13/12/23

AIM:-
Write a C program for shortest path Algorithm.

program:-

```
#include<stdio.h>
#include<stdlib.h>
void main()
{
 int cost[10][10],distance[10],path[10][10],n,P,v,row,column,min,index=1,i,j;
 printf("Enter cost of matrix");
 for(i=1;i<=n;i++)
 {
   for(j=1;j<=n;j++)
   {
    scanf("%d",&cost[i][j]);
   }
 }
 printf("Enter node to visit:");
 scanf("%d",&v);
 printf("Enter paths for the selected node:");
 scanf("%d",&P);
 printf("Enter path matrix \n");
 for(i=1;i<=P;i++)
 {
   for(j=1;j<=n;j++)
   {
    scanf("%d",&Path[i][j]);
   }
 }
 for(i=1;i<=P;i++)
 {
   distance[i]=0;
   row=1;
   for(j=1;j<n;j++)
   {
     if(row!=v)
     {
       column=path[i][j+1];
       distance[i]=distance[i]+cost[row][column];
     }
     row=column;
   }
 }
```

```
min = distance[1];
for(i=1;i<=n;i++)
{
  if(distance[i]<=min)
  {
    min = distance[i];
    index = i;
  }
}
printf("min distance is %d\n", min);
printf("min distance path is\n");
for(i=1;i<=n;i++)
{
  if(path[index][i]!=0)
        printf("--->%d", path[index][i]);
}
}
```

Output:-

```
Enter no of nodes: 5
Enter cost matrix: 0
4
0
8
0
4
0
3
0
0
0
3
0
4
0
8
0
4
6
7
0 0 0 7 0.
```

```
Enter node to visit : 5
Enter paths for the selected node : 2
Enter path matrix
1
2
3
4
5
1
4
5
0
0
Min distance is 15
Min distance path is  --->1--->4--->5.
```