# Assignment 3

## Problem 3.1

**1. Explain how the following algorithms choose which node to expand next:**

Greedy search with heuristic *h*：

Node *n* with smallest *h(n).*

A∗ search with path cost *g* and heuristic *h*:

Node n with smallest *f(n)=g(n)+h(n)*.

**2. Explain what *h\** is here and why *h* is admissible.**

h\*(n) is the real cost from n to the goal.

Because A\* search with h can also find the optimal path.

**Proof:**

Node G is the Goal node. On the path P found by A\*,

since

∀ Node m: -①

Suppose: P is not an optimal path, then ∃ Node n on the optimal path:

since n is an the optimal path, while P is not optimal

since

∃ Node n: -②

① and ② are contradictory, so P is an optimal path.

**3. For each search, give the order in which nodes are expanded.**

Greedy search with heuristic *h*:



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A∗ search with path cost *g* and heuristic *h*:

1.

|  |
| --- |
| Lugoj:244+0=244 |

2.



3.



4.



5.



6.



7.



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