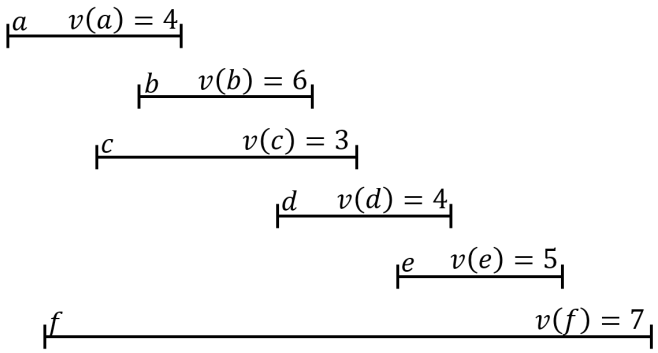
COSC 311: ALGORITHMS
MINI 8

Due Wednesday, October 31 in class

1. Weighted interval scheduling. Here's a set of intervals and their associated values:



Show what happens when the algorithm we discussed in class is run on this set of intervals. Your response should show both the optimal solution that our algorithm finds, and how the algorithm goes about finding it.

0. Initialization: the value of first 0 tasks is 0

0						

1. The opt. solution for the first job is taking a.

0	4					

2. The opt. solution for the first 2 jobs is taking b, because $v(b)+v(0) > v(1)$, $v(2) = v(b)+v(0) = 6$.

0	4	6				

3. The opt. solution for the first 3 jobs is taking b, because $v(c) + v(0) < v(2)$, $v(3) = v(2) = 6$.

0	4	6	6			

4. The opt. solution for the first 4 jobs is taking a and d, because $v(d) + v(1) > v(3)$, $v(4) = v(d) + v(1) = 8$.

0	4	6	6	8		

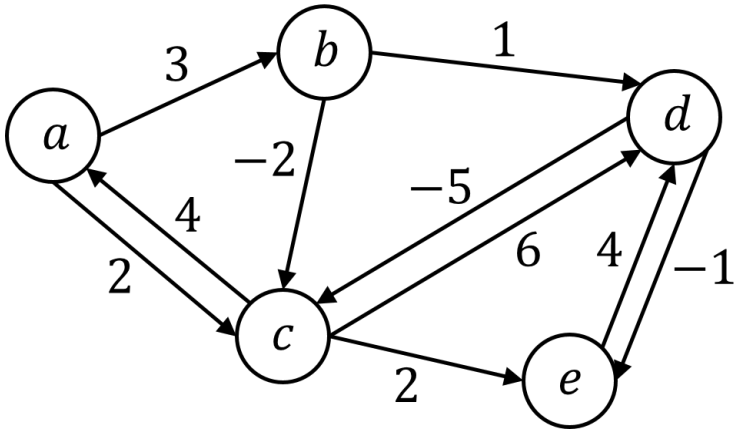
5. The opt. solution for the first 5 jobs is taking b and e, because $v(e) + v(3) > v(4)$, $v(5) = v(e) + v(3) = 11$.

0	4	6	6	8	11	

6. The opt. solution for the first 6 jobs is taking b and e, because $v(f) + v(0) < v(5)$, $v(6) = v(5) = 11$.

0	4	6	6	8	11	11

2. Shortest paths revisited. Here's a graph:



Fill in the below table to show what happens when you run the Bellman-Ford algorithm on this graph to find the shortest path from a to each other node.

	0	1	2	3	4
a	0	0	0	0	0
b	∞	3	3	3	3
c	∞	2	1	-1	-1
d	∞	∞	4	4	4
e	∞	∞	4	3	1