	Duration: 15 mins			
			Da	te: 02/03/202
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Student ID:	Student name:			•••
	following graph. The initial state is		_	ate is vertex (
The heuristic table is shown as	ide the graph. Ties are broken in a	alphabetica	ıl order.	
	6 G			
(A)	1 8	Vertex	Heuristic	
2	(c) /	S	10	
2		Α	8	
S 1		В	5	
	(D). /	С	5	
1		D	4	
1 \/				
Υ	$\left(\begin{array}{c} \mathbf{R} \end{array} \right)$	E	2	
*($B \longrightarrow B$	E G	0	
For each of the following sear	<i>)</i> 3 <i>(</i>	G	0	ed and the pa
	ch strategies, state the order in we resented in their exact order withou	G which states	0 are expande	_
returned. Vertices should be pr	ch strategies, state the order in w	G which states at spaces in	o are expande between, e.g.	_
returned. Vertices should be pr	ch strategies, state the order in we resented in their exact order withou	G which states it spaces in ded states is i	are expande between, e.g. wrong.	_
returned. Vertices should be pr Note that the path returned will	ch strategies, state the order in we resented in their exact order without not be accepted if the list of expand	G which states it spaces in ded states is i	are expande between, e.g. wrong.	., SABC)
returned. Vertices should be proposed that the path returned will Algorithm Uniform cost search (1pt)	ch strategies, state the order in we resented in their exact order without not be accepted if the list of expanding List of expanded states in exact order without here.	G which states it spaces in ded states is i	are expande between, e.g. wrong.	., SABC)
returned. Vertices should be proposed that the path returned will Algorithm Uniform cost search (1pt) Iterative deepening search	ch strategies, state the order in we resented in their exact order without not be accepted if the list of expand List of expanded states in exact the list of e	G which states it spaces in ded states is i	are expande between, e.g. wrong.	., SABC)
returned. Vertices should be proposed that the path returned will Algorithm Uniform cost search (1pt)	ch strategies, state the order in we resented in their exact order without not be accepted if the list of expanding List of expanded states in exact order without here.	G which states it spaces in ded states is i	are expande between, e.g. wrong.	., SABC)
returned. Vertices should be proposed that the path returned will Algorithm Uniform cost search (1pt) Iterative deepening search	ch strategies, state the order in we resented in their exact order without not be accepted if the list of expand List of expanded states in exact the list of e	G which states it spaces in ded states is i	are expande between, e.g. wrong.	., SABC)
returned. Vertices should be proportion Note that the path returned will Algorithm Uniform cost search (1pt) Iterative deepening search (0.5pt)	ch strategies, state the order in we resented in their exact order without not be accepted if the list of expand List of expanded states in exact the list of e	G which states it spaces in ded states is i	are expande between, e.g. wrong.	., SABC)
returned. Vertices should be proportion of the path returned will algorithm Uniform cost search (1pt) Iterative deepening search (0.5pt) Graph-search GBFS (0.5pt)	ch strategies, state the order in we resented in their exact order without not be accepted if the list of expanded List of expanded states in exact order without the accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted if the list of expanded states in exact order without not be accepted in the list of expanded states in exact order without not order without not be accepted in the list of expanded states in exact order without not order	chich states at spaces in ded states is nact order	are expande between, e.g. wrong.	eturned
returned. Vertices should be proportion of the path returned will algorithm Uniform cost search (1pt) Iterative deepening search (0.5pt) Graph-search GBFS (0.5pt)	ch strategies, state the order in we resented in their exact order without not be accepted if the list of expanded List of expanded states in exact order without not be accepted if the list of expanded List of expanded states in exact order without not be accepted if the list of expanded Level 0: Level 1: Level 2:	chich states at spaces in ded states is nact order	are expande between, e.g. wrong.	eturned

IN CLASS EXERC	136 (12)				
	Duration: 15 mins		Da	ate: 02/03	1/2023
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					/3
Student ID:	Student name:				
	llowing graph. The initial state is v ote the graph. Ties are broken in al		_	ate is ver	tex G
(_A)-	1 0 8	Vertex	Heuristic		
2	$\frac{1}{2}$ (c)	S	10		
2/ 2		Α	8		
		В	5		
$\binom{s}{1}$	~ (D) /	С	5		
	1 /	D	4		
1		E	2		
('	$\frac{3}{3}$ (E)	G	0		
returned. Vertices should be pres	strategies, state the order in when sented in their exact order without ot be accepted if the list of expanded List of expanded states in exact or	spaces in d states is	between, e.g wrong.		e path
Graph-search A* (1pt)		0010101			
Graph-search A (1pt)					
Depth-first search (0.5pt)					
avoid repeating any state on the current path					
Breadth-first search (0.5pt)					
Question 2 (1pt) The heuristic gives that violate the consistency.	ven in Question 1 is inconsistent. F	oint out a	t least two	pairs of ve	ertice

