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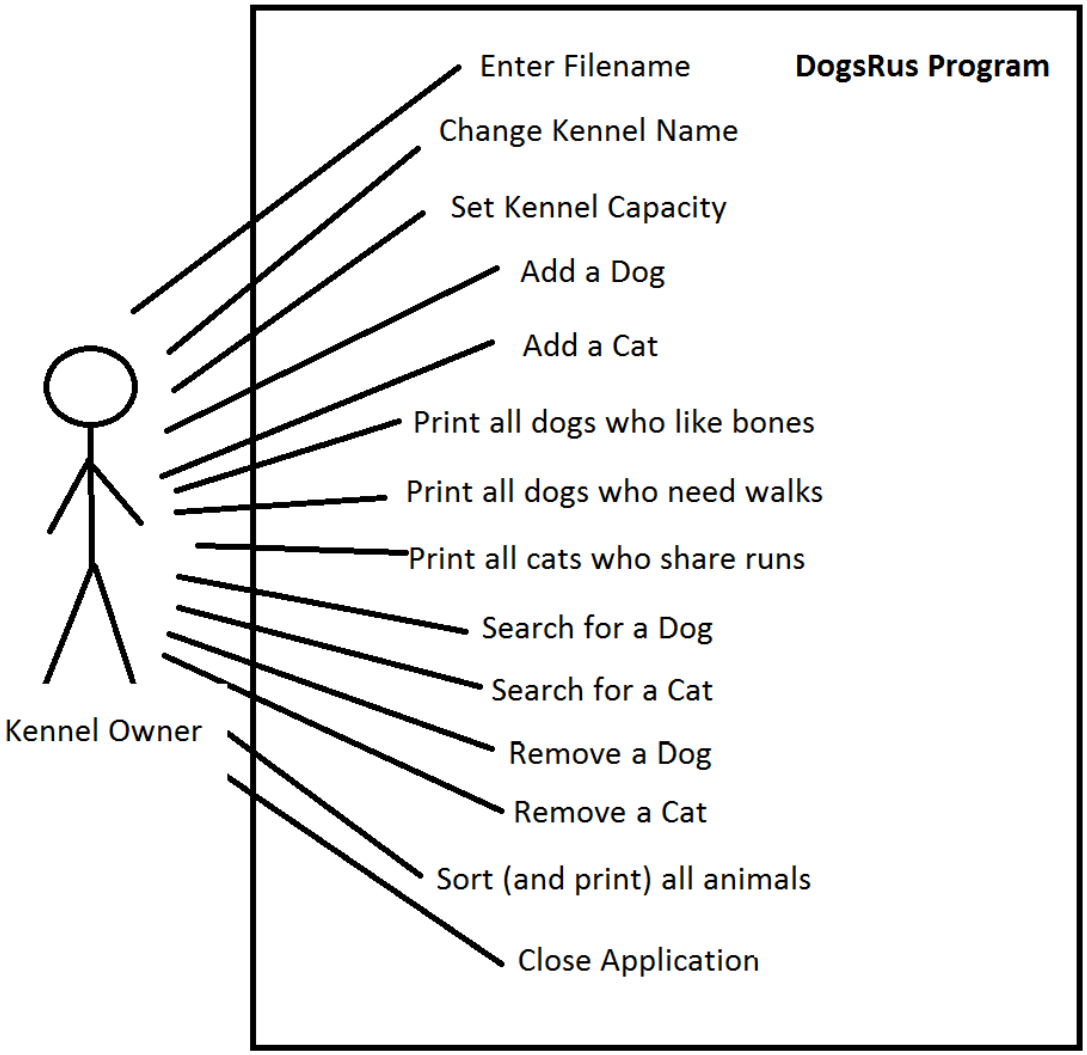
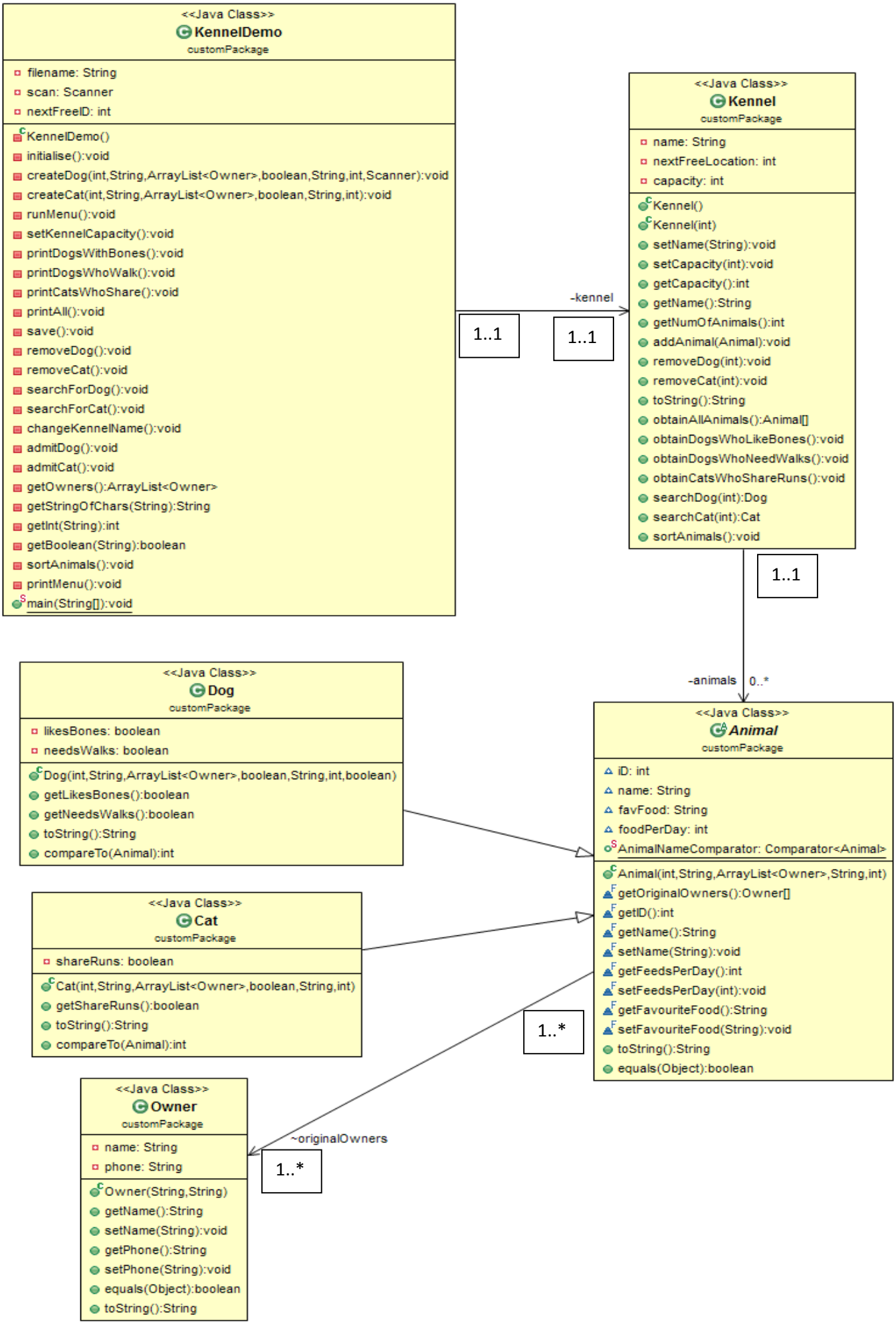
DogsRUs

