

ADA-LAB-7

Q) Implement All Pair Shortest paths problem using Floyd's algorithm.

CODE-

```
#include <stdio.h>

int min(int a, int b) {
    if (a < b)
        return a;
    else
        return b;
}

void printm(int n, int d[][10]) {
    printf("Distance matrix is:\n");
    for (int i = 0; i < n; i++) {
        for (int j = 0; j < n; j++) {
            printf("%d\t", d[i][j]);
        }
        printf("\n");
    }
}

void floyd(int n, int a[][10]) {
    int d[10][10], i, j, k;
    for (i = 0; i < n; i++) {
        for (j = 0; j < n; j++) {
            d[i][j] = a[i][j];
        }
    }
    for (k = 0; k < n; k++) {
        for (i = 0; i < n; i++) {
            for (j = 0; j < n; j++) {
                d[i][j] = min(d[i][j], (d[i][k] + d[k][j]));
            }
        }
    }
    printm(n, d);
}

int main() {
    int a[10][10], i, j, n;
    printf("Enter the order of the matrix: ");
    scanf("%d", &n);
    printf("Enter the adjacency matrix:\n");
    for (i = 0; i < n; i++) {
        for (j = 0; j < n; j++) {
            scanf("%d", &a[i][j]);
        }
    }
    floyd(n, a);
}
```

```
    return 0;  
}
```

OUTPUT-

```
Enter the order of the matrix: 4  
Enter the adjacency matrix:  
0 1 999 4  
999 0 999 999  
8 2 0 999  
999 6 5 0  
Distance matrix is:  
0      1      9      4  
999     0     999    999  
8      2      0     12  
13     6      5      0  
  
Process returned 0 (0x0)   execution time : 24.721 s  
Press any key to continue.
```