	Duration: 15 mins			
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	following graph. The initial state ide the graph. Ties are broken		_	ate is vertex
(A)		Vertex	Heuristic	
,) \	$\frac{1}{c}$ c	S	10	
2/ 2		А	8	
10	1/	В	5	
S 1	(D) /	С	5	
		D	4	
1		E	2	
($\frac{B}{3}$	G	0	
eturned. Vertices should be pr	ch strategies, state the order is resented in their exact order with not be accepted if the list of exp	thout spaces in	between, e.g.	_
Algorithm	List of expanded states in	exact order	Path r	eturned
Uniform cost search (1pt)				
Iterative deepening search	Level 0: Level 1:			
(0.5pt)	Level 2:			
Graph-search GBFS (0.5pt)				
Question 2 (1pt) Check whether the vertices that violate the adr	r the heuristic given in Question	n 1 is admissib	le or not. If n	ot, point out

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Student ID:Student name:		Duration: 15 mins		Da	ate: 02/03	3/202
Question 1 (2pts) Consider the following graph. The initial state is vertex S, and the goal state is verte. The heuristic table is shown aside the graph. Ties are broken in alphabetical order. Vertex Heuristic S 10 A 8 B 5 C 5 D 4 E 2 G 0						
Question 1 (2pts) Consider the following graph. The initial state is vertex S, and the goal state is verte. The heuristic table is shown aside the graph. Ties are broken in alphabetical order. Vertex Heuristic S 10 A 8 B 5 C 5 D 4 E 2 G 0	Student ID:	Student name:				
For each of the following search strategies, state the order in which states are expanded and the 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	Student ID.	Student name.				
For each of the following search strategies, state the order in which states are expanded and the 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 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 given in Question 1 is inconsistent. Point out at least two pairs of vertices in the path returned in their exact order in which states are expanded and the returned. It is a state of the list of expanded states in between, e.g., SABC) Vertex Heuristic S 100 A 8 8 B 5 C 5 D 4 E 2 C G 0 D 4 E 2 C G D D 4 E 2 C G D D D D D D D D D D D D D D D D D D		e the graph. Ties are broken in al		_	tate is ver	tex G
For each of the following search strategies, state the order in which states are expanded and the 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) Depth-first search (0.5pt) avoid repeating any state on the current path Breadth-first search (0.5pt) Question 2 (1pt) The heuristic given in Question 1 is inconsistent. Point out at least two pairs of vertical paths and the path returned of the list of expanded states in exact order and the path returned of the path returned of the list of expanded states in exact order are paths or paths and the path returned of the paths returned of the path returned of the paths retu	(A)-	1 0 18	Vertex	Heuristic		
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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) Depth-first search (0.5pt) avoid repeating any state on the current path Breadth-first search (0.5pt) Question 2 (1pt) The heuristic given in Question 1 is inconsistent. Point out at least two pairs of vertical paths and the current paths are consistent.	('	3 ()	G	0		
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avoid repeating any state on the current path Breadth-first search (0.5pt) Question 2 (1pt) The heuristic given in Question 1 is inconsistent. Point out at least two pairs of vertical path and the current path are also as a second path and the current path are also as a second path and the current path are also as a second pat	Depth-first search (0.5pt)					
Question 2 (1pt) The heuristic given in Question 1 is inconsistent. Point out at least two pairs of vert						
	Breadth-first search (0.5pt)					
		ven in Question 1 is inconsistent. P	oint out a	t least two	pairs of v	ertice

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Question 1 (2pts) Consider the f The heuristic table is shown asi				· ·	is vertex (
(B) '	(E)	Vertex	Heuristic	
3	5 _ 4	2	А	13	
15		7	В	11	
(A) 2	(□)	(G) <u> </u>	12	
2			D	5	
2 1	/3 4	4 / 6	Е	2	
				1 1	
For each of the following searc	12 ch strategies, sta	te the order in which	F G ch states ar	e expanded a	nd the pa
returned. Vertices should be pr	esented in their e	exact order without s	G ch states ar spaces in be	e expanded a tween, e.g., SA	_
returned. Vertices should be pr	esented in their of not be accepted in	exact order without s	ch states ar spaces in be states is wr	e expanded a tween, e.g., SA	BC)
returned. Vertices should be pr Note that the path returned will	esented in their of not be accepted in	exact order without s f the list of expanded	ch states ar spaces in be states is wr	e expanded a tween, e.g., SA ong.	BC)
returned. Vertices should be pr Note that the path returned will Algorithm	esented in their of not be accepted in	exact order without s f the list of expanded	ch states ar spaces in be states is wr	e expanded a tween, e.g., SA ong.	BC)
returned. Vertices should be pr Note that the path returned will Algorithm Uniform cost search (1pt)	esented in their end be accepted in List of expan	exact order without s If the list of expanded Ided states in exact	ch states ar spaces in be states is wr	e expanded a tween, e.g., SA ong.	BC)
Uniform cost search (1pt) Iterative deepening search	List of expar	exact order without s If the list of expanded Ided states in exact	ch states ar spaces in be states is wr	e expanded a tween, e.g., SA ong.	BC)

