



**Artificial Intelligence
CSC3206**

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Report

NO.	NAME	ID	PROGRAM
1.	Eric Chong Chi Kit	18084491	BCS
2.	Hong Ren Shen	18088880	BCS

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The algorithm that is done is used for the snake game where the snake will find its way to the food automatically without the user doing anything. We have 2 kinds of different searches for the snake which are informed and uninformed searches.

For the informed search algorithm, it is the most time efficient and low cost as it could calculate the distance between the snake and the food to get the shortest path possible to reach the food. However, due to this, there's also a chance that it could bite its own tail due to how it may trap its head within the tail length. As for the uninformed search algorithm, it would search all the possible routes within before reaching the goal, hence, in terms of time and cost, it isn't efficient, however, it may be more reliable as it may have less error compared to informed search or if the maximum cost is really low to begin with.

To make the algorithm understand and able to solve the problem, for uninformed search, firstly, the snake goes north and when it reaches the top it will move to the next column which is east. Then the snake will keep on moving south till the second last row and it will turn to east. This action will keep on repeating till it reaches [9,]. When it does the snake will go to move to [9,9] and move west till [0,0] and repeat the same steps again.

For informed search, firstly we will find the location of the food. Then the snake will move vertically towards the same column of the food and then only move vertically to the food. For example, if the food is at [0,5] the snake will move to column 0 and then only move to row 5 and the steps will keep on repeating. Furthermore, the search for the opposite current direction is made impossible as that position will be returning to its prevent it from returning to its previous position. This will help eliminate the search for a particular direction as it will definitely cause the snake to bite itself. For example, if the snake is currently moving towards north, it couldn't instantly turn from north to south right away but to turn east or west or continue north until a certain condition that allows it to turn east or west before turning to south. The condition are checking the other 3 other directions that are not eliminated, if they are safe to move without obstacles, it will move to the direction.

For the result, using the uninformed search algorithm, it can obtain the 3 challenges with no problem. But on the other hand, the informed search algorithm can easily be done. But for the other two challenges, it is hard for the snake to get to the goal points.

Therefore, in conclusion, for the uninformed search algorithm, in our opinion the performance is good enough to solve the problem. On the other hand, for the informed search algorithm the algorithm can still be improved and at the moment the algorithm is not good enough to solve all three of the challenges.

missing problem
formulation