	Duration: 15 mins			
			Dat	te: 02/03/202
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Student ID:	Student name:			
	following graph. The initial state ide the graph. Ties are broken		_	ate is vertex
В	(E)	Ver	tex Heuristic	
3	5 4 2	4	13	
\sim			3 11	
(A) a	(D) 7	(G) (12	
2			5	
2	/3 4 /6	E	2	
\mathcal{C}		F		
()	, , , ,			
_			6 0	
eturned. Vertices should be pr	ch strategies, state the order in esented in their exact order wit not be accepted if the list of expo	which state hout spaces in	s are expande n between, e.g.	_
eturned. Vertices should be pr	esented in their exact order wit	n which state hout spaces in anded states is	s are expande n between, e.g. s wrong.	-
returned. Vertices should be pr Note that the path returned will	esented in their exact order wit not be accepted if the list of expo	n which state hout spaces in anded states is	s are expande n between, e.g. s wrong.	, SABC)
returned. Vertices should be pr Note that the path returned will Algorithm	esented in their exact order wit not be accepted if the list of expo	n which state hout spaces in anded states is	s are expande n between, e.g. s wrong.	, SABC)
returned. Vertices should be provided that the path returned will Algorithm Uniform cost search (1pt)	esented in their exact order wit not be accepted if the list of expanded states in	n which state hout spaces in anded states is	s are expande n between, e.g. s wrong.	, SABC)
returned. Vertices should be provide that the path returned will Algorithm Uniform cost search (1pt) Iterative deepening search	esented in their exact order with not be accepted if the list of exposed List of expanded states in Level 0: Level 1:	n which state hout spaces in anded states is	s are expande n between, e.g. s wrong.	, SABC)

IN CLASS EXERC	136 (12)			
	Duration: 15 mins		Da	te: 02/03/2023
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Student ID:	Student name:			
	llowing graph. The initial state is verte e the graph. Ties are broken in alpha		_	ate is vertex G .
B) (E)	Vertex	Heuristic	
3	5 4 2	A	13	
		В	11	
(A)	$\binom{D}{7}$ $\binom{G}{6}$	С	12	
2		D	5	
2	3 4 6	Е	2	
		F	1	
(6)	(+)	G	0	
returned. Vertices should be pres	strategies, state the order in which sented in their exact order without spant of be accepted if the list of expanded sta	ices in b	etween, e.g.	_
Algorithm	List of expanded states in exact or	der	Path r	eturned
Graph-search A* (1pt)				
Depth-first search (0.5pt)				
avoid repeating any state on the current path				
Breadth-first search (0.5pt)				
Question 2 (1pt) The heuristic give that violate the consistency.	ven in Question 1 is inconsistent. Poin	t out at	least two p	pairs of vertices

SOLUTION

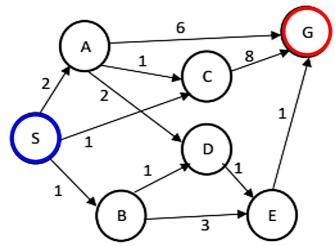
Duration: 15 mins

D	ate: 02/03/2	.023
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Score: /3

Student ID:	Student name:	

Question 1 (2pts) Consider the following graph. The initial state is **vertex S**, and the goal state is **vertex G**. The heuristic table is shown aside the graph. **Ties are broken in alphabetical order**.



Vertex	Heuristic
S	10
А	8
В	5
С	5
D	4
E	2
G	0

For each of the following search strategies, state the order in which states are expanded and the path returned. Vertices should be presented in their exact order without spaces in between, e.g., SABC)

Note that the path returned will not be accepted if the list of expanded states is wrong.

Algorithm	List of expanded sta	ates in exact order	Path returned
Uniform cost search (1pt)	SBCADEG		S B D E G
Iterative deepening search	Level 0: S	evel 1: S A B C	S A G
(0.5pt)	Level 2: S A		
Graph-search GBFS (0.5pt)	SBE		SBEG

Question 2 (1pt) Check whether the heuristic given in Question 1 is admissible or not. If not, point out **all** the vertices that violate the admissibility.

