Janys Li

005759685

**CS32 Project 3 Report**

My recursive Goblin movement function is called pathExists, which is in Actor.cpp.

**High-level description of goblin movement function:**

* The function returns a non-empty vector to indicate a path with less than 15 steps is available; it returns the empty vector {} to indicate no path exists.
* Base cases: if the goblin is too far from the player (>15 blocks away), runs out of steps, or hits a wall, return {}
* If reached the player, return a vector with length 1 indicating the current location
* For each of the 4 directions, call the function recursively to explore different directions
* Store and return the path with shortest vector length

**High-level description of generating level with rooms:**

* Initialization:
  + Clear the current space (m\_space).
  + Initialize the entire map (m\_ac\_space and m\_nona\_space) with # to represent walls.
* Room Generation:
  + Generate a random number of rooms between 4 and 5.
  + For each room:
    - Generate random dimensions (width and height) and position (x, y) ensuring the room does not touch the periphery of the map.
    - Check if the new room overlaps with any existing rooms:
    - Iterate through the dimensions of existing rooms to ensure the new room does not overlap.
    - If it overlaps, regenerate the room's dimensions and position.
  + Once a valid room is generated, store its dimensions and center coordinates.
  + Mark the room's area as empty space (' ') in the map.
* Path Carving:
  + Connect each room to the next by carving paths between their centers.
  + Carve horizontal and vertical paths to ensure connectivity.