

Programming Assignment #2

Unity version used: 2020.2.1f1

Requirement 1:

Maze is styled the same as the assignment handout. The size of the floor model is 24x24 units. Due to the walls and obstacles, the total amount of nodes present is 427. The following images will display the rooms and clusters.

Rooms:

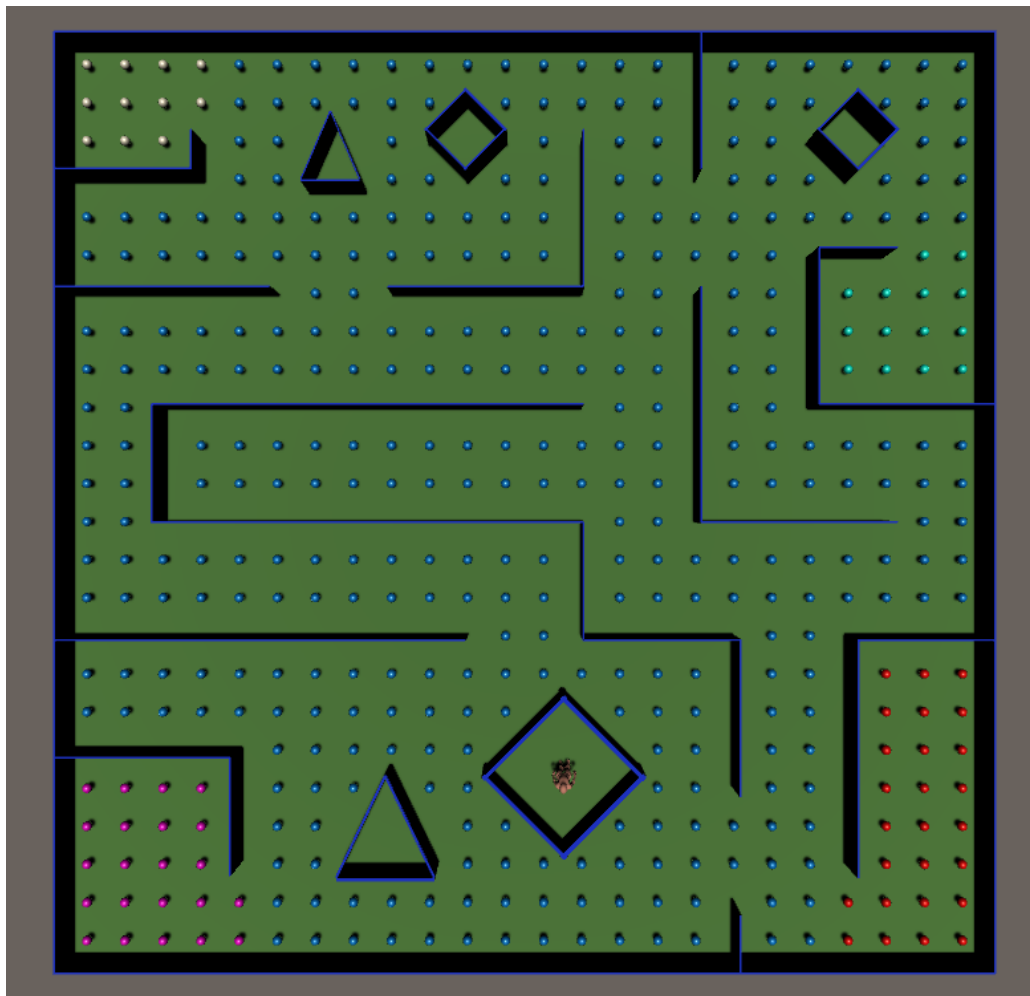


Fig. 1: Room 1 is magenta, room 2 is red, room 3 is cyan, room 4 is white.

Clusters:

