Design and Analysis of Algorithms – 20ISL57A

Part B - Program 7

Implement and analyze Floyd Warshall's algorithm to find the shortest path between all pairs of vertices in a given weighted connected graph.

```
#include<stdio.h>
int min(int a,int b)
{
        if(a<b)
          return(a);
else
          return(b);
}
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 main()
{
        int p[10][10],n,i,j;
        printf("Enter the number of vertices:\n");
        scanf("%d",&n);
        printf("Enter the Matrix\n");
        for(i=1;i<=n;i++)
```

```
        {
            for(j=1;j<=n;j++)
            {
                scanf("%d", &p[i][j]);
            }
        }
        floyds(p,n);
        printf("Output Matrix :\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]);
            }
}
```