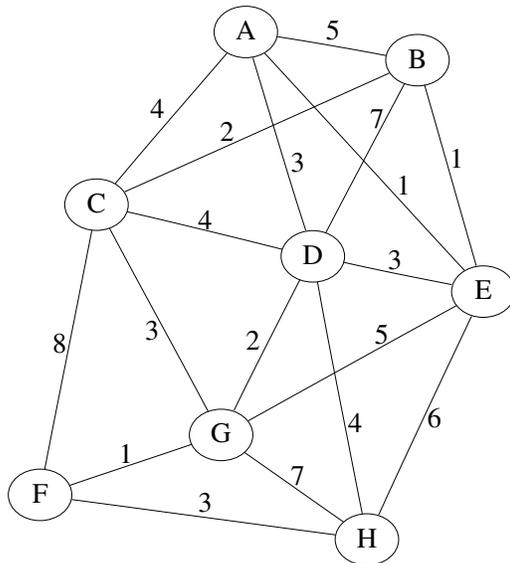


This review exercise focuses on a detailed example of the use a skew heap to solve the shortest weighted path problem using Dijkstra’s algorithm.

1. List the members of your group below. Underline your name.

2. Define the *score* of a vertex to be the third-smallest value of the weights of edges incident on it. For example, the score of *H* is 6 below. List all vertices of the following graph in *lexicographic order of names*, noting the *score* of each vertex next to its name.



3. Depict the *skew min-heap* obtained by inserting the (vertex, score) pairs of Question 2 in lexicographic order into an initially empty heap (using scores as keys). For this and the following questions, you do not need to depict all intermediate states, but depicting at least a few to ensure your work is correct.

[additional space for answering the earlier question]

4. Trace the action of a *deleteMin* operation applied to the final heap of Question 3.

5. Starting with the final heap of Question 4, trace the action of a *decreaseKey* operation that decreases the score of H to 2.

6. Trace the operation of Dijkstra's shortest weighted path algorithm on the graph of Question 2, with starting vertex A , using a skew heap to keep track of next-closest vertices. (Refer to p. 887 of the textbook but use a skew heap instead of a pairing heap.) Depict the state of the heap and the current vertex-distance values after the computation of the shortest path to each vertex.

[additional space for answering the earlier question]

7. Trace the operation of mergesort on the list of edges of the graph of Question 2, sorting by edge weights. The initial list is in lexicographic order of edge names. (Recall the previous class exercise.)