Alexis Tucker
Final Project
3/16/2018
Design and Reflection

Design and Reflection:

I decided I wanted to make a dungeon-like game. My design for the time limit was the player losing 1 HP every time they change between rooms. They also can lose health from traps, using an incorrect item on an object, or brute forcing something open. I initially designed 4 spaces derived from the Space parent class; BlankSpace, ItemSpace, TrapSpace, and EndSpace.

BlankSpace is a empty room, it can be interacted with but nothing with happen unless an item is used to regain health. There are four possible descriptions of the room that is decided in the constructor.

ItemSpace is similar to BlankSpace in that the room can be interacted with but using an item in it will have no effect unless it is to regain health. Also like BlankSpace, ItemSpace randomly chooses an object to be in the room for the player to investigate, and randomly chooses an item for the player to find. The player will not always find items.

TrapSpace contains a trap that can be disarmed by using wire cutters that can possible be found in an ItemRoom. There is also a possibility to disarm it with the player's hands, but that is not a always successful. The player may trigger the trap trying to disarm it. There is also a perception check, to see if the player even notices the trap. If the player tries to leave the room with the trap being disarmed, then the trap will be triggered, and the player will take damage.

The EndSpace contains the exit to the dungeon. If the player uses the exit key on the door in the room, then the player exits the dungeon and wins the game. If the player tries to use a different item, they will take damage.

Because of the way I designed ItemSpace, there was not a guaranteed chance for the player to get an exit key, or they might get multiple exit keys. Because of this, I designed another space called KeySpace. In KeySpace, there is a box that can be smashed on the ground, triggering a trap that causes damage, to get the key, or the box can be safely unlocked by using a peculiar gem item that can possibly be found in an item room.

	Trap	
End (Exit)	Blank	
	Item	
Key	Trap	Trap
	Item	
	Blank (Start)	

I initially planned to have a map of the dungeon, so I have a Map class, that creates the layout of the dungeon and moves the player around. However, I was struggling with valgrind errors with the array I was trying to use to display the map, so there is not actual map in the game. Instead if the player investigates a room, it will tell them where adjacent room are. The layout of the dungeon is displayed to the left. I also wanted to have a much larger dungeon but deallocating the memory was getting confusing, so I simplified it.

Two other classes are Player and Item. Player holds information about the player, like their health and inventory, which is a vector of items with a max of two items since the dungeon is small. Item holds names and description, which ended up not being utilized because I was struggling with a memory

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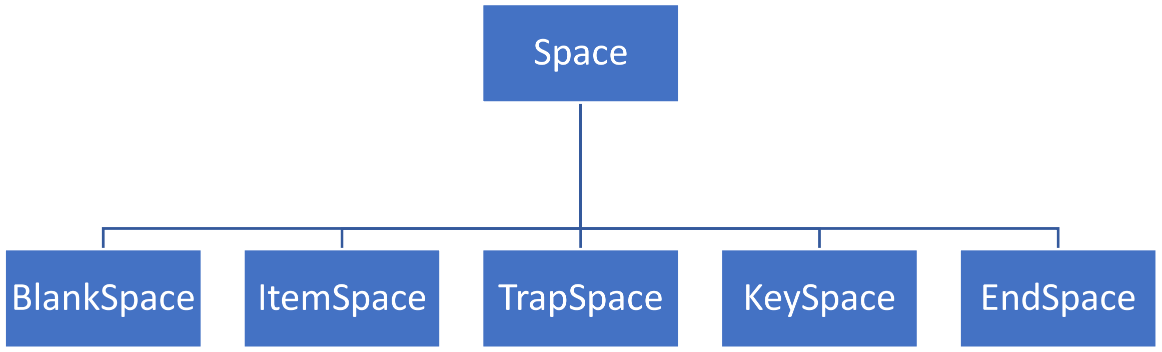
leak caused by strings in the derived classes that were not also in the parent class, even with a virtual destructor.

The final class was game, which held the game menu. The player is given an initial choice to play the game or quit. If the they choose to play the game, the instructions are displayed, the player is shown the room description of their current location, then given options to investigate the room, check their inventory, use/drop an item, check their health, or change rooms. Based on the player's selection, the appropriate functions are called. Minus the instructions, this loops until the player exits the dungeon or their HP reaches 0 or below. Once an end condition is reached, it displays if the player wins or loses.



Test Table

Test Plan	Input Values	Expected Outcomes	Observed Outcomes	Changes Made
Input an integer that is not a valid choice	An integer outside of selection range	Error message and loops for new input until valid input is entered	Error message and loops for new input until valid input is entered	None
Input a non-integer	Any non-integers such as a, A, @	Error message and loops for new input until valid input is entered	Error message and loops for new input until valid input is entered	None
Player chooses to quit	2	Game exits	Game exits	None
Player chooses to play the game	1	Game starts	Game starts	None
Player enters a trap room	None	A perception roll determines if the player notices the trap, if they do not	Player only has a chance to notice the trap if they choose	Forces the player to investigate the room when they enter a trap room

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		the trap triggers, otherwise they are given the option to disarm it.	to investigate the room	
Player disarms trap	None	If player uses wire cutters in the room, 100% disarm rate, if the player chooses to disarm with their hands, there is a chance of failure and the trap activating.	If player uses wire cutters in the room, 100% disarm rate, if the player chooses to disarm with their hands, there is a chance of failure and the trap activating.	None
Player finds an item	None	Item is added to inventory	Item is not added to inventory	Changed Player object to a pointer, Item now added to inventory
Player uses an item to restore health	None	Health is restored	Health is restored	None
Player uses an item in a room (that is not a health item)	None	If item the player uses matches the one requested by the room, the player successfully opens something/disarms something. Otherwise nothing happens, or a trap is sprung depending on the room.	If item the player uses matches the one requested by the room, the player successfully opens something/disarms something. Otherwise nothing happens, or a trap is sprung depending on the room.	None
Player uses the exit key on the exit to the dungeon	None	Door unlocks, player escapes dungeon, wins game	Door unlocks, player escapes dungeon, wins game	None
Player's health reaches <= 0	None	Player dies and loses the game	Player dies and loses the game	None