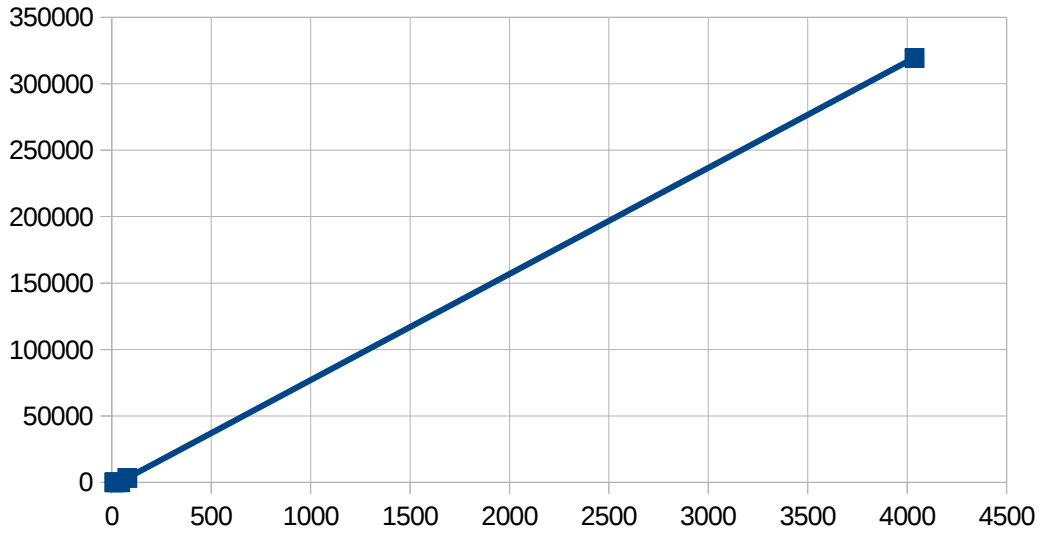
CSC384
Assignment 1

Rui Peng
1002003477
c5pengru

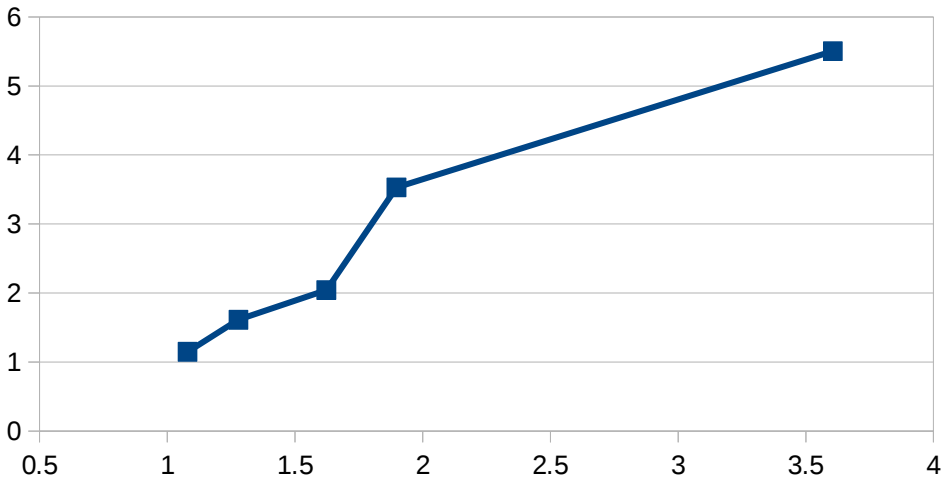
Q1.

(a) Manhattan distance heuristic performs better.

(b)




original plot




log-log plot

From log-log plot, we roughly know #nodes_misplaced will grow exponentially as #nodes_manhattan.

Q2

(a)
1) Both heuristics are admissible.
2) Both heuristics are admissible. Actually this case is the same as each package with 10000 gram weight in original problem.

(b) No. Since all states under the same problem specification share the same location map, it's of little use to distinguish states from each other.

(c) No. This is redundant information for representing the state, hence not necessary.

(d)
1) No. More legal successors won't affect the completeness and optimality.
2) Yes. We can know for sure dropping off first can have at least as good result in earning as picking up first, so we can block picking up in this case as a way of pruning less optimal path. Less nodes will be expanded hence resulting in higher efficiency.

(e) No. Suppose Job1 can be picked up at locA but that job pays fixed amount as long as it's delivered before 1140, the courier might as well just do other more profitable jobs first so that he can potentially earn more money.

(f) When new state is about to be put to OPEN, we compare two states, if everything but the time is same and the new state has later time, we won't put the new state to OPEN since we know it's not optimal.