Explanation algorithms' flow.

Backtracking:

A backtracking algorithm is a recursive algorithm in which solution to problem constructs incrementally. To somehow optimize the backtracking algorithm some constraints can decrease the number of backtracking calls. In this assignment, I use backtracking to find the shortest path from start to destination (i.e.home). To decrease execution time I introduce the condition that if a path is greater than the already obtained path from start to home when we can cut this path.

A* algorithm

For the second algorithm to be implemented I choose the A* algorithm. A* algorithm is a heuristic search that is widely used to find the shortest path in a graph. In the A* algorithm cost calculated for every cell (or node in the graph) and as the next step algorithm choose the cell with minimum cost. The cost of the cell is the sum of G and H of the cell. G is the movement cost to move from the start to the node. H is a heuristic used to estimate movement cost from a given cell to the home cell. As an actor in this assignment can move in 8 directions, the heuristic will be diagonal distance, which is the maximum between absolute values of the difference between x and x of home and difference between y and y of home.

PEAS (performance measure, environment, actuators, sensors) for actor:

Performance measure: win - reaches home, lose - infected by covid

Environment: map, covids, mask, doctor, home, rules of move

- Fully observable
- Single agent
- Deterministic
- Sequential
- Static
- Discrete
- Known

Actuators: see doctor, see mask,

Sensors: feeling covid, take mask, visit doctor.