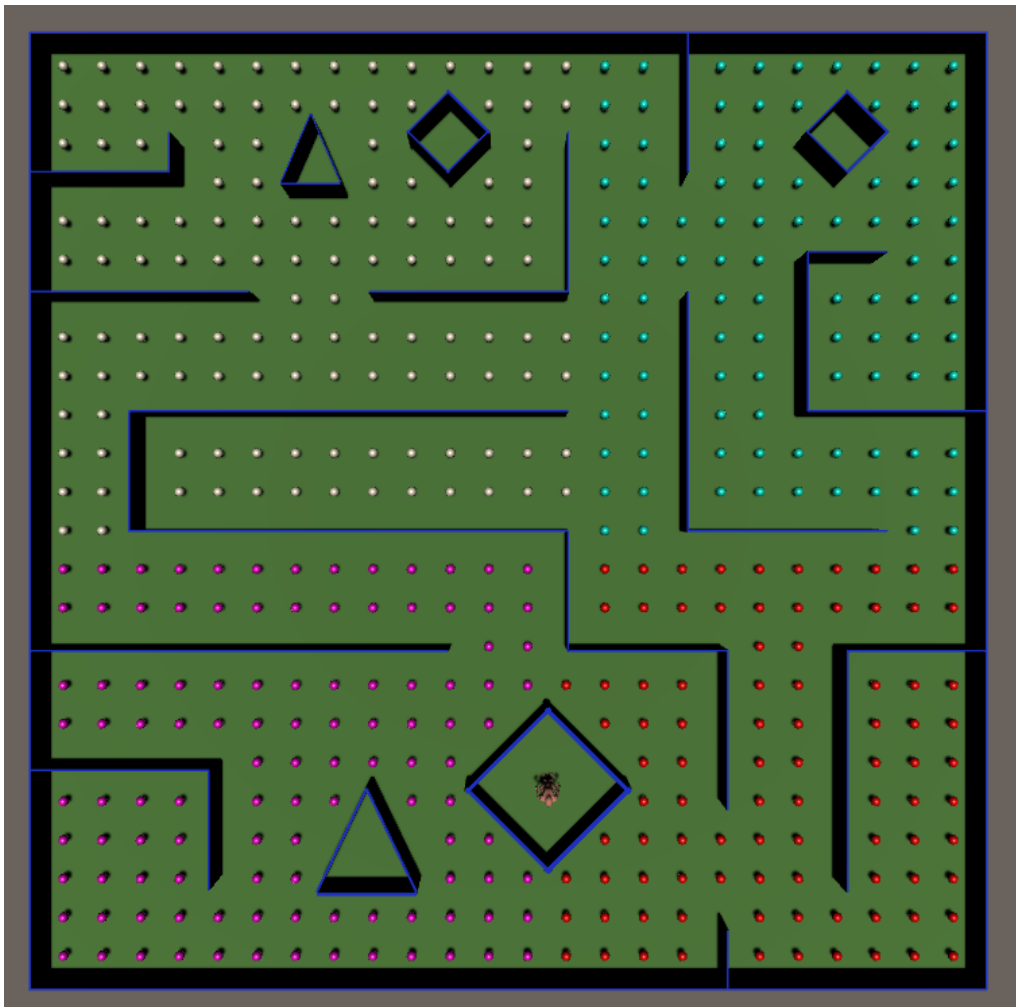


Fig. 2: Cluster 1 is magenta, cluster 2 is red, cluster 3 is cyan, cluster 4 is white.

Requirement 2:

The graph is color coded as follows:

- Default node – blue
- Nodes in open list – magenta
- Nodes in closed list – white
- Nodes in grid path – green
- Nodes in smoothed grid path – yellow
- Start and target nodes – red

The “pathfind” gameobject contains two Boolean inspector variables. They are “ClickStartEnd” and “Manhattan_T_cluster_F”. The former gives you the option to set your own path. The start node must be in one of the rooms as stated in the assignment. The target must be in a room other than the start node. If one selects the start node properly, the message “Start node registered in chamber _”. A similar message will appear for the target node.

Fill Manhattan heuristic:

