Homework 1

CS-224 Object Oriented Programming & Design Methodologies
Habib University
Fall 2023

1 Guidelines

You need to submit this assignment on **08-September-2023** at **11:59 pm** as the next assignment will be given on the same day. Some important guidelines about the assignment are as following:

- You need to do this assignment alone.

- You will submit your assignment to LMS.

- You need to follow the best programming practices as given in the accompanying document and it is also present on LMS. Failure in doing so will have your marks deducted.

- Submit assignment on time; late submissions will not be accepted.

- Some assignments will require you to submit multiple files. Always Zip and send them.

- It is better to submit incomplete assignment than none at all.

- It is better to submit the work that you have done yourself than what you have plagiarized.

- It is strongly advised that you start working on the assignment the day you get it. Assignments WILL take time.

- Every assignment you submit should be a single zipped file containing all the other files. Suppose your name is John Doe and your id is 0022 so the name of the submitted file should be JohnDoe0022.zip

- DO NOT send your assignment to your instructor, if you do I will just mark your assignment as ZERO for not following clear instructions.

- You can be called in for Viva for any assignment that you submit.

2 Whisker's Odyssey

Meet Whisker, an adventurous feline with an insatiable curiosity, and his devoted owner Alex. One day, Whisker mysteriously vanishes, believed to be catnapped by an eccentric wizard. You step into Alex's shoes, a determined animal lover, who embarks on a journey to rescue Whisker and bring him back home. Your expedition takes you through the

whimsical realm of Petralis, a land filled with talking animals and magical landscapes. To succeed, you must seek out the three elusive lost collar charms, artifacts of great power that, when reunited, are rumored to enable the defeat of the quirky wizard and reunite Alex with his beloved Whisker.

Fig. 1 depicts the enchanting realm of Petralis, where various locations await your exploration. Arrows between locations indicate possible paths, while the cost of travel to a certain location is measured in cat treats that Alex is throwing on the path next to that location.
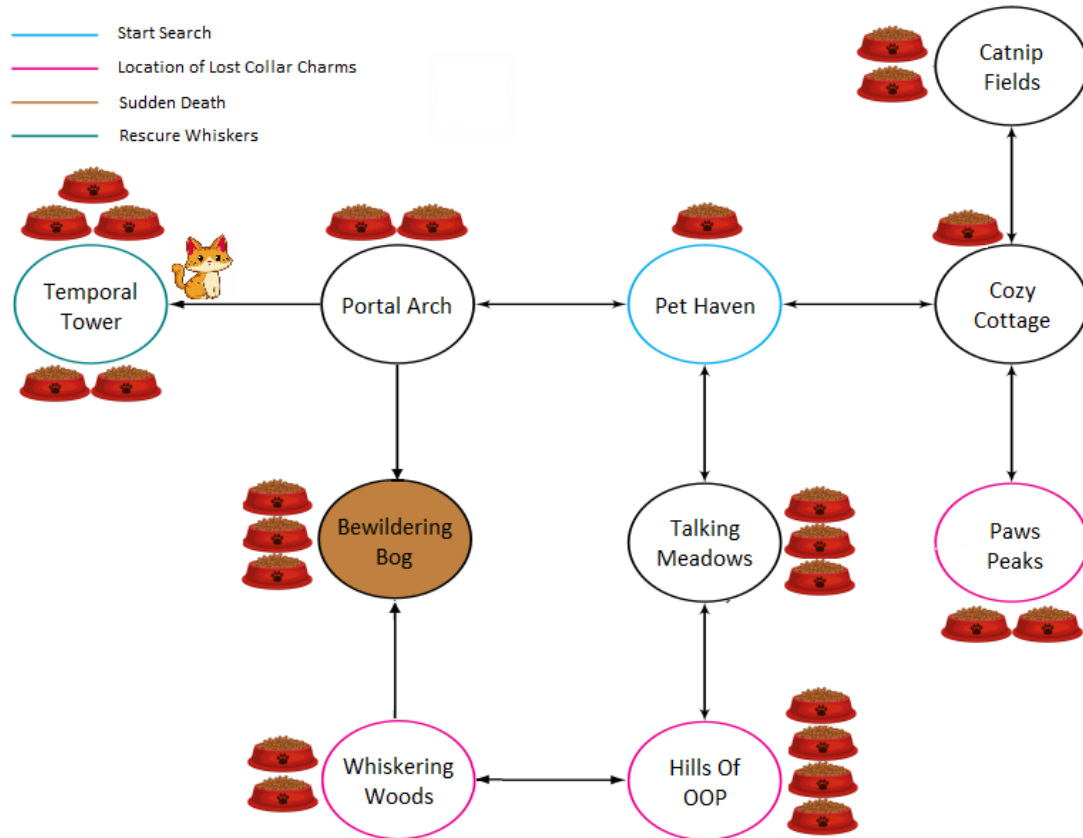

