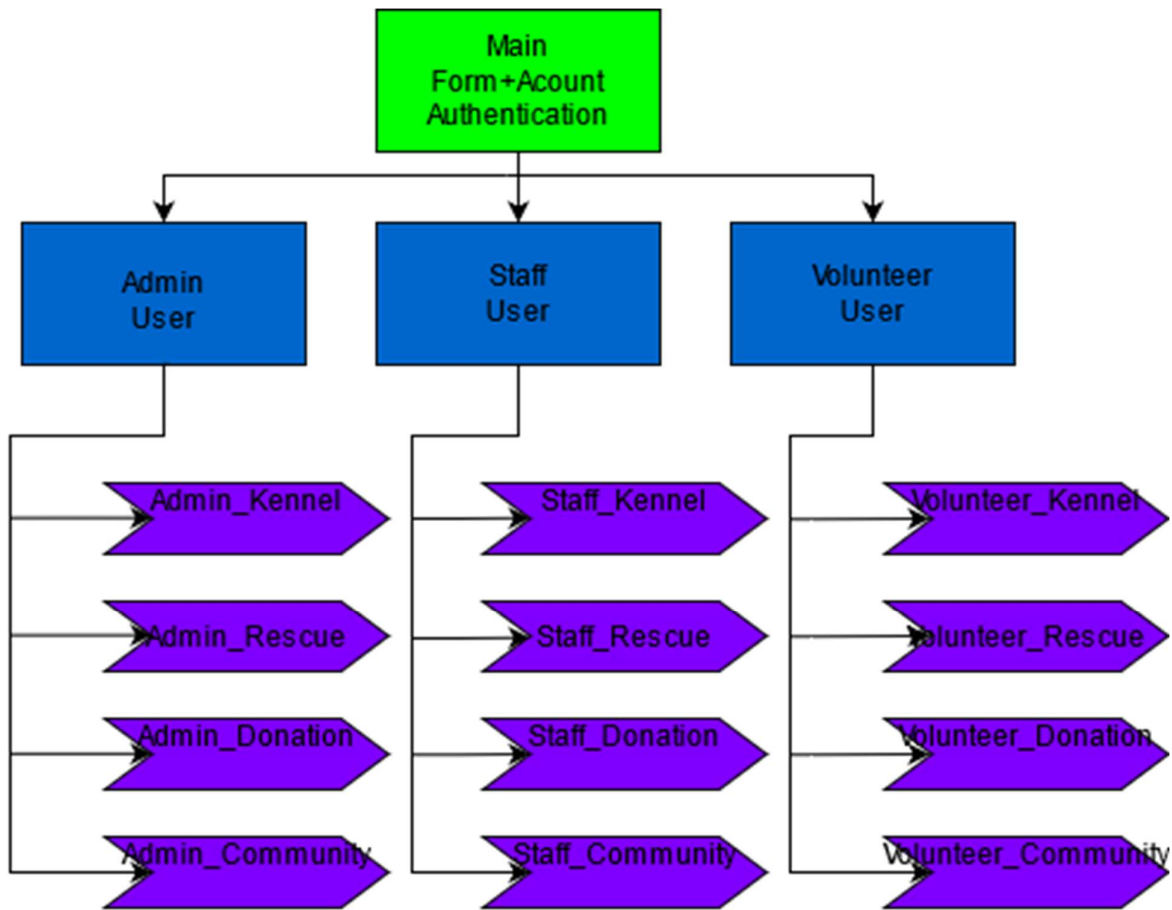


Screenshot 2: The Application Main Form with the sliding menu onscreen.



Screenshot 3: The Application Main Form with the sliding menu active in another category.

More UI Elements and features will be added as development of the PAT Progresses and Phase 2 nears completion.



Flowchart 1: This is a navigational flow diagram. It explains how the User will log in through the main form and what content is accessible under each account type.

5) Data Dictionary

Word	Definition and Use
Database	An organised collection of data stored in a computer. Data will be stored and called upon from the database for majority of the tasks in the system. Data validation techniques will be used to ensure the Integrity of Data. Links will be made to show the relationship between fields and data.
Text Files	A text file is a computer file that only contains text and has no special formatting. They will be used to store the system configuration and settings because of this characteristic.

Classes and Objects	A Class consists of fields, methods and properties which defines character and behaviour of an object. Objects are dynamically allocated blocks of memory whose structure is determined by their class type.
Variables	A variable is used to store information in a data type. These data types can be strings (for text), integers (for whole numbers) or real (for decimal numbers). They will be used throughout the program for calculations and logic.
Array	An array is a series of variables of a data type. They will be used to store inputs in this project.

