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CS 162

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Final Project Design

1. main
    a. holds menu function call
2. menu
    a. holds the menu of the game
3. inputValidation
    a. holds input validation functions
4. gamePlay
    a. calls to what space user is in
    b. calls to inventory
5. bag
    a. holds user's inventory
    b. can only hold four items at a time
6. bagNode
    a. struct to hold the next and previous nodes and iten name string
7. land – abstract class
    a. things to do in room – virtual
    b. obtain item - virtual
    c. 4 pointers
        i. top
        ii. right
        iii. left
        iv. bottom
    d. setter/getter functions for top, bottom, left, right
8. mainStreet – derived class of space class
    a. landPlay question
        i. if user answers correctly, item is obtained
    b. function to obtain item
9. adventureLand – derived class of space class
    a. landPlay question
        i. if user answers correctly, item is obtained
    b. function to obtain item
10. frontierLand – derived class of space class
    a. landPlay question
        i. if user answers correctly, item is obtained
    b. function to obtain item
11. toonTown – derived class of space class
    a. landPlay question
        i. if user answers correctly, item is obtained

    b. function to obtain item
12. fantasyLand – derived class of space class
    a. landPlay question
        i. if user answers correctly, item is obtained
    b. function to obtain item
13. tomorrowLand– derived class of space class
    a. landPlay question
        i. if user answers correctly, item is obtained
    b. function to obtain item
14. Simulation
    a. holds the gameplay functions
    b. holds the print map function

Test Plan and Results

TEST CASE	INPUT VALUES	EXPECTED OTUCOMES	OBSERVED OUTCOMES
main menu, start game	1, 1, 1	starts player at Main street	starts player at Main street
main menu, start game	2, 3, -4	tell user to enter 1	tell user to enter 1
main street, take photo	1 -> 3	quiz question, correct answer, obtain Mickey photo	quiz question, correct answer, obtain Mickey photo
main street, take photo	1->2	quiz question, wrong answer, don't obtain Mickey photo	quiz question, wrong answer, don't obtain Mickey photo
main street, don't take photo	2	ask user which land to go to next	ask user which land to go to next
main street, ask user if they want photo	-5, 3, f	enter 1 or 2	enter 1 or 2
direction from Main Street	2, c	ask user to try again	ask user to try again
direction from main street	1, 3, 4	travel to corresponding land	travel to corresponding land
Toon Town, sing song	1->2	quiz question, wrong answer, don't obtain item	quiz question, wrong answer, don't obtain item
Toon Town, sing song	1->1	quiz question, correct answer, obtain Pooh badge	quiz question, correct answer, obtain Pooh badge
Toon Town, don't sing song	2	ask user which land to go to next	ask user which land to go to next
Toon Town, ask user if they want to sing	-3, 0	enter 1 or 2	enter 1 or 2
direction from Toon Town	2, 3, 4	travel to corresponding land	travel to corresponding land

direction from Toon Town	1, a	ask user to try again	ask user to try again
Fantasyland, take photo	1 -> 3	quiz question, wrong answer, don't obtain item	quiz question, wrong answer, don't obtain item
Fantasyland, take photo	1->2	quiz question, correct answer, obtain Pooh photo	quiz question, correct answer, obtain Pooh photo
Fantasyland don't take photo	2	ask user which land to travel to next	ask user which land to travel to next
Fantasyland ask user if the want photo	-1	ask user to enter integer 1 or 2	ask user to enter integer 1 or 2
direction from Fantasyland	1, 4, -2	ask user to enter again	ask user to enter again
direction form Fantasyland	2, 3	travel to corresponding land	travel to corresponding land
Tomorrowland, buy plush	1->1	correct answer, obtain Mickey plush	correct answer, obtain Mickey plush
Tomorrowland, buy plush	1->2	wrong answer, don't obtain Mickey plush	wrong answer, don't obtain Mickey plush
Tomorrowland don't buy plush	2	travel to next land	travel to next land
direction from Tomorrowland	2, 4, 3a	ask user to try again	ask user to try again
direction from Tomorrowland	1, 3	travel to corresponding land	travel to corresponding land
obtain item when already have four items in bag, want to remove	1	oldest item gets stolen and replaced with new item, then ask user where to next	oldest item gets stolen and replaced with new item, then ask user where to next
obtain item when already have four items in bag, don't want to remove	2	discard new item and print items already in bag, then ask user where to next	discard new item and print items already in bag, then ask user where to next
obtain item when already have four items in bag, bad answer	0, 3	enter 1 or 2	enter 1 or 2
Adventureland, buy Pooh plush	1->1	wrong answer, don't get pooh plush, where to next	wrong answer, don't get pooh plush, where to next
Adventureland, buy Pooh plush	1->2	correct answer, obtain pooh plush	correct answer, obtain pooh plush
Adventureland, don't buy pooh plush	2	ask user where to next	ask user where to next
direction from Adventureland	2, 3	can't go that way, ask to try again	can't go that way, ask to try again

