Algorithms Assignment 5

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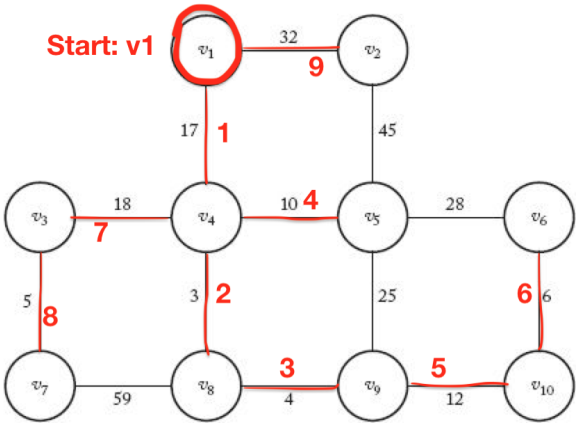
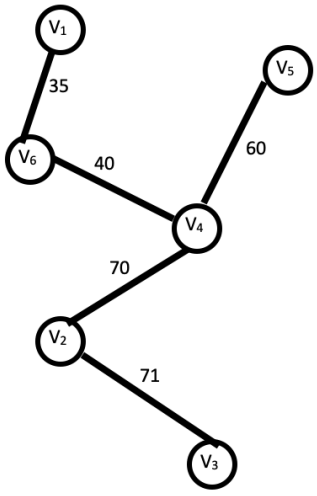
4.2 The MST using prim's algorithm starting at v_1. Step by step shown by numbers.



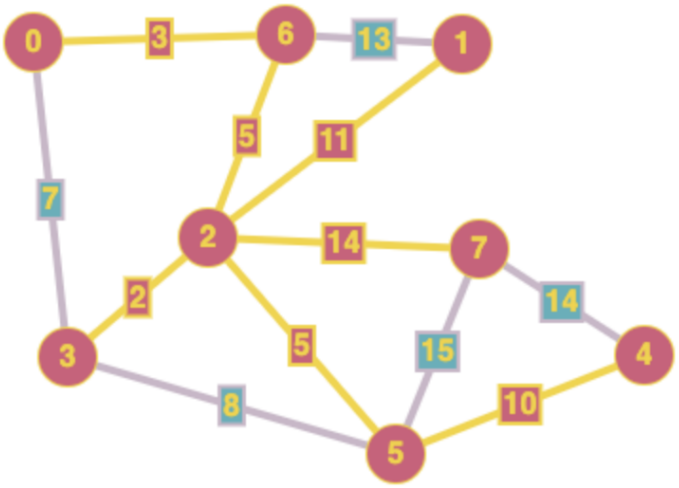
4.3
a. and b.

	1	2	3	4	5	6
1	0	∞	72	50	90	35
2	∞	0	71	70	73	75
3	72	71	0	∞	77	90
4	50	70	∞	0	60	40
5	90	73	77	60	0	80
6	35	75	90	40	80	0

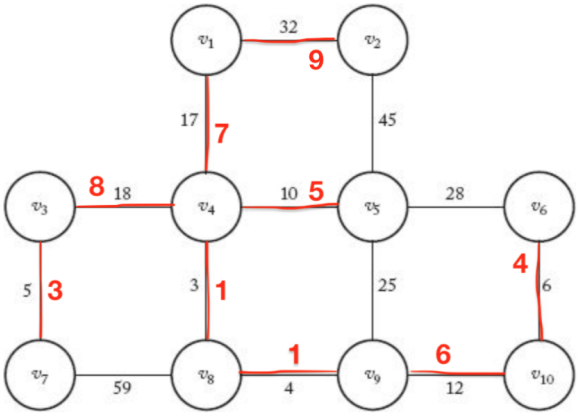


c. MST cost: 276

4.4
The graph below colors one possible minimum spanning tree, but the MST could use the edge between 7 and 4 instead of 7 and 2.



4.7
The MST using Kruskal's algorithm. Step by step shown by numbers.



Greedy Bin Problem:
Implementation: assign5.py
Local optimality condition: pick the largest object that can fit into the bin first until the bin is as full as possible. (Repeat until all objects are placed into a bin)
This greedy approach is not optimal as can be seen in code's second example.
However, this algorithm will generally work alright given you know all the object sizes in advance as we do.