AI : Programming Assignment 1

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Question 1: The given points have decimal values. The problem is reduced in two steps. First, the given coordinates are bucketed in the given plane, such that the point (x,y) map to (round(x), round(y)). Once this integer grid is constructed, it is populated with the regions that cannot be visited as unreachable blocks. Once this grid has been constructed, we perform a BFS on this reduced grid graph. The cost function is simply the distance between the centers of any two squares, which is 1 (for the directions that are allowed).

Once this graph has been constructed, we use the following heuristic to estimate the order of picking up employees:

- *start from the origin*
- *perform BFS, pick the employee closest to origin*
- *move to that employee, perform BFS again*
- *repeat above process till you reach last employee*
- *move to the destination*

BFS and DFS are the 2 techniques that have been tried out.
For BFS, the optimal path comes out as : *0,1,2,3,4* , with the cost being 140
For DFS, the optimal path comes out as : 2*,3,4,1,0* , with the cost being 1402