COMP3411/9814

23T1

QUIZ 1

Question 1

Optimality of a search algorithm answers the question:

- ○ How much memory is needed to perform the search?
- ◉ Does the strategy find the solution that has the lowest path cost of all solutions?
- ○ How long does it take to find a solution?
- ○ Is the algorithm guaranteed to find a solution when there is one?

Question 2

Optimality of a search algorithm answers the question:

- How much memory is needed to perform the search?
- **Does the strategy find the solution that has the lowest path cost of all solutions?**
- How long does it take to find a solution?
- Is the algorithm guaranteed to find a solution when there is one?

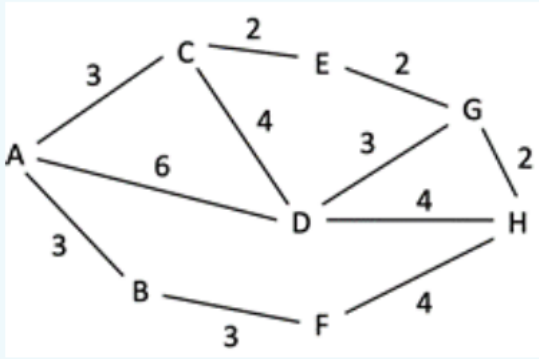
Question 3

The two main uninformed search strategies are:

- ○ greedy best-first search and A* search
- ○ breadth-first search and A* search
- ○ breadth-first search and greedy best-first search
- ◉ breadth-first search and depth-first search

Question 4

Consider the following road map with distances indicated on lines drawn between towns (the map is not to scale). The straight-line distances from each town to H are listed in the table.



Town	Distance to H
A	7
B	6
C	5
D	3
E	3
F	2
G	1
H	0

What is the order are nodes expanded by a **depth-first search** when searching for a path between A and H?

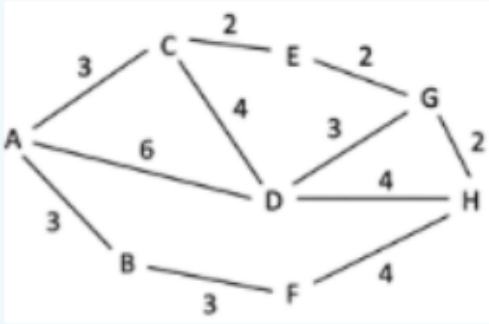
Assume the successors of a state are returned in **alphabetical order (i.e. the neighbouring nodes go into the stack or queue in alphabetical order)**, and that the search algorithm includes cycle checking along a path.

- ADH
- ABCDFEGH
- ABCDH
- ABFH

Question 5

Correct answer

Consider the following road map with distances indicated on lines drawn between towns (the map is not to scale). The straight-line distances from each town to H are listed in the table.



Town	Distance to H
A	7
B	6
C	5
D	3
E	3
F	2
G	1
H	0

What is the order are nodes expanded by a **breadth-first search** when searching for a (shortest) path between A and H?

Assume the successors of a state are returned in **alphabetical order (i.e. the neighbouring nodes go into the stack or queue in alphabetical order)**, and that the search algorithm includes cycle checking along a path.

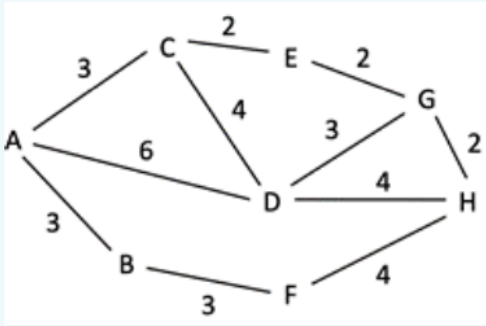
Assume the algorithm uses an "explored" set of states and stops when a node with the goal state is generated.

- ABCDFDECGH
- **ABCDFEGH**
- ABCDH
- ABCDFH

Question 5

Accepted answer

Consider the following road map with distances indicated on lines drawn between towns (the map is not to scale). The straight-line distances from each town to H are listed in the table.



Town	Distance to H
A	7
B	6
C	5
D	3
E	3
F	2
G	1
H	0

What is the order are nodes expanded by a **breadth-first search** when searching for a path between A and H?

Assume the successors of a state are returned in **alphabetical order (i.e. the neighbouring nodes go into the stack or queue in alphabetical order)**, and that the search algorithm includes cycle checking along a path.

Assume the algorithm uses an "explored" set of states and stops when a node with the goal state is generated.

- ○ ABCDFH
- ○ ABCDFDECGH
- ◉ ABCDH
- ○ ABCDFEGH