```
#include<stdio.h>
struct node
{
   unsigned dist[20];
   unsigned from[20];
}rt[10];
int main()
{
   int costmat[20][20];
   int nodes,i,j,k,count=0;
   printf("\nenter the number of nodes : ");
   scanf("%d",&nodes);//enter the nodes
   printf("\nenter the cost matrix :\n");
   for(i=0;i<nodes;i++)
   {
      for(j=0;j<nodes;j++)
      {
         scanf("%d",&costmat[i][j]);
         costmat[i][i]=0;
         rt[i].dist[j]=costmat[i][j];//initialise the distance equal to cost matrix
         rt[i].from[j]=j;
      }
   }
      do
      {
         count=0;
         for(i=0;i<nodes;i++)//we choose arbitary vertex k and we calculate the direct distance from the
node i to k using the cost matrix
         //and add the distance from k to node j
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            for(j=0;j<nodes;j++)
            for(k=0;k<nodes;k++)
               if(rt[i].dist[j]>costmat[i][k]+rt[k].dist[j])
               {//we calculate the minimum distance
                  rt[i].dist[j]=rt[i].dist[k]+rt[k].dist[j];
                  rt[i].from[j]=k;
                  count++;
               }
         }while(count!=0);
         for(i=0;i<nodes;i++)
         {
            printf("\n\n for router %d\n",i+1);
            for(j=0;j<nodes;j++)
            {
               printf("\t\nnode %d via %d distance %d ",j+1,rt[i].from[j]+1,rt[i].dist[j]);
            }
         }
      printf("\n\n");
      getch();
}
```