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Computer Networks
Lab
Write-Up

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Dijkstra's Algorithm

```
#include<iostream>
using namespace std;
int a[30][30], source, d[30], p[30];
void alg(int a[][30], int n) {
    int s[n];
    for(int i=0; i<n; i++){
        d[i] = a[source][i];
        p[i] = source;
        s[i] = 0;
    }
    s[source] = 1;
for(int c=0; c<n; c++) {
    int min=999, u;
    for(int j=0; j<n; j++) {
        if(d[j]<min && s[j] !=1) {
            min = d[j];
        } u=j;
    }
    s[u] = 1;
    for(int i=0; i<n; i++) {
        if(min+a[u][i] <d[i]) {
            d[i] = min + a[u][i];
            p[i] = u;
    } }
}
}
```

```
int main(){
    int n;
    cout<<"Enter the no. of vertices: "<<endl;
    cin>>n;
    cout<<"Enter the adjacency matrix (Enter 9999
          for infinity):"<<endl;
    for(int i=0;i<n;i++)
        for(int j=0;j<n;j++)
            cin>>a[i][j];
    cout<<"Enter the source vertex: "<<endl;
    cin>>source;
    cout<<"The shortest paths from vertex "<<source
        <<" are:"<<endl;
    alg(a,n);
    for(int i=0;i<n;i++){
        int k=i;
        while(k!=source){
            cout<<k<<"<-";
            k=p[k];
        }
        cout<<source<<" = ";
        cout<<d[i]<<endl;
    }
    return 0;
}
```