Figure 1: Petrails Map

In this game, you'll immerse yourself in the adventure of rescuing your beloved pet Whisker from the clutches of an eccentric time sorcerer. Here are the rules to guide you on your journey:

- You start your quest at the cozy Pet Haven with 40 bowls of Treats.

- At each location, you can choose to move in one of four directions: north, south, east, or west.

- Only directions indicated on the map are valid moves. Attempting an invalid move, like going north from the Catnip Fields, uses up a move and costs you one bowl of Treats.

- Each valid move requires the number of Treats indicated on the arrow. For example, moving from Whiskering Woods to Hills of OOP might require two Treats.

- Your goal is to collect three Lost Collar Charms from the designated locations before you can rescue Whisker.

- A Lost Collar Charm is automatically recovered when you arrive at the location it's hidden.

- If you arrive at the Bewildering Bog, you find yourself entangled in the bog's maze-like paths and are unable to escape. The game ends, and you lose.

- You can't advance past the Portal Arch leading to the Temporal Tower without possessing all three Lost Collar Charms.

- You can only visit the Portal Arch twice.

- Upon reaching the Temporal Tower, you successfully rescue Whisker, and you win the game!

- However, if you run out of Treats before rescuing Whisker, your energy wanes, and you succumb to exhaustion. The game ends, and you lose... Whisker forever.

3 Task

A bare-bone implementation is given in Odyssey folder. You can move Alex by arrow keys, and it does some arbitrary operations to demonstrate how to use the available functions. You have to provide the implementation of `odyssey.cpp -> makeMove (string direction)` function in accordance with the game rules given above. This function is called every time you press an arrow-key with appropriate direction provided as argument. To modularize the program, you should add other functions as well in the same file, that you call in `makeMove`. You are required to use `enum` at least once for the completion of this task.

Note: A `solution.exe` file of the ideal solution has been provided in your project that serves as reference for you. Moreover, if any rule is not clearly mentioned above or not apparent in the solution, you can implement it at your own discretion.

4 Game Status

The **Game State** is displayed on the top and displays, 'Running', 'Lost', or 'Won' as per game rules. The bottom-left corner displays the game status that shows:

- **Treats**: Initially it shows all the 40 treats available, as you travel the number of treats are reduced.

- **Collars**: Initially there are no collars, but as you find one, you will increment the `nCollarsFound`, and they will be shown next to treats.

5 Available Functions/Parameters

- `moveEast()` : moves the Alex to East.

- `moveWest()` : moves the Alex to West.

- `moveSouth()` : moves the Alex to South.

- `moveNorth()` : moves the Alex to North.

- `treatsLeft` : set it to the number of treats left.

- `nCollarsFound` : set it to the number of collar charms found so far.

- `gameState` : set it to Running, Won or Lost.

6 Rubric

Warnings/Errors	The code had no warnings/errors	1
Comments	The code was properly commented	1
Coding	The code followed best practices guideline	3
Game Logic	Game logic is fully implemented	5
Total		10

1

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