

In the first map the heuristic search has found its way to the goal but has taken a suboptimal path going upwards due to following heuristic without any boundaries which does not take into account the wall. It has computed the path to the goal in 41 runs. The A\* has found the best path to the goal taking the least amount of steps to get there but computes it in a total of 185 runs. The difference in

run values is due to the fact that heuristic wants to find goal as quickly as possible where as A\* attempts to find the best path to the goal taking it a longer time to find that path.

MAP2:

[illegible][illegible]

In this map the heuristic value follows a path to a goal that is also suboptimal but still reaches the goal, and completes this run in 47 steps. A\* choose the best path without taking any detours at the cost of 698 runs which is far larger than the heuristic. This is due to the need for heuristic to terminate as quickly as possible following nothing but the heuristic values computed where as A\* uses both heuristic values and cost to find the best path/most optimal path to the goal.

## MAP3:

[illegible]

In this case, even if both paths are different, the paths themselves are both the same in length and complete by getting to the goal. The main differences here are that the number of runs are 151 in comparison to 410 expands. This is due to the fact that heuristic has attempted to complete the search as fast as possible regardless of the path it follows where as the A\* will take every example path into account in order to locate and follow the best possible path.

## MAP4:

[illegible]

In this example to explicitly show that the heuristic will forcibly follow a path to the goal that is suboptimal to all other paths but still follows it due to the fact that the heuristic at those point were higher and disregards the cost of the steps.

In the second map explores many different paths but then decides to follow the best path that has been computed to the goal.

The difference in runs is due to the fact that heuristic will try to follow the best path as long as it is the best heuristic. A\* has chosen the path that has the least amount of steps in order for it to achieve the goal.

Although Best-first mind end up taking less expansions than the A\*, best first will run the risk of not being able to complete or even complete the path that takes routes that lengthen its size substantially, and A\* will take up more expansions as to ensure that all possible paths have been explored but will only return the best possible path to it.