TECHNO INDIA UNIVERSITY

WEST BENGAL

EM 4, SECTOR V, SALT LAKE, KOLKATA - 700091, WEST BENGAL, INDIA

Subject: DESIGN ANALYSIS AND ALGORITHM

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```
#include <stdio.h>
#define V 4
#define INF 99999
void printSolution (int dist[V][V]);
void floydWarshall (int graph[V][V]) {
   int dist[V][V], i, j, k;
   for (i=0; i<V; i++)
      for (j=0; j<V; j++)
         dist[i][j] = graph[i][j];
   for (k=0; k<V; k++) {
      for (i=0; i<V; i++) {
         for (j=0; j<V; j++) {
            if (dist[i][k] + dist[k][j] < dist[i][j])
               dist[i][j] = dist[i][k] + dist[k][j];
         }
      }
   }
   printSolution (dist);
}
void printSolution (int dist[V][V]) {
   printf ("Following matrix shows the shortest
   distances between every pair of vertices:\n");
   for (int i=0; i<V; i++) {
      for (int j=0; j<V; j++) {
         if (dist[i][j] == INF)
            printf ("%7s", "INF");
         else
            printf ("%7d", dist[i][j]);
      }
```

```
int main(){
    int graph[V][V] = {{0, 3, INF, 7},
                       {8, 0, 2, INF},
                       {5, INF, 0, 1},
                       {2, INF, INF, 0}};
printf("Input adjacency matrix\n");
for(int i=0; i<V; i++){
    for(int j=0; j<V; j++){
        if (graph[i][j]==INF)
            printf("%7s", "INF");
        else
            printf("%7d", graph[i][j]);
    }
    printf("\n");

}
printf("\n");
floydWarshall(graph);
return 0;
}
```

---

output:

```
Input Adjacency matrix:
      0      3    INF      7
      8      0      2    INF
      5    INF      0      1
      2    INF    INF      0
```

Following matrix shows the shortest distances between every pair of vertices:

```
      0      3      5      6
      5      0      2      3
      3      6      0      1
      2      5      7      0
```