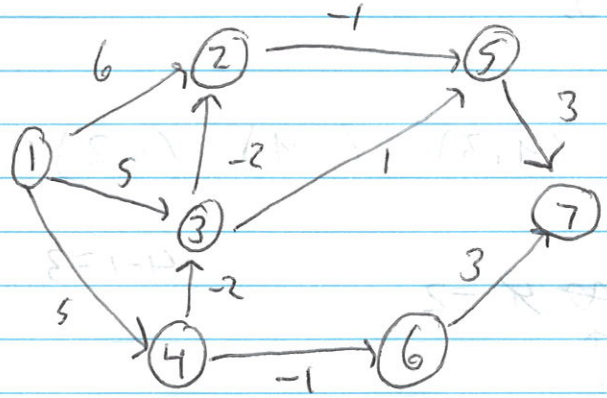
Single Source Shortest Path

Bellman - Ford

dynamic programming, tries all and picks best.



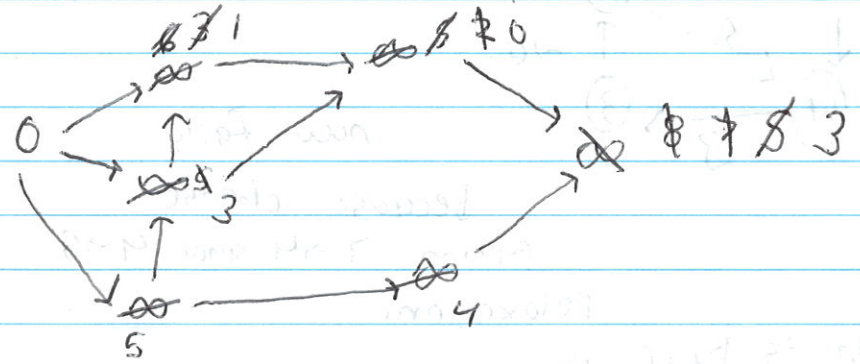
relax all edges for n-1 times!

prepare list of all edges

List of edges vertex by vertex: (6,7)

(1,2) (1,3) (1,4) (2,5) (3,2) (3,5) (4,3) (4,6) (5,7)

these need relaxed |7|-1 times so 6 each!

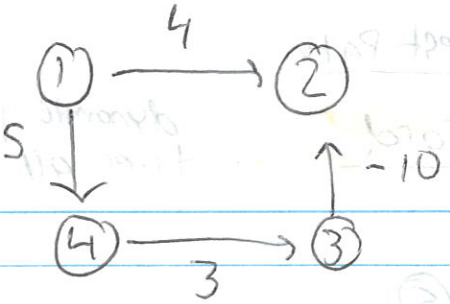


stopped changing so done.

vertex:	1	2	3	4	5	6	7
distance:	0	1	3	5	0	4	3

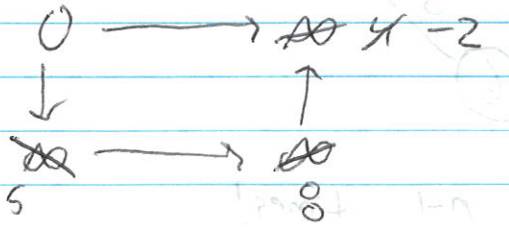
Another ex: ....

Ex:



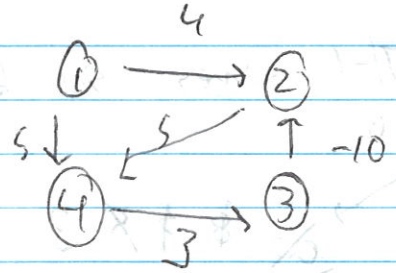
edges: (3,2) (4,3) (1,4) (1,2)

4-1=3 relaxes



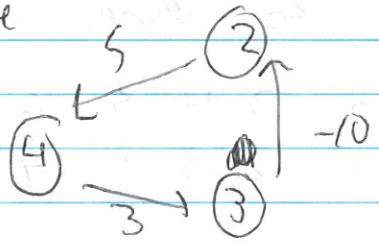
vertex:	1	2	3	4
value:	0	-2	8	5

ex



now fails because change from 3→4 and 4→5 relaxation.

reason is sure is a cycle



negative cycle).

Class Bellman-Ford we learned looks for this! Check notes