CSE 208 (Data Structures and Algorithms II Sessional)

Offline 3

Due: Week 5

Implement the Floyd-Warshall algorithm for solving the all pair shortest-paths problem. The graph may contain edges with negative weight. Also consider that negative cycles may exist in the graph. You need to calculate shortest paths for all pairs of vertices. Your algorithm should run in time $O(|V|^3)$ and take $O(|V|^2)$ space. Also detect whether the graph contains any negative cycle. You can't use standard template library in your implementation. Use file operations for input and output.
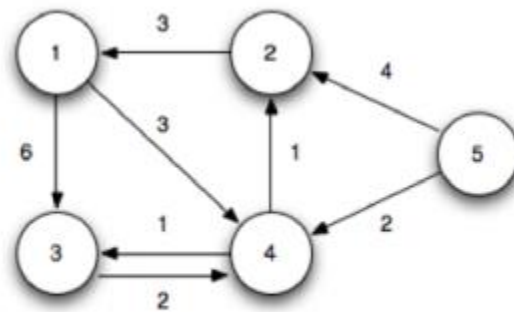

Fig.: Input Graph

Input:

5
8
1 3 6
1 4 3
2 1 3
3 4 2
4 2 1
4 3 1
5 2 4
5 4 2

Output:

0	4	4	3	∞
3	0	7	6	∞
6	3	0	2	∞
4	1	1	0	∞
6	3	3	2	0

0	4	4	3	∞
3	0	7	6	∞
6	3	0	2	∞
4	1	1	0	∞
6	3	3	2	0