Use Case Diagram



Class Diagram



Write-up

I began by creating an Animal superclass to be used for dogs and cats. I made this an abstract class as I never intent to create an Animal. I first moved all the methods from dog into this Animal class. I made these methods final as I did not want them edited in the subclasses. I changed the toString to use a stringbuilder as per the request of the pdf. I gave it 500 characters of space, as it in practice was large enough to not have any errors.

The dog class now only contains getters for likesBones and needWalks as there is nothing that edits these values after they have been initialised. The dog class extends Animal as it inherits things used in its constructor. The Cat class is very similar to the dog class.

Using a stringBuilder for my toStrings was very easy to implement, I found it similar to using string concatenation, but it's a lot more pleasing to work with in its presentation.

The most difficult thing in Kennel was the sorting all animals by name. I eventually took the internet, and followed a tutorial on how to compare value of objects in an arrayList. I had to implement "Comparable" to Animal. From here I adapted some code from the tutorial to compare 2 strings, and called this method from Kennel via "Collections.sort". As a side effect of implementing "Comparable" to Animal I had to include 2 blank methods in Cat and Dog to compile the code.

In total there are 13 menu options (including quit). I could have theoretically cut this down to many fewer, by compressing "add dog" and "add cat" down to add animal, and inside that asking which animal too add, but I decided that having them all accessible on the menu made it quicker to do what you wanted (which was helpful for running repeated tests). It does make it slightly more work to add extra animal types who want the same functions.

I added an "ID" as a solution to the problem of searching for an animal when two animals had the same name. By giving each Animal a unique ID, it makes it really easy to search for, and remove the intended animal from the arrayList. To give each animal a unique ID, I make the "nextFreeID" equal to the largest ID read in during the "initialise" method plus one.

I used a custom package to show I know how to implement one, it does not serve much purpose other than to demonstrate the implementation of one in my project. I found this relatively easy to do. I simply replaced the default package with my own simply name "CustomPackage".

To ensure good error checking, and correct input from the user, I created a few functions called "getStringOfChars", "getInt" and "getBool", as these were called multiple times in the code. I included regular expression when I wanted to enforce a specific input (Such as Y, N, yes or no for weather to do something again, like getting another owner).

I believe I deserve a first for achieving all the goals set in the task in a way which has thorough error checking and makes sense given the situation.

Test table

ID	Menu Option Selected	Description	Inputs	Expected outputs	Pass/ Fail	Comments
1.1	1/2	Test animal name input	Rover	It is accepted	Pass	I only accept letters of the alphabet as input, so numbers may not be in the name of a dog.
			Rover234	It is not accepted	Pass	
1.2	1/2	Test animal owner name input	Shankly	It is accepted	Pass	I do not recognise the " " space as an accepted input for strings, therefore only a forename is accepted. All info requiring a string follow the same rules that both this and 1.1 follow, any further tests for string I will refer to these ones
			Shankly Cragg	It is not accepted	Pass	
1.3	1/2	Test animal owner phone number input	1234	It is accepted	Pass	I only accept 4 digits in a row as input.
			123	It is not accepted	Pass	
			abcd	It is not accepted	Pass	
1.4	1/2	Test add another owner prompt (Y/N)	y	It is accepted	Pass	I accept either "y", "n", "yes" or "no" for this selection. Capitalisation does not
			n	It is accepted	Pass	

			Yes	It is accepted	Pass	matter. All yes or no checks follow this exact same procedure, and when requiring screenshots I will refer to these ones
			No	It is accepted	Pass	
			gibberish	It is not accepted	Pass	
1.5	1/2	Test dog like bones / cat share runs (Y/N)	Mirrored from 1.4	Mirrored from 1.4	Pass	For dogs liking bones and cats sharing runs takes place at the same place sequentially. This input/output is mirrored from 1.4
1.6	1/2	Test animal favourite food	Mirrored from 1.1/1.2	Mirrored from 1.1/1.2	Pass	String input follow same guidelines as 1.1/1.2
1.7	1/2	Test animal number of feeds	3	It is accepted	Pass	Only accepts an int larger than 0
			0	It is not accepted	Pass	
			-3	It is not accepted	Pass	
1.8	1/2	Test ID given to Animal	N/A	It is unique	Pass	When comparing the ID given to those of Animals already in the kennel, we see it is unique.
3.1	3	Test change Kennel name	Mirrored from 1.1/1.2	Mirrored from 1.1/1.2	Pass	String input follows same guidelines as 1.1/1.2 User is taken back to main menu and new Kennel name is printed.