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Question 1 (2pts) Consider the	following gr	anh. The initial state is v	vertey S and	the goal stat	e is vertey G
The heuristic table is shown a		-		_	c is vertex u
	-	~ 1	P		
(B	(E) <	Vertex	Heuristic	
, , ,	7	\sim	Α	13	
13	1.1		В	11	
(A)	G	7	C	12	
2			D	5	
2	1 /3	4 1 6	E	2	
				5397	
7	$\overline{}$	\sim	F	1	
	9	F	G	0	
eturned. Vertices should be p Note that the path returned wi	oresented in t	their exact order withou epted if the list of expande	hich states and the spaces in bear december of the states is write and the states is write.	oe expanded etween, e.g., s	SABC)
returned. Vertices should be poster that the path returned winderstands. Algorithm	oresented in t	their exact order withou	hich states and the spaces in bear december of the states is write and the states is write.	o re expanded etween, e.g.,	SABC)
returned. Vertices should be poster that the path returned winderstands. Algorithm	oresented in t	their exact order withou epted if the list of expande	hich states and the spaces in bear december of the states is write and the states is write.	oe expanded etween, e.g., s	SABC)
eturned. Vertices should be postering that the path returned wield Algorithm Graph-search A* (1pt)	oresented in t	their exact order withou epted if the list of expande	hich states and the spaces in bear december of the states is write and the states is write.	oe expanded etween, e.g., s	SABC)
returned. Vertices should be postering that the path returned with Algorithm Graph-search A* (1pt) Depth-first search (0.5pt)	resented in till not be acce	their exact order withou epted if the list of expande	hich states and the spaces in bear december of the states is write and the states is write.	oe expanded etween, e.g., s	SABC)
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returned. Vertices should be posterior that the path returned with Algorithm Graph-search A* (1pt) Depth-first search (0.5pt) avoid repeating any state on the current paths.	resented in till not be acce	their exact order withou epted if the list of expande	hich states and the spaces in bear december of the states is write and the states is write.	oe expanded etween, e.g., s	SABC)
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returned. Vertices should be polote that the path returned with Algorithm 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	coresented in the core of the	their exact order withou epted if the list of expande expanded states in exa	hich states and states in beed states is writer ct order	e expanded etween, e.g., s eong.	SABC)

SOLUTION

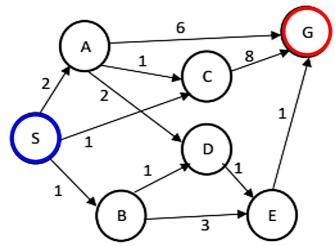
Duration: 15 mins

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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**.



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.

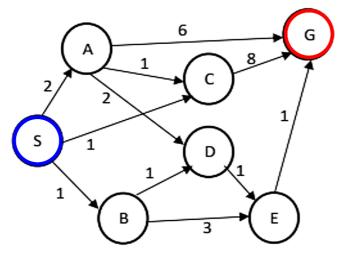
Inadmissible. Vertices are S, A, B, D, and E. $h(S) = 10 > c^*(S, G) = 4$, $h(A) = 8 > c^*(A, G) = 6$, $h(B) = 5 > c^*(B, G) = 3$, $h(D) = 4 > c^*(D, G) = 2$, $h(E) = 2 > g^*(E, G) = 1$.

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

Date: 02/03/2023

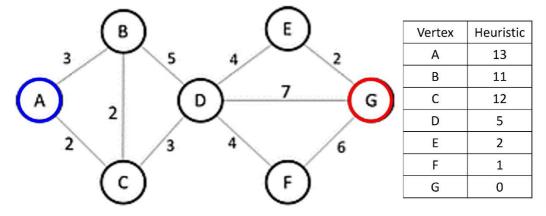
IN-CLASS EXERCISE (12)

Duration: 15 mins

		Score: / <u>3</u>

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

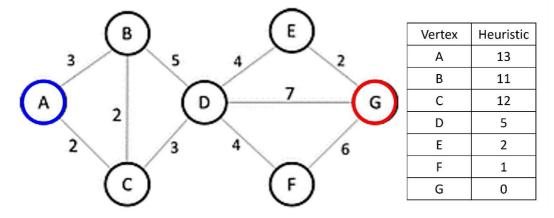
IN-CLASS EXERCISE (12)

Duration: 15 mins

		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	A B C D	A B C D G
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