6) IPO (Inputs /Process (Validation) /Output)

<u>Form Name: Admin/Staff/Volunteer_Kennel</u>								
<u>Input</u>				<u>Validation</u>		<u>Output</u>		
<u>Source</u>	<u>Data Type</u>	<u>Format</u>	<u>GUI Component</u>	<u>Occurance</u>	<u>Error Message</u>	<u>Data</u>	<u>Format</u>	<u>GUI Component</u>
Mouse Click	String	Short Text	ComboBox	User Enters Invalid Kennel Type	"Please select a valid Kennel Type"	Kennel Type	String	RichEdit
Keyboard Entry/Mouse Click	Integer	Currency	SpinEdit	User Enters invalid number.	"Please enter a valid number"	Kennel Price	String	RichEdit
Mouse Click	Boolean	Yes/No	CheckBox	Value changes depending on if the box is checked.	-	Kennel Vacancy	String	RichEdit

Form Name: Admin/Staff/Volunteer Rescue

<u>Input</u>				<u>Validation</u>		<u>Output</u>		
<u>Source</u>	<u>Data Type</u>	<u>Format</u>	<u>GUI Component</u>	<u>Occurance</u>	<u>Error Message</u>	<u>Data</u>	<u>Format</u>	<u>GUI Component</u>
Keyboard Entry	String	Short Text	Editbox	Editbox is blank.	“Please enter a name”	Animal Name	String	RichEdit
Mouse Click	Boolean	Yes/No	CheckBox	Value changes depending on if the box is checked.	-	Animal Neutered State	String	RichEdit
Keyboard Entry	String	Long String	RichEdit	Richedit is left blank.	“Please describe the animal”	Animal Description	String	RichEdit
Keyboard Entry	String	Long String	RichEdit	Richedit is left blank.	“Please enter the animal’s medical information”	Animal Medical History	String	RichEdit
Keyboard Entry/ Mouse Click	Integer	Number	SpinEdit	Value is set to 0	“Please enter a valid age”	Animal Age	String	RichEdit
Keyboard Entry	String	Short String	Editbox	Editbox is left blank.	“Please enter the animal kind”	Animal kind	String	RichEdit
Mouse Click	DateTime	Date/Time	DateTimePicker	No date is picked	“Please pick a date”	Date Animal was registered	String	RichEdit
Mouse Click	Integer	Short Text	RadioGroup	Nothing is selected	“Please select a gender”	Animal Gender	String	RichEdit
Mouse Click	Boolean	Yes/NO	CheckBox	Value changes depending on if the box is checked.	-	Animal Owner Existance.	String	RichEdit

Form Name: Admin/Staff/Volunteer Donations								
Input				Validation		Output		
Source	Data Type	Format	GUI Component	Occurance	Error Message	Data	Format	GUI Component
Keyboard Entry	String	Short Text	EditBox	No information is entered.	“Please select an item name”	Item Name	String	RichEdit
Keyboard Entry/Mouse Click	Integer	Currency	SpinEdit	User Enters invalid number.	“Please enter a valid number”	Item Price	String	RichEdit
Mouse Click	Boolean	Yes/No	CheckBox	Value changes depending on if the box is checked.	-	Item Used State	String	RichEdit

Form Name: Admin/Staff/Volunteer Community								
Input				Validation		Output		
Source	Data Type	Format	GUI Component	Occurance	Error Message	Data	Format	GUI Component
Keyboard Entry	String	Short Text	EditBox	No information is entered.	“Please select an item name”	Worker Name	String	RichEdit
Keyboard Entry/Mouse Click	Integer	Number	SpinEdit	User Enters invalid number.	“Please enter a valid number”	Worker Age	String	RichEdit
Mouse Click	DateTime	Date/Time	DateTimePicker	No date is picked	“Please pick a date”	Worker’s Birthday	String	RichEdit
Mouse Click	DateTime	Date/Time	DateTimePicker	No date is picked	“Please pick a date”	Date Worker was registered	String	RichEdit
Mouse Click	Image	Attachment	Button	No Image is Selected	“Please select an image”	Worker Photo	Image	TImage
Mouse Click	Integer	Short Text	RadioGroup	Nothing is selected	“Please select a gender”	Worker Gender	String	RichEdit

