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CS590 Homework Assignment 11: Creativity Exercises

Due Date: April 12, 2022

Problem 13.7.19:

Input: Graph G with the two vertices v and w.

Algorithm: Check the adjacency.

Step 1: Start finding the connected component in the graph.

Step2: Provide the numbering to each vertex like start time and end time of each vertex.

Step 3: when both the vertices v, and w get covered by the parser stop the parsing.

Step 4: till the step 3 the compiler will take log n time, where n is the number of vertices in the graph.

Step 5: After the step 4, when compiler reached at the second vertices, it checks the previous vertex. If the previous vertex is v of the w vertex. It means the both the vertices are adjacent.

Step 6: In step 5, the compiler will take only O (1) time.

Thus, the total time taken by the compile is = log(n) + O (1)

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Time to delete an edge:

To delete an edge from the graph using same procedure will take log (n) time.

Space complexity:

To store the n vertices and m edges will take O (n + m) time.