4.1	4	Test that all dogs who like bones are printed	N/A	Only dogs who like bones are printed	Pass	The only dog who likes bones is printed
5.1	5	Test that all dogs who need daily walks are printed	N/A	Only dogs who need walks are printed	Pass	Both dogs who need walks are printed
6.1	6	Test that all cats who share runs are printed	N/A	Only cats who share a run are printed	Pass	All cats in Kennel who share runs are printed
7.1	7	Test search dog	14	Finds and prints information on dog with ID 14	Pass	Only the dog with ID 14 is printed, the cat with ID of 2 isn't printed when searching for a dog
			2	No dog is found	Pass	
8.1	8	Test search Cat	2	Finds and prints information on cat with ID 2	Pass	Only the cat with ID 2 is printed, the dog with ID 14 isn't printed when searching for a cat
			14	No cat is found	Pass	

9.1	9	Test remove dog	14	Removes dog with ID 14	Pass	Only the dog with ID 14 is removed, the cat with ID 2 isn't removed when removing a dog
			2	No dog is found to be removed	Pass	
10.1	10	Test remove Cat	2	Removes cat with ID 2	Pass	Only the cat with ID 2 is removed, the dog with ID 14 isn't removed when removing a cat
			14	No cat is found to be removed	Pass	
11.1	11	Test change Kennel size	2	Not aloud as too small size	Pass	Kennel size can only be changed to an integer equal too or larger than the number of animals currently in the Kennel.
			10	Kennel size changed to 10	Pass	
12.1	12	Sort by name and print all animals	N/A	All Animals printed in alphabetical order	Pass	Animals are printed in alphabetical order

This is the file I used for all of my tests

```
animalsRus
20
3
dog
14
Oliver
1
Shankly
8888
true
9
Chicken
true
cat
2
Dinky
1
James Bond
007007
true
1
Gold fingers
dog
7
IHATEBONES
1
HATESBONES
1994
false
2
NOTBONES
true
```

ID 1.1

Rover being accepted

```
Please enter the name of your dog
Rover
Here you will enter the information regarding the owner(s) of the animal
please enter your name
```

Rover 234 being denied

```
Please enter the name of your dog
Rover234
Please enter characters only from the alphabet (Spaces are not permitted)
```

ID 1.2

Shankly being accepted

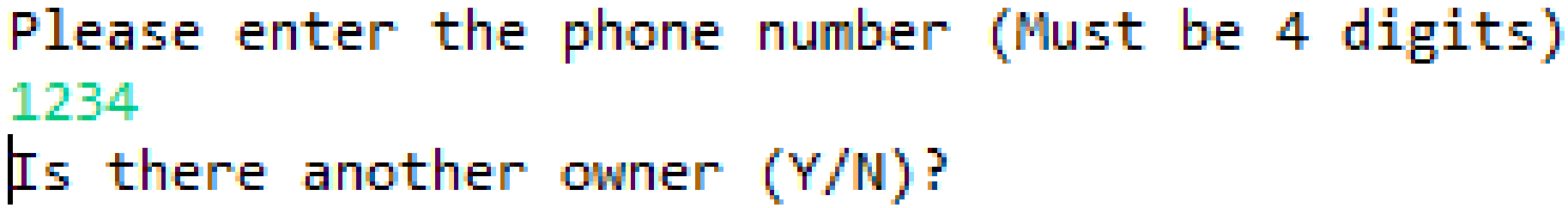
```
Here you will enter the information regarding the owner(s) of the animal
please enter your name
Shankly
Please enter the phone number (Must be 4 digits)
```