7) Processing/Flow Diagrams

Processing (WHAT)	Processing (HOW)
Just as the application runs, the user will encounter a log in screen. They will need to enter in a specific password word, depending on what account needs to be accessed.	They will be stored as a variable, and an IF statement will check the authenticity. The variable can be changed at any time from the Admin Menu by entering a new password and clicking confirm.
Upon entering Register Pet Form, the user must enter in all relevant information regarding the animal in question.	An IF statement will check if fields have been left blank. This is to ensure data is as accurate and detailed as possible. Users with Staff and Admin access will be allowed to make changes to the database. Volunteers will only be able to view this data.
The Main Form Selection Menu allows the user to Navigate from 4 options (The Community, Kennels, Rescue and Donations Tabs), and then choose 1 of 4 options from a sub menu with a blue highlight.	This select Menu is a clever use of Panels and Labels. A green panel is put behind labels to act as a highlighter. When the User clicks on a category, the label caption changes. The form to open on the labels next click is determined by its caption. No User can change this as it is a part of the UI Elements.
For the user to search an item or animal, the text entered must be used to filter through the database to find the desired result.	This is done with the “SELECT” command in the SQL language. The content that “SELECT” will find depend on the term searched, checkboxes checked, and items selected in a radio group (Data will be gathered from User Inputs from other components to narrow down search results). All users can perform this action.
The SPCA Staff form will allow the User to see employed staff and	All data here will be stored in another table in the database. However, it will

volunteers. These include all their employment info. Members can be hired or dismissed from here.	be presented neatly through a custom form UI. A special field type used here and not anywhere else is the attachment data type. This will be used for storing Photo IDs. Only Admins can access this.
If the user wants to book their pet into a kennel, all information about the pet, as well as the user's details must be filled into the form. Once the Complete button is pressed, the data will open in a new window to be confirmed.	The Data will be collected using variables, arrays, and functions. IF statements will be used for radio groups and checkboxes. All users can access this.