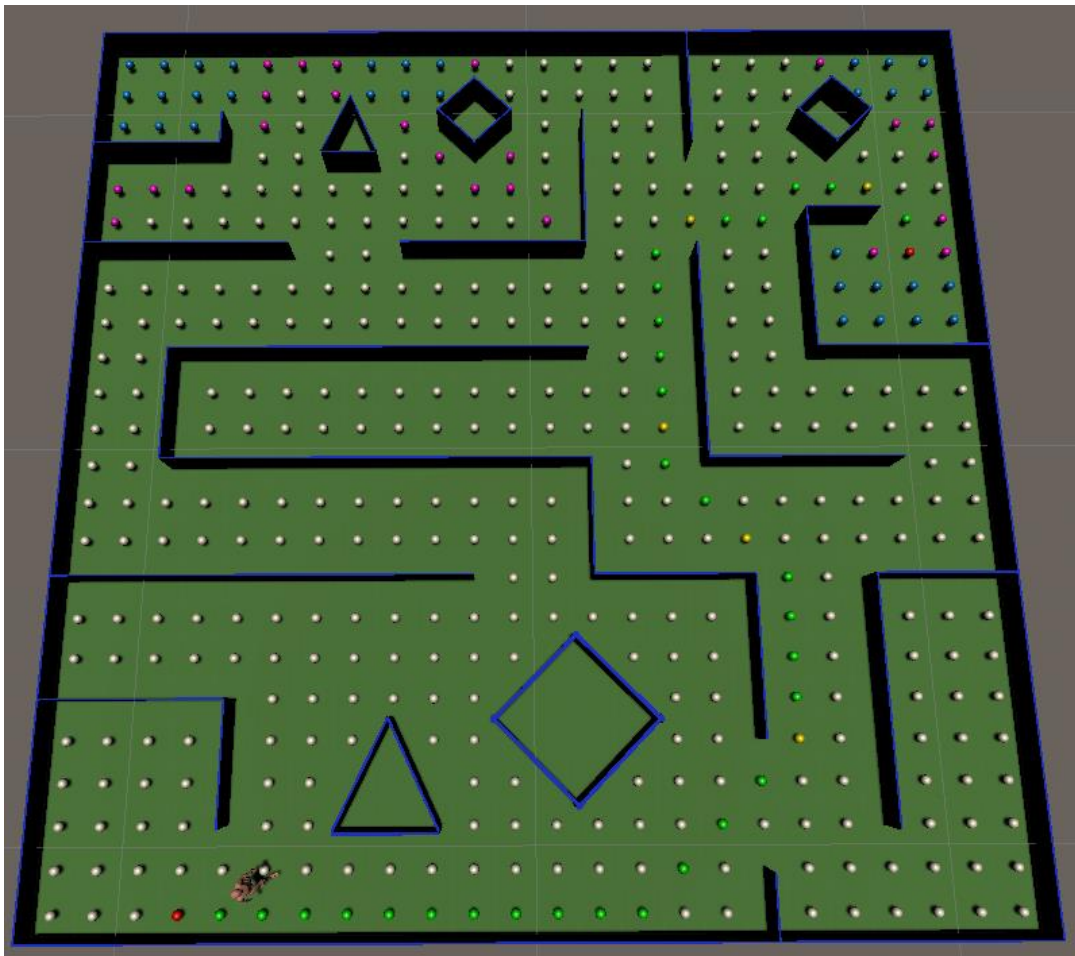


Fig. 3: Manhattan heuristic used for A algorithm.*

Fill Cluster heuristic:

