

C14- There are flight paths between cities. If there is a flight between city A and city B then there is an edge between the cities. The cost of the edge can be the time that flight takes to reach city B from A, or the amount of fuel used for the journey. Represent this as a graph. The node can be represented by airport name or name of the city. Use adjacency list representation of the graph or use adjacency matrix representation of the graph. Justify the storage representation used

```
#include<iostream>
#include<string.h>
using namespace std;

class flight
{
    public:
        int am[10][10];
        char city_index[10][10];
        flight();
        int create();
        void display(int city_count);
};

flight::flight()
{
    int i,j;
    for(i=0;i<10;i++)
    {
        strcpy(city_index[i],"xx");
    }
    for(i=0;i<10;i++)
    {
        for(j=0;j<10;j++)
        {
            am[i][j]=0;
        }
    }
}

int flight::create()
{
    int city_count=0,j,si,di,wt;
    char s[10],d[10],c;
    do
    {
        cout<<"\n\tEnter Source City    : ";
        cin>>s;
        cout<<"\n\tEnter Destination City : ";
        cin>>d;
        for(j=0;j<10;j++)
        {
            if(strcmp(city_index[j],s)==0)
                break;
```

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    }
    if(j==10)
    {
        strcpy(city_index[city_count],s);
        city_count++;
    }

    for(j=0;j<10;j++)
    {
        if(strcmp(city_index[j],d)==0)
            break;
    }

    if(j==10)
    {
        strcpy(city_index[city_count],d);
        city_count++;
    }

    cout<<"\n\t Enter Distance From "<<s<<" And "<<d<<": ";
    cin>>wt;

    for(j=0;j<10;j++)
    {
        if(strcmp(city_index[j],s)==0)
            si=j;
        if(strcmp(city_index[j],d)==0)
            di=j;
    }

    am[si][di]=wt;
    cout<<"\n\t Do you want to add more cities.....(y/n) : ";
    cin>>c;
    }while(c=='y' || c=='Y');
return(city_count);
}
void flight::display(int city_count)
{
    int i,j;
    cout<<"\n\t Displaying Adjacency Matrix :\n\t";
    for(i=0;i<city_count;i++)
        cout<<"\t"<<city_index[i];
    cout<<"\n";

    for(i=0;i<city_count;i++)
    {
        cout<<"\t"<<city_index[i];
        for(j=0;j<city_count;j++)
        {
            cout<<"\t"<<am[i][j];
        }
        cout<<"\n";
    }
}

```

```

int main()
{
    flight f;
    int n,city_count;
    char c;
    do
    {
        cout<<"\n\t*** Flight Main Menu *****";
        cout<<"\n\t1. Create \n\t2. Adjacency Matrix\n\t3. Exit";
        cout<<"\n\t.....Enter your choice : ";
        cin>>n;
        switch(n)
        {
            case 1:
                city_count=f.create();
                break;
            case 2:
                f.display(city_count);
                break;
            case 3:
                return 0;
        }
        cout<<"\n\t Do you Want to Continue in Main Menu....(y/n) : ";
        cin>>c;
    }while(c=='y' || c=='Y');
    return 0;
}

```