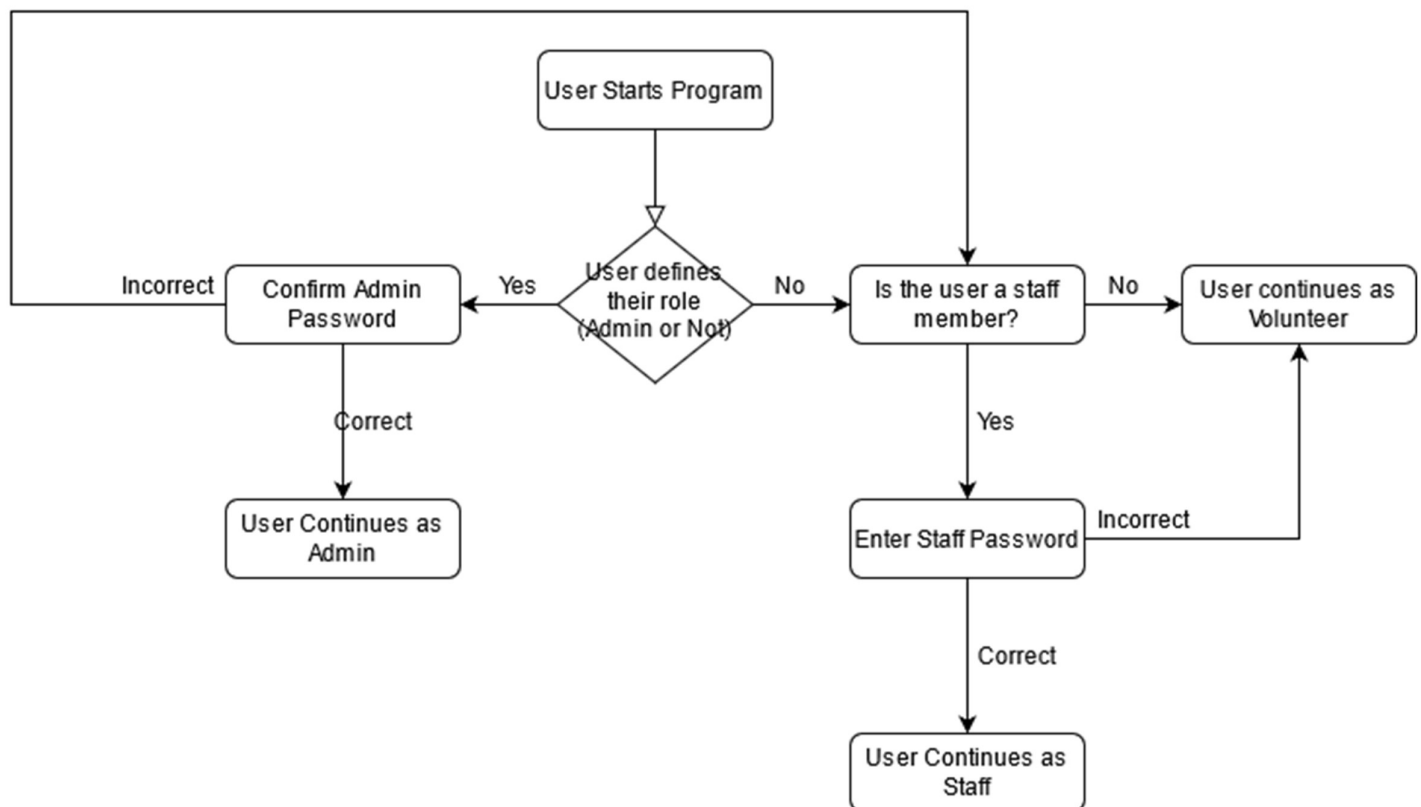


Figure 1: Diagram explains the log in screen

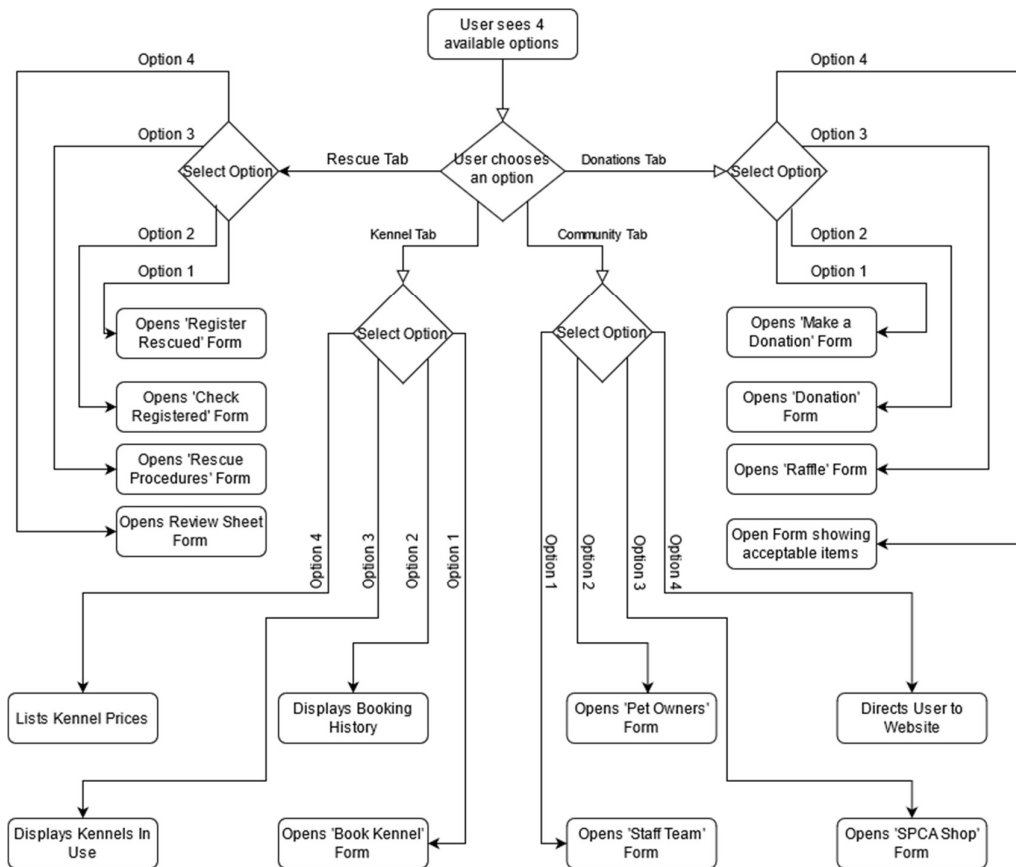


Figure 2: Diagram explains the main form operations

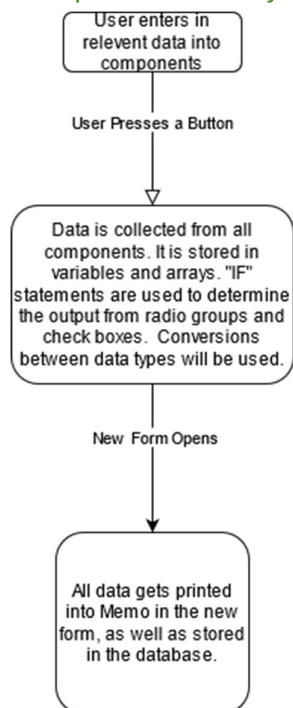


Figure 3: This Diagram explains the process for the Animal Registration and Thrift Store Forms.