Phase 2
Elder Care Agent

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Stage 1:

1-Information needed to apply A*:

a)-The program asks the user to enter:

1. -Size of the grid
2. Number of patients
3. -Position of patients
4. -Position of battery recharging room
5. -Position of medicine room

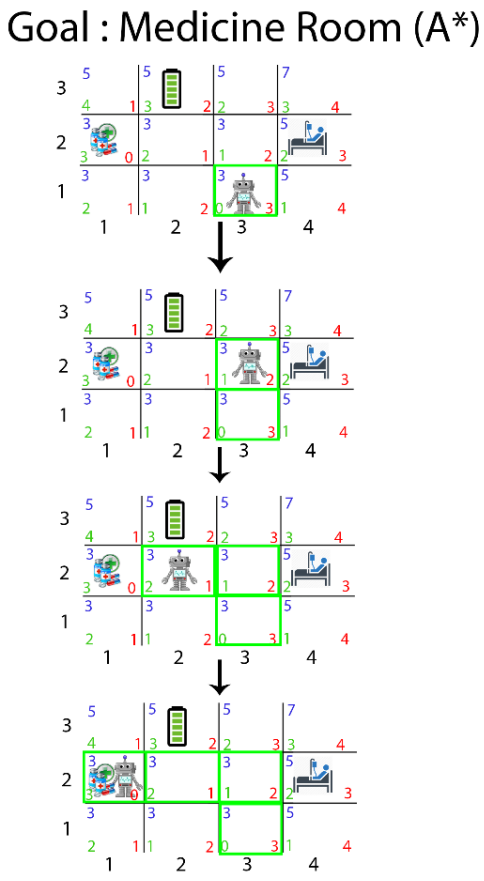
b) Heuristic Function:

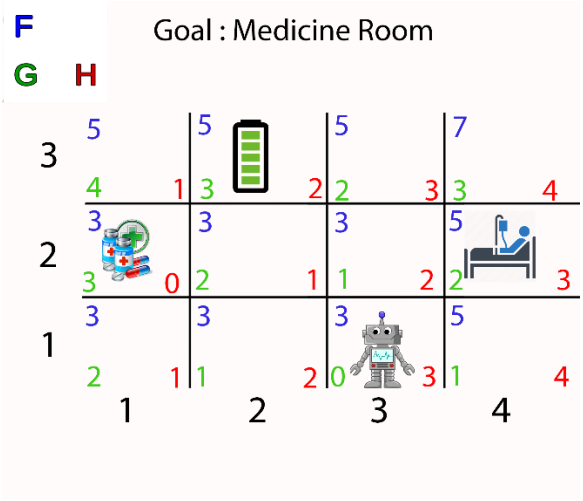
-Manhattan Distance

It is nothing but the sum of absolute values of differences in the goal's x and y coordinates and the current cell's x and y coordinates respectively.

H = abs (current_cell.x – goal.x) + abs(current_cell.y – goal.y)

-Case study using A*:

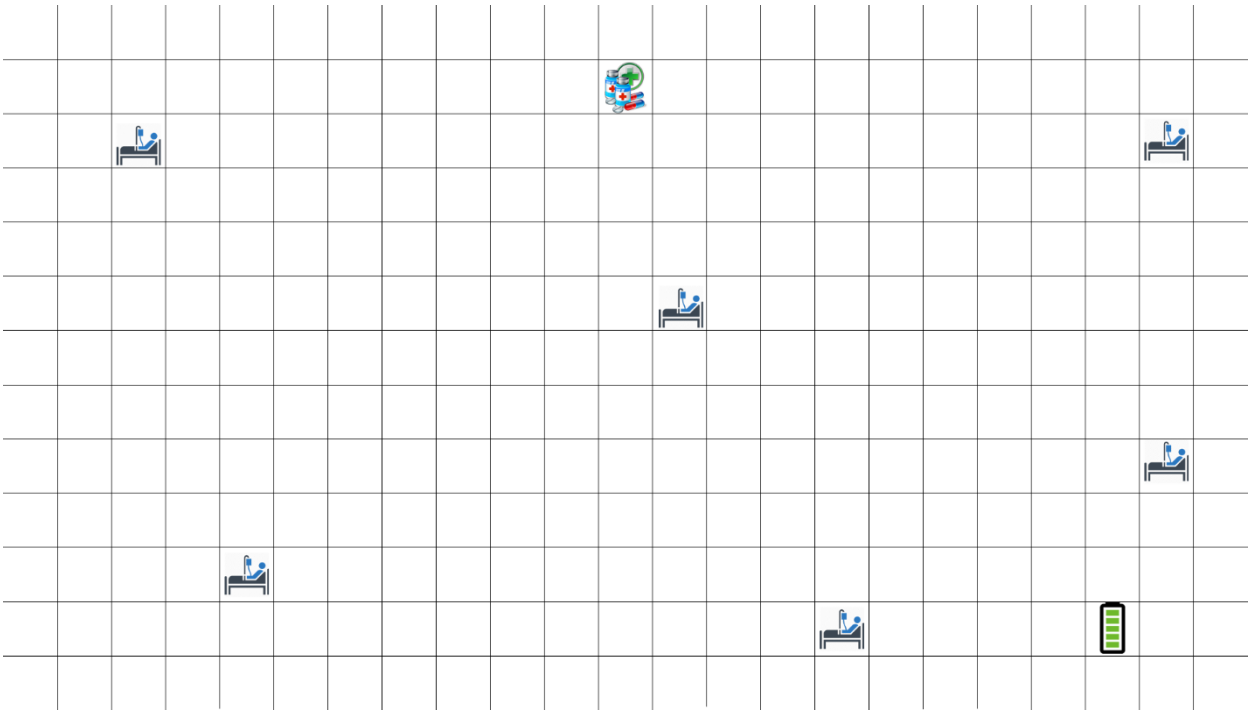




c) Case studies:

1) Battery recharge: from start point to the battery recharge room (The robot needs to recharge only once at the start of the day)
2) Medicine room: from the battery recharge room, the robot moves to the Medicine room point.
3) Check patient: from Medicine room the robot moves to the patient rooms and perform specific action as (Giving Medicine, Measure Blood pressure, Measure blood glucose and Measure temperature)

- **Background used in GUI:**



Stage 2:

A* Useful or Not?

→ Yes, It's useful.

-Why?

→ Because A* is a complete and optimal algorithm as it calculates the shortest path by using the edge cost and heuristic (f = g (Cost of paths) + h (Heuristic Cost)). That means if any solution exists it will always find it and we are sure that it will always be the shortest path. So, it looks like this is what we need.