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S16B

Machine Project Discussion

The purpose of this program is to create a simulation where Little Red Riding Hood (LRRH) will attempt to traverse the player-generated board in order to reach her Granny. She will need to get items that she needs to reach Granny while avoiding all the obstacles that prevent her from doing so. LRRH will attempt to finish the simulation without the help of the player, relying only on her own decision-making skills and memory. The only purpose of the player is to set up the board for LRRH. The player will need to input the dimensions of the board, as well as the location of each of the elements: Granny, Wolf, Woodsman, 1-3 Bakeshops, 1-3 Pits, and 1-3 Flowers.

There are rules that both the player and LRRH have to follow. The player is only limited to a grid size of 8 - 15, and each of the elements needs to be inside of the grid. While LRRH can only win when she reaches Granny with the Woodsman, the Bread, and the Flowers and missing even one of these will result in an automatic loss. LRRH can also lose by falling into a pit or going to the wolf without bread. The feature that determines the win or lose state of LRRH is the inventory system. It is responsible for storing every item that LRRH comes in contact with. It can store the items that will determine if LRRH is going to win when she reaches Granny, or lose when it detects a Wolf, Pit, or Granny, without the necessary items, in her inventory.

As for the behavior, LRRH decides her next move by having a separate board that represents her “memory”. The “memory” board is identical to the game board in terms of dimensions but it is completely empty. LRRH will fill up this board as she walks along the path and uses sense. Every time LRRH uses sense, it stores the object and position on the memory board and replaces the empty spaces with ‘o’ for whenever LRRH passes through the board.

She will rotate, sense, and forward depending on what is in her vicinity based on her memory. She will use sense if she does not know the element in front of her, move forward if she knows it is safe, and rotate when she knows she is going out of bounds or senses danger. She will retrace her steps and go back if she notices that she is trapped. She also can think up of a route to follow based on her needs. She can generate a route towards an unknown tile if she is in front of a tile that she has previously been in, she can generate a route towards Granny if she has everything she needs and knows Granny’s location, and she can generate a route towards a bakeshop when she needs to get more bread to feed the wolf to get to her objective. She also knows when to surrender, which is usually when she realizes that she is trapped with no hope of escaping, when Granny is trapped with no hope of getting to her, or when an item she needs is trapped with no hope of taking it.

With these behavioral patterns in mind, Little Red Riding Hood should be able to make the best decisions in order to efficiently and effectively win the game.