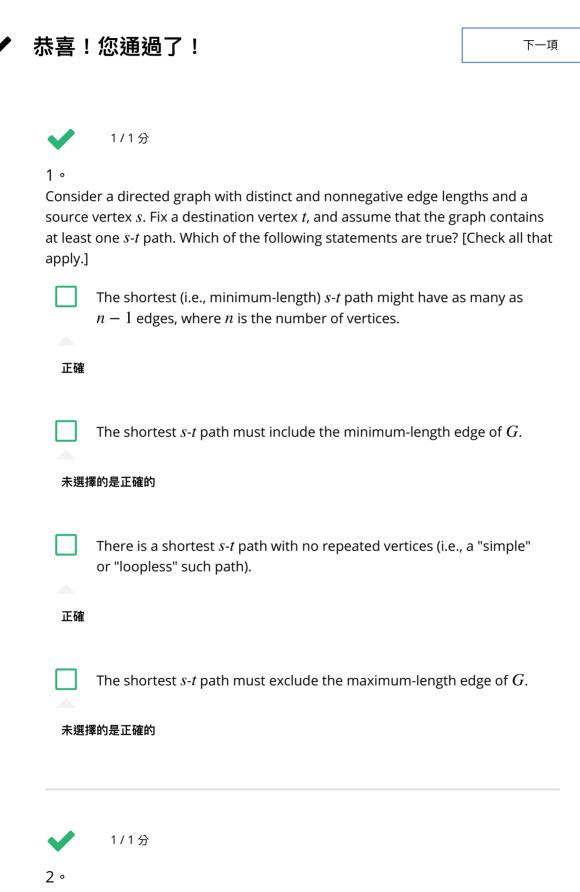
Problem Set #2

測驗, 5 個問題

5/5 分 (100%)



Consider a directed graph G with a source vertex s, a destination t, and Problem S点t,并是gative edge lengths. Under what conditions is the shortest s-t path guaranteed to be unique?

5/5 分 (100%)

guai ai i	teed to be driique:
	When all edge lengths are distinct positive integers.
	None of the other options are correct.
	When all edges lengths are distinct positive integers and the graph ${\cal G}$ contains no directed cycles.
0	When all edge lengths are distinct powers of 2.
	sums of distinct powers of two cannot be the same (imagine the bers are written in binary).
~	1/1分
oroper negativ edges f	er a directed graph $G=(V,E)$ and a source vertex s with the following ties: edges that leave the source vertex s have arbitrary (possibly re) lengths; all other edge lengths are nonnegative; and there are no from any other vertex to the source s . Does Dijkstra's shortest-path nm correctly compute shortest-path distances (from s) in this graph?
0	Always
still v M to	approach is to see that the proof of correctness from the videos works. A slicker solution is to notice that adding a positive constant all edges incident to s increases the length of every s - v path by the third preserves the shortest path.
	Never
	Only if we add the assumption that ${\cal G}$ contains no directed cycles with negative total weight.

/

1/1分

Maybe, maybe not (depends on the graph)

2017/7/19 Coursera | Online Courses From Top Universities. Join for Free | Coursera 4。 $\operatorname{Problem} \operatorname{Set}_{\operatorname{rH}}$ der a directed graph G and a source vertex s. Suppose G has some 測驗,5個問題 negative edge lengths but no negative cycles, meaning G does not have a directed cycle in which the sum of the edge lengths is negative. Suppose you run Dijkstra's algorithm on G (with source s). Which of the following statements are true? [Check all that apply.] Dijkstra's algorithm might loop forever. 未選擇的是正確的 Dijkstra's algorithm always terminates, but in some cases the paths it computes will not be the shortest paths from s to all other vertices. 正確 Nonnegativity of the edge lengths was used in the correctness proof for Dijkstra's algorithm; with negative edge lengths, the algorithm is no longer correct in general. Dijkstra's algorithm always terminates, and in some cases the paths it computes will be the correct shortest paths from s to all other vertices. 正確 See Question 3. It's impossible to run Dijkstra's algorithm on a graph with negative edge lengths.

未選擇的是正確的



1/1分

Consider a directed graph G and a source vertex s. Suppose G contains a negative cycle (a directed cycle in which the sum of the edge lengths is negative) and also a path from s to this cycle. Suppose you run Dijkstra's algorithm on G(with source s). Which of the following statements are true? [Check all that apply.]

It's impossible to run Dijkstra's algorithm on a graph with a negative cycle.

5/5 分 (100%)

Problem Set ^{本選擇的是正確的} 測驗, 5 個問題	5/5 分 (100%)

	Dijkstra's algorithm might loop forever.	
未選擇的是正確的		
	Dijkstra's algorithm always terminates, and in some cases the paths it computes will be the correct shortest paths from s to all other vertices.	
未選擇的是正確的		
正確	Dijkstra's algorithm always terminates, but in some cases the paths it computes will not be the shortest paths from s to all other vertices.	

