

COMP 341 Homework #4 Report / Barış Aracı 62595

Answer Q1: The colors of the squares (the lighter color means the higher probability) represents the probabilities. In the second and third map, the bottom side has higher probabilities which means ghost has a tendency to move to the south side. Probabilities settle because they do not change as the ghost moves.

Answer Q2: In the first one, Pacman can't find the ghost since it cannot move, and it has a limited observation area. From its position, it cannot reach the farthest corners (it cannot observe those squares). But in the second one, Pacman can move, and it observes all of the corners so that it can find the ghost.

Answer Q3: In the code, we re-initialize particles if all particles receive 0 weight. This situation occurs when Pacman cannot find the ghost. For example, in the sixth test case, it re-initializes particles after probabilities settle since ghost is not in the colored square. Increasing the number of particles would not change anything since it initializes uniformly.

Answer Q4: Q1 and Q2 have lower speed but higher accuracy since there are more computation. Q4 and Q5 do approximate inference which has less computation, so they are faster. Also, 5000 particles would be better for Q5(not for Q4) because it uses `elapsedTime` function.