



Tamkang University Software Engineering Group

淡江軟體工程實驗室

<http://www.tkse.tku.edu.tw/>

演算法 個人作業

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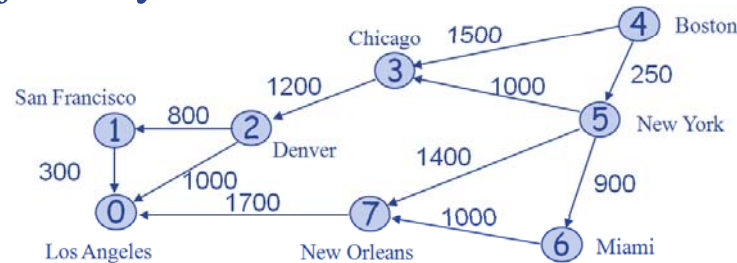
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Homework 01

- Implement Single Source-All Destination Shortest Path
 - Please implement the Shortest Path Algorithm (Dijkstra's algorithm) program by C, or C++, or Java.
 - The input data of the original weighted directed graph structure is using **Adjacency Matrix**.
 - The value of **99999** means ∞ , and the range of edge weight is between **0 – 3000**.
 - Your program needs to present the **Adjacency Matrix** of original graph structure and **start vertex**, firstly. And then show the distance from start vertex to all destination by **d[v] array**, $v \in V$, **prev[v] array** and **S** set step by step.

Homework 01 (Continuously)

- For example of teaching materials:
 - Input the Adjacency Matrix and start vertex is 4 of Graph



- And your program output are following step by step :

d[v]	d[v]	d[v]	d[v]	d[v]	d[v]	d[v]	d[v]	d[v]
0: ∞	0: ∞	0: ∞	0: ∞	0: ∞	0: 3350	0: 3350	0: 3350	0: 3350
1: ∞	1: ∞	1: ∞	1: ∞	1: ∞	1: 36	1: 3250	1: 3250	1: 3250
2: ∞	2: ∞	2: ∞	2: ∞	2: 2450	2: 2450	2: 2450	2: 2450	2: 2450
3: ∞	3: 1500	3: 1250	3: 1250	3: 1250	3: 1250	3: 1250	3: 1250	3: 1250
4: 0	4: 0	4: 0	4: 0	4: 0	4: 0	4: 0	4: 0	4: 0
5: ∞	5: 250	5: 250	5: 250	5: 250	5: 250	5: 250	5: 250	5: 250
6: ∞	6: ∞	6: 1150	6: 1150	6: 1150	6: 1150	6: 1150	6: 1150	6: 1150
7: ∞	7: ∞	7: 1650	7: 1650	7: 1650	7: 1650	7: 1650	7: 1650	7: 1650
prev[v]	prev[v]	prev[v]	prev[v]	prev[v]	prev[v]	prev[v]	prev[v]	prev[v]
0: U	0: U	0: U	0: U	0: U	0: 7	0: 7	0: 7	0: 7
1: U	1: U	1: U	1: U	1: U	1: U	1: 2	1: 2	1: 2
2: U	2: U	2: U	2: U	2: 3	2: 3	2: 3	2: 3	2: 3
3: U	3: 4	3: 5	3: 5	3: 5	3: 5	3: 5	3: 5	3: 5
4: X	4: X	4: X	4: X	4: X	4: X	4: X	4: X	4: X
5: U	5: 4	5: 4	5: 4	5: 4	5: 4	5: 4	5: 4	5: 4
6: U	6: U	6: 5	6: 5	6: 5	6: 5	6: 5	6: 5	6: 5
7: U	7: U	7: 5	7: 5	7: 5	7: 5	7: 5	7: 5	7: 5
S={}	S={4}	S={4, 5}	S={4, 5, 6}	S={4, 5, 6, 3}	S={4, 5, 6, 3, 7}	S={4, 5, 6, 3, 7, 2}	S={4, 5, 6, 3, 7, 2, 1}	S={4, 5, 6, 3, 7, 2, 1, 0}
Step 0	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8