This thread is part of the proposed study plan for the second test. Discuss the graphs practice problems here.

View questions here: http://beastie.cs.ua.edu/concepts/cs/al/graphs.html

This thread covers questions 21-31 of graphs.

Work together on the proposed answers to questions on this shared Google Doc (comment reasoning/arguments behind answers)

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I remember in class it being said that the answer for #31 wasn't in the available answer choices, so I want to make sure I have understanding of the correct answer:

Quote: Consider running Dijkstra's algorithm using a linked list (with a tail pointer) as the basis for a priority queue. What is the asymptotic run time for the algorithm?

I would think that an extract-min would be constant, and so would take V*1 = O(V) for the total runtime, while decrease-key would be linear, which would be O(EV) for the total runtime (as it takes E iterations, each for which the linear runtime would be controlled by the size of V). Then the runtime of Dijkstra's in this case would be O(V + EV), which simplifies to O(EV).

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simplest answer

This would be ElogE, right? Since Kruskal's is ElogE or ElogV, and E>V in this case.

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This one was proved by saying that E = O(V^2) \{Number of edges is bounded by V^2\}
Then ElogE == ElogV^2 == 2ElogV == ElogV
We won't look at theoretical situations like $E = o(V)$ since that would imply a disconnected graph.