6/7/21

UG - CSE - 4B

ADA LAB TEST - 2

1BM19CS090

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(Q) Implement All pair shortest paths problem using Floyds Algorithm.

code:

```
#include <stdio.h>
int min (int, int);
void floyds (int p[10][10], int n)
{
    int i, j, k;
    for (k=1; k<=n; k++)
        for (i=1; i<=n; i++)
            for (j=1; j<=n; j++)
                if (i==j)
                    p[i][j] = 0;
                else
                    p[i][j] = min (p[i][j], p[i][k] + p[k][j]);
}
int min (int a, int b)
{
    if (a<b)
        retun (a);
    else
        return (b);
}
```

```
void main()
{
  int p[10][10], w, n, e u, v, i ,j;
   printf ("\n Enter the number of vertices :");
    scanf ("%d", &n);
   printf ("\n Enter the number of edges :");
   scanf ("%d", &e);
   for (i =1; i <=n; i++)
   {
       for (j =1; j <=n; j++)
             p[i][j] =999;
   }
   for (i=1; i<=e; i++)
   {
      printf ("\n Enter the end vertices of edge %d with its
                    weight:\n ", i);
      scanf (" %d %d %d", &u, &v, &w);
      p[u][v] = w;
    }
    printf (" \n Matrix of input data:\n ");
    for (i =1; i<=n; i++)
    {
         for (j =1 ; j <= n; j++)
              printf ("%d \t", p[i][j]);
         printf ("\n");
    }
    Floyds (p, n);
    printf (" \n Transitive closure :\n ");
for(i=1; i<=n; i++)
{
    for(j=1;j<=n;j++)
        printf("%d\t", p[i][j]);
    printf("\n");
}
printf("\n The Shortest paths are: \n");
for (i=1; i<=n; i++)
    for (j=1 ;j<=n;j++)
    {    if (i!=j)
             printf("\n <%d, %d> = %d", i,j, p[i][j]);
    }
printf("\n Enter vertex 1: ");
int a, b;
scanf ("%d", &a);
printf ("\n Enter vertex 2 : ");
scanf("%d", &b);
printf("\n Shortest ~~dis~~ path between given source
              and destination : ");
printf("< %d, %d> = %d", a, b, p[a][b]);

}
```