**Artificial Intelligence Coursework**

**(CM3112)**

**Gediminas Jadkauskas C1643669**

Q1.

With the exampleLargeDifference.txt level, the heuristic is effective because there are a lot of blocks and goal positions. When the single player calculates the distance it calculates the Manhattan distance and if there were any obstacles it would take even longer to find the solution. Regarding the exampleSmallDifference.txt level, the reason why the heuristic evaluation is not that effective is that there aren’t many blocks and goal states. The program doesn’t need to do a lot of calculations, even the simple player. As well, the two goal states are in the corners of the level so it eliminates a few dead states.

Q2.

The first thing is because the level is so big. There is a lot of calculations involved looking for dead states, all the block positions. The way that the current heuristic evaluation works it tries to move the block to the nearest goal position. In the given example, it would try to move all 3 blocks there. After failing, it would try a different approach, for example moving one to the closest goal state and then the next two blocks to the other goal state, but that would be a dead state. Even with the current program, there is just too much to calculate, going through every position. One of the ways we could try to improve it is to check if a goal position has been reached by one of the blocks, and if so, move on to another goal position. Calculate the length of the solution to every goal state for every block and not just the closest one.