Shankly Cragg being denied

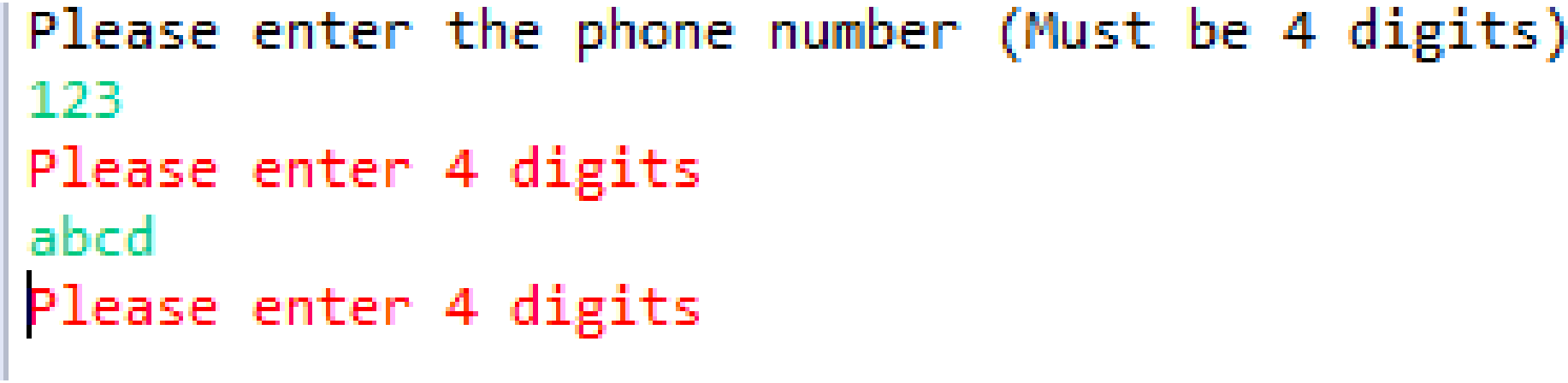
```
Here you will enter the information regarding the owner(s) of the animal
please enter your name
Shankly Cragg
Please enter characters only from the alphabet (Spaces are not permitted)
```

ID 1.3

1234 being accepted



123 and abcd being denied



ID 1.4

Y being accepted

```
Is there another owner (Y/N)?
y
Here you will enter the information regarding the owner(s) of the animal
please enter your name
```

N being accepted

```
Is there another owner (Y/N)?
n
Does he/she likes bones?(Y/N)
```

Yes being accepted

```
Is there another owner (Y/N)?
yes
Here you will enter the information regarding the owner(s) of the animal
please enter your name
```

No being accepted

```
Is there another owner (Y/N)?
no
Does he/she likes bones?(Y/N)
```

Gibberish being denied

```
Is there another owner (Y/N)?
gibberish
Please enter 'y' or 'n'
```

ID 1.7

0 and -3 not being accepted. Then 3 being accepted.

```
How many times is he/she fed a day? (as a number)
0
How many times is he/she fed a day? (as a number)
-3
How many times is he/she fed a day? (as a number)
3
Does he/she need walks?(Y/N)
```

ID 1.8

```
Your dogs ID is: 15
```

ID 4.1

```
11 -  set kennel capacity
12 -  Print all Animals
q - Quit
What would you like to do:
4
Type: Dog
ID: 14
Name: Oliver
Original Owners: [Shankly 8888]
Fav food: Chicken
Food per day: 9
Likes bones: true
Needs walks: true

1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

ID 5.1

```
12 -  Print all Animals
q - Quit
What would you like to do:
5
Type: Dog
ID: 14
Name: Oliver
Original Owners: [Shankly 8888]
Fav food: Chicken
Food per day: 9
Likes bones: true
Needs walks: true

