**REPORT**

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1. **Algorithm Idea:**

Our team developed a specific heuristic algorithm for intelligent agent (seeker) using for all 3 levels. We can change between each level depend on the parameter tranferred to function. The idea for this algorithm mostly come from Manhattan distance. Inside seeker, there is a container containing potential targets. Every turn of this seeker, it will calculate each posible move (not move to the wall or outside of the board) to each target from the container of seeker by using Manhattan distance and it will chose the smallest one. If the container is empty, it will move randomly until hider tell seeker where they are. In theory, this method is not optimal because in some map, the seeker can get stuck in 3-side wall and take time to move out there.

Besides, hiders in level 3 have the view. Once they realize their location is in view of seeker, they will move as far as posible. If not, it random.

1. **Assignment Plan:**

We construct this project by using OOP ( create class Seeker, Hider, Obstacle and each object contacts to each other if necessary through function in each class).

1. **Environment:**

In this project, you have to install pygame package if you want to run locally on your computer. But, don’t worry, we install virtual environment for python with all packages required. All icon for graphics game, all packages and code are in one file. You download and run in this folder.

In Code, we just use pygame package for graphics and the other is standard library of Python. Besides that, folder will contain maps which you can adjust to create whatever you want. Actually, you can change any obstacles, hiders’ location and seeker’s location in a fixed map 13x12.

1. **Completion:**

We have completed 3 levels: level 1, level 2 and level 3 with satisfying all requirements in each level. We can change between each level by adjusting map in text file and parameters tranferred to functions. Actually, we don’t use any game point to evaluate agent’s performance as well as data for algorithm, so, we don’t show game point.

1. **Demo:**

We upload a demo video on Youtube. You can watch it if you don’t want to run our project locally on your computer.

Here is the link

<https://youtu.be/2wI78KolJfs>