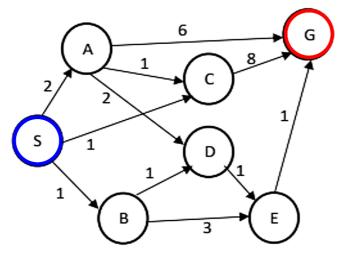
Inadmissible. Vertices are S, A, B, D, and E. $h(S) = 10 > c^*(S, G) = 4$, $h(A) = 8 > c^*(A, G) = 6$, $h(B) = 5 > c^*(B, G) = 3$, $h(D) = 4 > c^*(D, G) = 2$, $h(E) = 2 > g^*(E, G) = 1$.

Duration: 15 mins

Date: 02/03/2	.023
Score:	/ 3

Student ID:	Student name:	

Question 1 (2pts) Consider the following graph. The initial state is **vertex S**, and the goal state is **vertex G**. The heuristic table is shown aside the graph. **Ties are broken in alphabetical order**.



Vertex	Heuristic
S	10
А	8
В	5
С	5
D	4
E	2
G	0

For each of the following search strategies, state the order in which states are expanded and the path returned. Vertices should be presented in their exact order without spaces in between, e.g., SABC)

Note that the path returned will not be accepted if the list of expanded states is wrong.

Algorithm	List of expanded states in exact order	Path returned
Graph-search A* (1pt)	S B C D E G	S B D E G
Depth-first search (0.5pt)	S A	S A G
avoid repeating any state on the current path		
Breadth-first search (0.5pt)	S A	S A G

Question 2 (1pt) The heuristic given in Question 1 is inconsistent. Point out **at least two** pairs of vertices that violate the consistency.

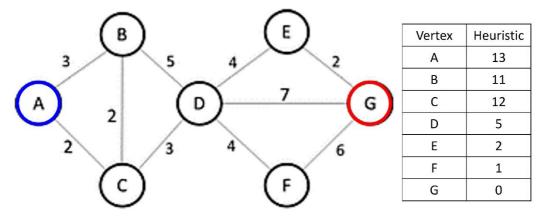
D-E and A-D. $h(D) = 4 > c(D, E) + h(E) = 1 + 2 = 3$. $h(A) = 8 > c(A, D) + h(D) =$	2 + 4 = 6

Duration: 15 mins

Date: 02/03/2023	
Score:	/ 3

Student ID: ____Student name: ____

Question 1 (2pts) Consider the following graph. The initial state is **vertex S**, and the goal state is **vertex G**. The heuristic table is shown aside the graph. **Ties are broken in alphabetical order**.



For each of the following search strategies, state the order in which states are expanded and the path returned. Vertices should be presented in their exact order without spaces in between, e.g., SABC)

Note that the path returned will not be accepted if the list of expanded states is wrong.

Algorithm	List of expanded states in exact order		Path returned
Uniform cost search (1pt)	ACBDEFG		ACDEG
Iterative deepening search	Level 0: A	Level 1: A B C	A B D G
(0.5pt)	Level 2: A B C D C B D		
Graph-search GBFS (0.5pt)	A B D		A B D G

Question 2 (1pt) Check whether the heuristic given in Question 1 is admissible or not. If not, point out **all** the vertices that violate the admissibility.

Inadmissible. Vertices are A and C. $h(A) = 13 > c^*(A, G) = 11$, $h(C) = 12 > c^*(C, G) = 9$

Date: 02/03/2023

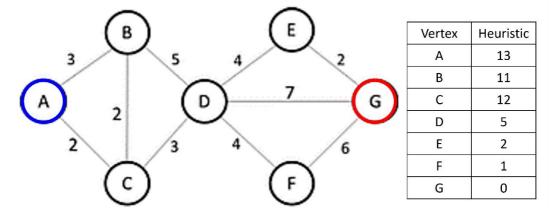
IN-CLASS EXERCISE (12)

Duration: 15 mins

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		Score:	/ 3

Student ID: Student name:

Question 1 (2pts) Consider the following graph. The initial state is **vertex S**, and the goal state is **vertex G**. The heuristic table is shown aside the graph. **Ties are broken in alphabetical order**.



For each of the following search strategies, state the order in which states are expanded and the path returned. Vertices should be presented in their exact order without spaces in between, e.g., SABC)

Note that the path returned will not be accepted if the list of expanded states is wrong.

Algorithm	List of expanded states in exact order	Path returned
Graph-search A* (1pt)	ABDFCEG	ABDEG
Depth-first search (0.5pt) avoid repeating any state on the current path	ABCD	ABCDG
Breadth-first search (0.5pt)	A B C D	A B D G

Question 2 (1pt) The heuristic given in Question 1 is inconsistent. Point out **at least two** pairs of vertices that violate the consistency.

B-D and C-D. h(B) = 11 > c(B, D) + h(D) = 5 + 5 = 10, h(C) = 12 > c(C, D) + h(D) = 3 + 5 = 8