Design Description

Cat Lady's Revenge is a text-based adventure game. Cat Lady leaves her job at a translation company and heads home, only to find that Dog Man has let all three of her indoor cats out of the house. She must go around town rescuing them, take revenge on Dog Man, and be home in time for bedtime at 8:00 pm in order to win the game.

There are seven types of spaces in the game, all of which inherit from the Space class (a virtual class). A pointer representing the player is moved from space to space. Because the spaces are linked using Space pointers to each other, this is easy to accomplish.

When initially creating the board, at first I considered using the Space * data members to dynamically create and then link one space at a time. Then I realized that the specs didn't require this, so I created all of the spaces and then went back and linked them. The default value for the pointer was nullptr, so only the ones that pointed to another space had to be changed.

Throughout the game, the player is able to keep track of Cat Lady's location in two ways. Every time she moves from one space to another, the player is told where she is. Also, a map can be viewed when the she is in the street space.

The virtual action() function is different depending on which type of class it takes place in. The player is also presented with different menu options in each space depending on certain conditions. Some of these conditions are whether the player has been there before and whether the cat has already been rescued from the space.

I made a Bag class to carry objects from space to space. In the storyline of the game, this is Cat Lady's purse. The same Bag object is passed to each space as an argument so that it can be accessed from inside of the space. One of my favorite uses of the bag was making 'revenge' be an invisible item, as a way to tell the final space in the game whether a certain step had been accomplished.

The assignment specified that the container had to be limited. At first I thought about making her purse be able to hold only one cat at a time, but then she would have had to go home after each cat rescue to drop off a cat. I thought this would make the game too tedious, so I decided to limit the amount of money that the purse could hold instead. I set the limit low enough so that a player would always have to go back to work at least once in order to win the game.

The way that Cat Lady earns money at her job is by transcribing "foreign languages" that she doesn't understand. I work at a translation company, and I've been looking forward to including this in my final project for the whole quarter. Cat Lady earns $10 for each sentence she correctly transcribes if the sentence consists of Latin letters. If it consists of symbols (meant to represent languages using non-Latin letters), she earns double. Because this is character matching and not free-form input, I hope this

doesn't violate the assignment specifications. I also didn't want this to be tedious for TAs to grade, so I added an option to just get $50 without typing anything.

The player has a total of 3 hours between the time Cat Lady leaves work and the time she needs to be in bed. Every time she moves to a new space, 5 minutes pass. The time is printed out for every move. I tried to give the player enough time to move around and enjoy the game, but not so much time that the clock could be completely ignored. I wrote a function that calculated and displays the time in a way that I think is interesting.

Reflection

I wasn't able to completely plan out how all of the pieces of this project would fit together before starting to program, so I essentially wrote one scene of the story at a time, and added whatever functionality I needed to make that scene work.

There are several things I would like to improve in Cat Lady's Revenge in the future:
- I think the number of embedded if/if-else statements could be reduced.
- I have a few more idea for places where additional cats could be found. One is a furniture factory where a cat is being used to help distress furniture. Another is a senior center that won't let the cat leave until it's replaced by a dog.
- There is a lot of repeated code in the functions where Cat Lady earns money at work. These could be tightened up significantly.
- I'd like to add a small amount of ASCII graphics and improve the overall formatting of the game.

I really enjoyed creating this game. It took a lot of time, but I can't believe how easy so many aspects of it were for me to implement. I often knew exactly how to solve a problem as soon as I discovered it. I've definitely learned a lot in this class.

Testing Plan

What's Being Tested	Expected Output	Actual Output
Do the correct scenes play out depending on what space Cat Lady enters?	The plot functions as expected and is controlled by the player's movements and choices	The plot functions as expected and is controlled by the player's movements and choices
Does the action() function behave correctly based on various data members?	Yes, the action function is affected by whether Cat Lady has been in a space before, etc.	Yes, the action function is affected by whether Cat Lady has been in a space before, etc.
Is the player allowed to play as many times as they want and end the game if desired?	Menu options work correctly	Menu options work correctly
Does the player win if Cat Lady saves all of the cats, gets	Player wins if these conditions are met	Player wins if these conditions are met

revenge, and gets home by 8:00?		
If the necessary conditions aren't met by 8:00, does the player lose?	Player loses	Player loses
If the player chooses to play again, is everything completely reset?	The second game is exactly like the first and nothing is held over between the two	The second game is exactly like the first and nothing is held over between the two
Does Cat Lady receive the correct amount of money at work?	Cat Lady receives $10 for easy sentences and $20 for hard sentences	Cat Lady receives $10 for easy sentences and $20 for hard sentences
Does Cat Lady's purse only hold $75 at a time?	Cat Lady isn't able to carry more than $75, no matter how much she earns	Cat Lady isn't able to carry more than $75, no matter how much she earns