

## Program:

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#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[i])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<<"\nEnter matrix:";

for(i=0;i<n;i++) {
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if(i==j)

table_new[i]=0;

else

cin>>table_new[i];

adj_new[i]= (char) ('A'+i);

}

cout<<endl;

}

void display(){

cout<<"\nDestination Router: "; for(int i=0;i<n;i++) cout<<(char) (A'+i)<<" "; cout<<"\nOutgoing Line: ";
for(i=0;i<n;i++) cout<<adj_new[i]<<" "; cout<<"\nHop Count: "; for(i=0;i<n;i++) cout<<table_new[i]<<" ";

}

void build(int j) {

for(int i=0;i<n;i++)

if(table_old[i]!=99)

for(int k=0;(i!=j)&&(k<n);k++) 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;

}

}

```

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}

}

void main() {

clrscr();

cout<<"Enter the number the 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 router "<<<(char) ('A'+i)<<":-";

r[i].display();

cout<<endl<<endl;

}

getch():

}

```