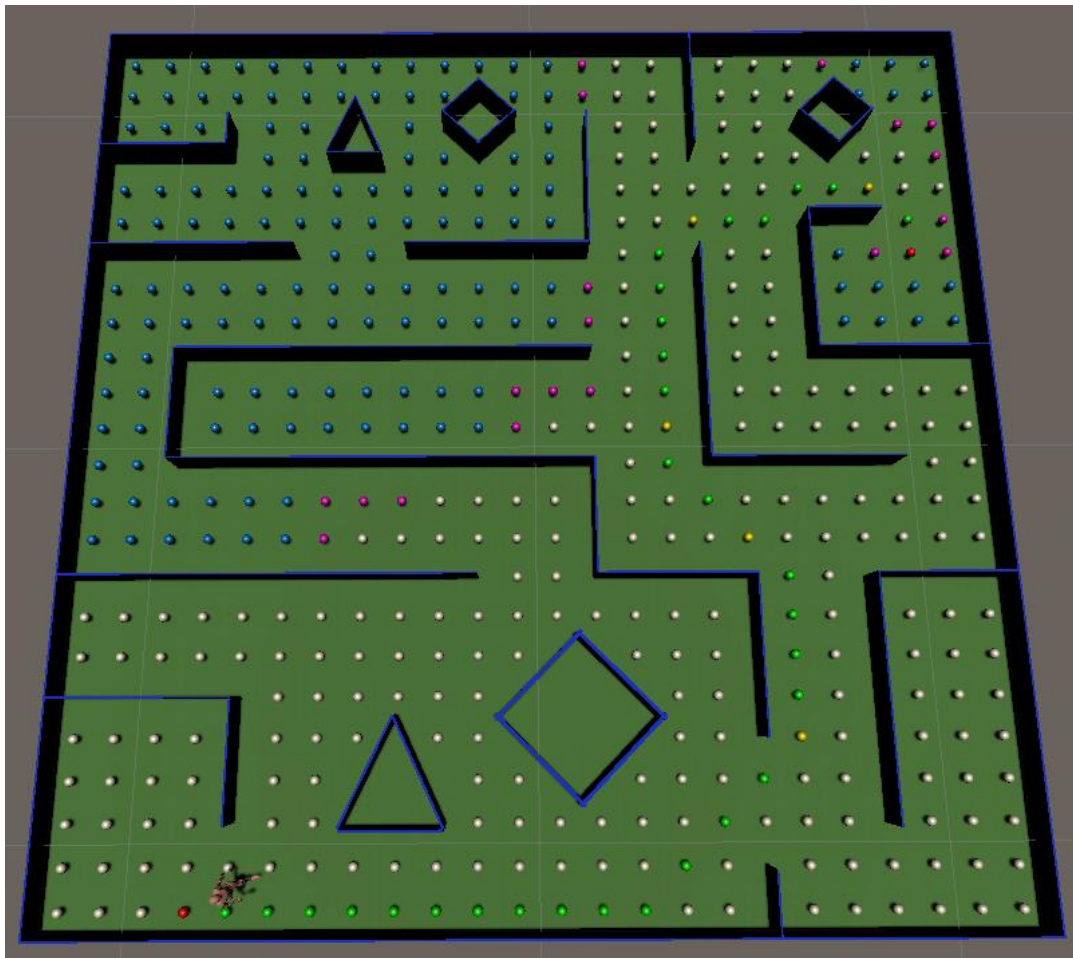


Fig. 4: Cluster heuristic used for A* algorithm.

Requirement 3:

Player character has 3 different animations tied to its animator controller. It has a “startwalk”, “walk”, and “stopwalk.” These are used in combination to steering arrive and align. The player character follows the smoothed path (yellow nodes). If “ClickStartEnd” is false, random start and end nodes will be automatically selected within the small rooms.

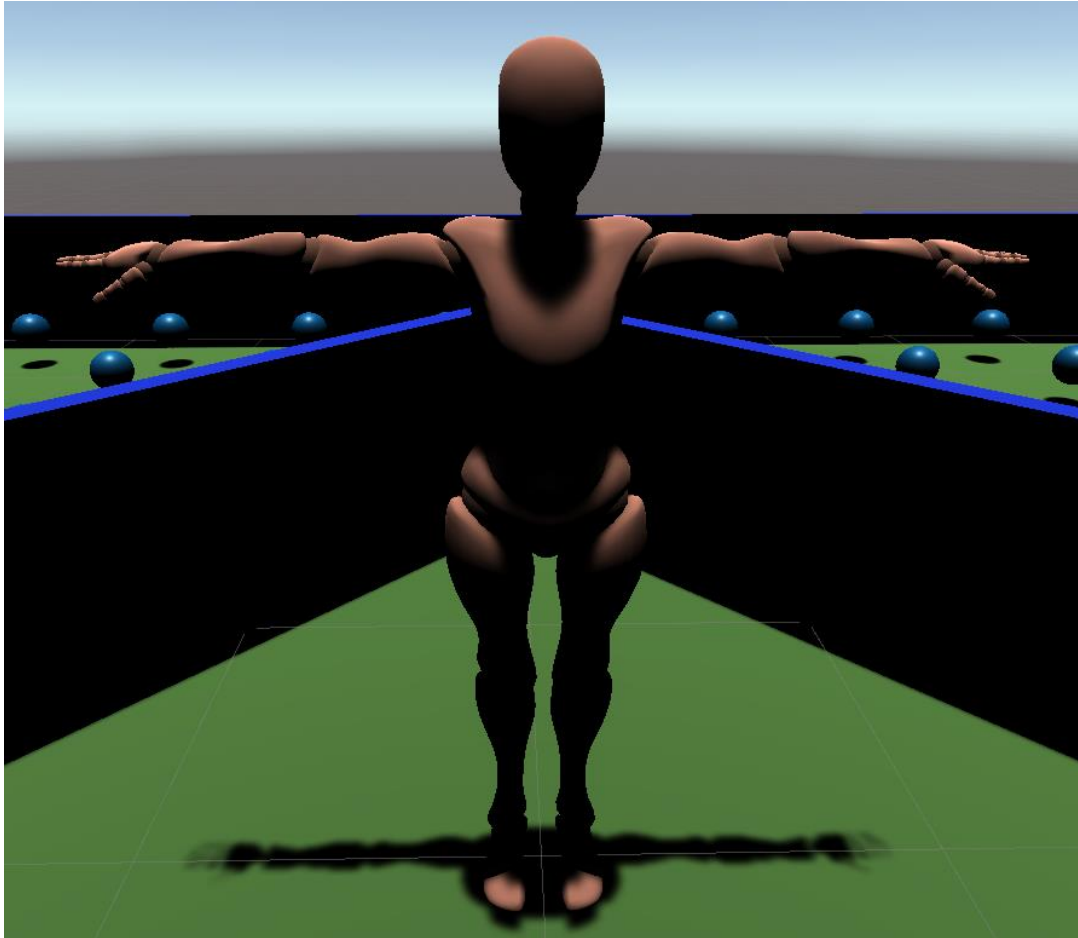


Fig. 5: Y-bot waiting for instruction with a classic T-pose.