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Distance Vector Algorithm

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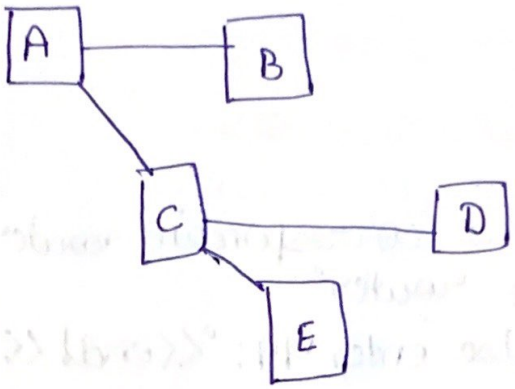
Topology:




```
#include <conio.h>
#include <iostream.h>
#define MAX 10
int n;

class router
{
    char adj_new[MAX], adj_old[MAX];
    int table_new[MAX], table_old[MAX];
    public:
    router()
    {
        for(int i=0; i<MAX; i++)
            table_old[i] = table_new[i] = 99;
    }

    void copy()
    {
        for(int i=0; i<n; i++)
        {
            adj_old[i] = adj_new[i];
            table_old[i] = table_new[i];
        }
    }
```

```
int equal()
{
    for (int i=0; i<n; i++)
        if (table_old[i] != table_new[i] || adj_new[i] != adj[old
        return 0;
    return 1;
}
void input(int j)
{
    cout << "Enter 1 if the corresponding router is
            adjacent to router"
    <<(char)('A'+j)<<" else enter 99: "<<endl<<"   ";
    for(int i=0; i<n; i++)
    if(i!=j) cout<<(char)('A'+i)<<" ";
        cout<<"\n Enter matrix:";
        cout
        for(i=0; i<n; i++)
        {   if(i==j)
                table_new[i]=0;
            else
                cin>>table_new[i];
                adj_new[i]=(char)('A'+i);
        }
        cout<<endl;
}
void display()
{
    cout<<"\n Destination Router: ";
    for(int i=0; i<n; i++) cout<<(char)('A'+i)<<" ";
        cout<<"\n Outgoing Line: ";
    for(i=0; i<n; i++) cout<<adj_new[i]<<" ";
        cout<<"\n Hop Count: ";
    for(i=0; i<n; i++) cout<<table_new[i]<<" ";
}
```

```
void build (int j)
{
    for (int i=0; i<n; i++)
      for (int k=0; (i!=j) && (k<n); k++)
        if (table_old[i] != 99)
          if ((table_new[i] + r[i].table_new[k]) < table_new[k])
          {
            table_new[k] = table_new[i] + r[i].table_new[k];
            adj_new[k] = (char)('A'+i);
          }
}
} r[10];

void build_table()
{ int i=0, j=0;
  while (i != n)
  {
      for (i=j; i<n; i++)
      { r[i].copy();
        r[i].build(i);
      }
      for (i=0; i<n; i++)
        if (!r[i].equal())
        { j=i
          break;
        }
  }
}
void main()
{ clrscr();
  cout << "Enter the number of routers (<" << MAX << "): ";
  cin n;
```

```
for (int i=0; i<n; i++) r[i].input(i);
  build_table();
for (i=0; i<n; i++)
 {
    cout << "Router table entries for routers " << (char)('A'+i)
                << " :-";
    r[i].display();
    cout << endl << endl;
 }
 getch();
}
```