Type: Dog
ID: 7
Name: IHATEBONES
Original Owners: [HATESBONES 1994]
Fav food: NOTBONES
Food per day: 2
Likes bones: false
Needs walks: true

1 -  add a new Dog
2 -  add a new Cat
```

ID 6.1

```
12 -  Print all Animals
q - Quit
What would you like to do:
6
Type: Cat
ID: 2
Name: Dinky
Original Owners: [James Bond 007007]
Fav food: Gold fingers
Food per day: 1
Shares runs: true

1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

ID 7.1

Dog ID 14 being searched for

```
q - Quit
What would you like to do:
7
which dog do you want to search for
14
Type: Dog
ID: 14
Name: Oliver
Original Owners: [Shankly 8888]
Fav food: Chicken
Food per day: 9
Likes bones: true
Needs walks: true

1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

Dog ID 2 being searched for

```
12 -  Print all Animals
q - Quit
What would you like to do:
7
which dog do you want to search for
2
Could not find dog: 2
1 -  add a new Dog
2 -  add a new Cat
```

ID 8.1

Cat with ID 2 being searched for

```
KennelDemo (1) [Java Application] C:\Program Fi
12 -  Print all Animals
q - Quit
What would you like to do:
8
which cat do you want to search for
2
Type: Cat
ID: 2
Name: Dinky
Original Owners: [James Bond 007007]
Fav food: Gold fingers
Food per day: 1
Shares runs: true

1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

Cat with 14 being searched for

```
11 -  set kennel capacity
12 -  Print all Animals
q - Quit
What would you like to do:
8
which cat do you want to search for
14
Could not find cat: 14
1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

ID 9.1

Dog with ID 14 being removed

```
11 -  set kennel capacity
12 -  Print all Animals
q - Quit
What would you like to do:
9
which dog do you want to remove
14
removed 14
1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

Dog with ID 2 not found

```
12 -  Print all Animals
q - Quit
What would you like to do:
9
which dog do you want to remove
2
cannot remove - not in kennel
1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

ID 10.1

Cat with ID 2 removed

```
11 -  set kennel capacity
12 -  Print all Animals
q - Quit
What would you like to do:
10
which cat do you want to remove
2
removed 2
1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

Cat with ID 14 not found to be removed

```
11 -  set kennel capacity
12 -  Print all Animals
q - Quit
What would you like to do:
10
which cat do you want to remove
14
cannot remove - not in kennel
1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```

ID 11.1

Chancing Kennel size to 2 (too small)

```
12 -  Print all Animals
q - Quit
What would you like to do:
11
Enter max number of animals:
2
The kennal would be too small! The change has not been made.
1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
4 -  print all dogs who like bones
5 -  print all dogs who need walks
6 -  print all cats who share runs
```

Changing Kennel size to 10

```
11 -  set kennel capacity
12 -  Print all Animals
q - Quit
What would you like to do:
11
Enter max number of animals:
10
Capacity of Kennel is 10
1 -  add a new Dog
2 -  add a new Cat
```

ID 12.1

Sorting all the animals alphabetically and printing them

```
10 -  remove a cat
11 -  set kennel capacity
12 -  Print all Animals
q - Quit
What would you like to do:
12
Type: Cat
ID: 2
Name: Dinky
Original Owners: [James Bond 007007]
Fav food: Gold fingers
Food per day: 1
Shares runs: true

Type: Dog
ID: 7
Name: IHATEBONES
Original Owners: [HATESBONES 1994]
Fav food: NOTBONES
Food per day: 2
Likes bones: false
Needs walks: true

Type: Dog
ID: 14
Name: Oliver
Original Owners: [Shankly 8888]
Fav food: Chicken
Food per day: 9
Likes bones: true
Needs walks: true

1 -  add a new Dog
2 -  add a new Cat
3 -  set up Kennel name
```