Intelligent Systems: Reasoning and Recognition

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Heuristic search can be used to plan travel through a subway network. Suppose you wish to use Time as the cost function. Your task if to determine the fastest route through the network. Assume that the metro takes 2 minutes to travel between stations (on the average), and that changing subway lines takes on the average 5 minutes.

The following describes a subway network. Subway lines are numbers, stations are letters.

```
(subway-Network
    (line 1 A B C D E F)
    (line 2 G H I J K L)
    (line 3 M N C I O P)
    (line 4 Q R E J S T)
)
```

1) Under what conditions can time be used as a cost function for optimal search with the A* algorithm ?

2) What heuristic can be used to speed up the search? Is the search optimal with this heuristic?

3) What is the shortest path from station H to F?