direction from Adventureland	1, 4	move to corresponding land	move to corresponding land
Frontierland, sing song	1->1	wrong answer, do not obtain item	wrong answer, do not obtain item
Frontierland, sing song	1->2	correct answer, obtain Mickey badge	correct answer, obtain Mickey badge
Frontierland, don't sing song	2	ask user where to next	ask user where to next
Frontierland, sing song	3, g, -1	ask user to enter 1 or 2	ask user to enter 1 or 2
user walks more than 12 miles and doesn't have either 3 mickey or 3 pooh items		prints stats and says you lose, asks if want to play again	prints stats and says you lose, asks if want to play again
user walks 12 miles or less and has all 3 Mickey items		prints stats and says you win with Mickey winning screen, asks if want to play again	prints stats and says you win with Mickey winning screen, asks if want to play again
user walks 12 miles or less and has all 3 pooh items		prints stats and says you win with Pooh winning screen, asks if want to paly again	prints stats and says you win with Pooh winning screen, asks if want to paly again
play again?	1	shows main menu again	shows main menu again
play again?	2	program exits	program exits
play again?	1g, -2	ask user to enter 1 or 2	ask user to enter 1 or 2

Reflection

I really enjoyed the final project for this class. I like how it was open ended and I could create a theme I was interested in. It helped motivate me to try out things. I also liked how it was using many of the things we learned in previous labs and projects. What was hard was deciding how I wanted to implement what I wanted to do since we learned many different ways to do things. For example, I wasn't sure if I wanted to use an array or vector to store my items or not. I ended up using linkedlist. But once I started it was okay because I was implementing things I did in past labs in projects and tweaking it to fit my final project.

My design is not much different from my final project. My space class is the land class, which is a parent class. The derived classes are 6 different lands. The virtual function of the land class is the landPlay function which plays out what happens in each land. Another notable thing in my design is the bag and bagNode files. These is how the items in my game are held and manipulated.

It was hard to begin because I didn't know where to start. Looking through some of the final projects that were provided by the professor was very helpful because you can see all the different ways people went about their project. Each one is similar yet different and it was interesting. I did like the idea of using a string to keep track of the items from one of the projects. To win my game, you need either 3 Mickey items or 3 Pooh items (one of each). I used a search function to check to see if a string was there and if it was, the function would return true, if it wasn't, then it would return false. I got stuck

here for a while because I was using conditional and statements to check that all 3 of an item were found, but my program was jamming each time that portion of code was called. After a while, I figured out that it was jamming there because sometimes when it's called, there are no items in the inventory, so it was jamming there, so I just added an if statement to check to make sure items were in the bag first before checking to see if 3 of a kind were in the inventory.

Another area I got stuck on for a while was how to move the user between lands. Then I started thinking about it, if I had a Land object that can point to where I am, the lands just need to be connected to each other using the pointers as mentioned in the final project instructions. So once I link all the lands together and specify the lands relative to each other, the land object should be able to "move" between the lands.

I had a memory leak issue with my addBack function in my bag class for a while. I didn't realize I was creating an object twice. This happened to me in my Project 4 as well and I was stuck on it for a very long time, so that is something I have to remember if I am running into issues with memory leaks.

One issue I had was with my destructor in my simulation class. I first just tried doing delete main1, etc. for each land but that was not working. I then realized that since the lands were linked together depending on where the user was, I could start the user pointing at a land, then delete clockwise, and that gave me no memory leaks.

Overall, I found this project quite enjoyable. it was fun creating my own scenarios. I also like video games, so It was interesting to me how I can create my own game. This final project to me was much easier than project 1, which to me was still the hardest project of the course. This was probably because I forgot much of what I learned since I took 225 between 161 and 162, and I didn't even know how to make a menu anymore. Also, as time went on in this course, we can reuse things we used in prior projects, such as input validation, main menus, etc. I really enjoyed this project compared to other assignments in this class. We were given freedom, but still had instructions to follow and guide us, which I liked.