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Forecast Week 10: Floyd-Warshall Algorithm

1. Please modify above algorithm to reconstructing correspond shortest path.

   Void print (int i, int i)

   If (pre[i][j]==0)

         Print i

   Else print (i, pre[i][j])

         Print (pre[i][j],j)

2. Please modify above algorithm to detecting negative cycles of G.
   Adj[N][N]
   DP[N][N]
   REP(i,N)
         REP(j,N)
               If(DP[i][j]+ Adj[i][j] < 0)
                   Negative cycle!

3. Please answer the differences between $R_{i,i} = 0$ and $R_{i,i} = \infty$ in Question 1.
   0 means the vertex is connected to itself, infinity is unreachable. One loops on itself, the other no.

4. Analyze space complexity, time complexity of best/worst case in Question 1 and Question 2.
   Question 1: from adjlist $O(n^2)$
   An it also goes through all of it so time $O(n^2)$

   Question 2: $O(n^3)$ using Floyd-Warshall
   Best case only goes through one $O(1)$