**Code**

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//Project: Airport Code Search

//Class: CS246

//Date:03/26/2018

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

typedef struct{

char code[5];

char name[50];

char city[50];

char state[5];

char country[30];

}Airport;

Airport parse(char \*str){

Airport result;

char \*token;

token=strtok(str,",");

strcpy(result.code,token);

token=strtok(NULL,",");

strcpy(result.name,token);

token=strtok(NULL,",");

strcpy(result.city,token);

token=strtok(NULL,",");

strcpy(result.state,token);

token=strtok(NULL,",");

strcpy(result.country,token);

return result;

}

Airport show(Airport a){

printf("%s - %s, %s %s (%s)\n",a.code,a.name,a.city,a.state,a.country);

}

void readData(char \*file,Airport list[],int \*n){

FILE \*fp;

int i=0;

printf("Opening file: %s\n",file);

fp=fopen(file,"r");

if(fp==NULL){

printf("Unable to open file %s.\n",file);

exit(EXIT\_FAILURE);

}

printf("Opened file %s\n", file);

printf("Reading...");

char line[80];

fgets(line,sizeof(line),fp);

while((fgets(line,sizeof(line),fp))!=NULL){

int l=strlen(line);

line[l-1]='\0';

list[i]=parse(line);

i++;

}

\*n=i;

fclose(fp);

printf("...done.[%d]\n",i);

}

void upper(int n,char s[]) {

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

if (s[i] >= 'a' && s[i] <= 'z') {

s[i] = s[i] +'A'-'a';

}

}

}

int main(int argc,char \*argv[]){

Airport airportList[4000];

int nA=0;

char response;

if(argc!=2){

printf("Cannot proceed: Missing file name.\n");

exit(EXIT\_FAILURE);

}

readData(argv[1],airportList,&nA);

do{

printf("Enter the three-letter code for an airport: ");

char c[3];

scanf("%s",&c);

upper(3,c);

int find =0;

for(int i=0;i<nA;i++){

if(strcmp(c,airportList[i].code)==0){

find =1;

printf("Sucess: ");

show(airportList[i]);

}//if

}

if(find==0){

printf("Unsucessful: %s is not a know airport.\n",c);

}

printf("Would you like to search again (Y/N)?");

scanf(" %c",&response);

}while(response=='Y');

printf("Byebye!\n");

/\*int count=0;

for(int i=0;i<nA;i++){

if(strcmp("USA",airportList[i].country)!=0){

show(airportList[i]);

count++;

}

}

printf("%d",count);\*/

}//main

**Output**

[jsheng@rukbat lab8]$ gcc -o search search.c

[jsheng@rukbat lab8]$ ./search code.txt

Opening file: code.txt

Opened file code.txt

Reading......done.[3376]

Enter the three-letter code for an airport: BMC

Sucess: BMC - Brigham City, Brigham City UT (USA)

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: 172

Unsucessful: 172 is not a know airport.

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: 00M

Sucess: 00M - Thigpen, Bay Springs MS (USA)

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: TCS

Sucess: TCS - Truth Or Consequences Municipal, Truth Or Consequences NM (USA)

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: BUZ

Unsucessful: BUZ is not a know airport.

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: 5A8

Sucess: 5A8 - Aleknagik, Aleknagik AK (USA)

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: DAR

Unsucessful: DAR is not a know airport.

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: ZZV

Sucess: ZZV - Zanesville Municipal, Zanesville OH (USA)

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: 22M

Sucess: 22M - Pontotoc County, Pontotoc MS (USA)

Would you like to search again (Y/N)?Y

Enter the three-letter code for an airport: PHL

Sucess: PHL - Philadelphia Intl, Philadelphia PA (USA)

Would you like to search again (Y/N)?N

Byebye!

**Reflection**

With given the implicit instructions in the lab handout, I did not face too many difficulties in completing this homework assignment. The only thing I missed at the beginning is that I used strcmp(airport1,airport2)==1 to test whether airport1 and airport2 are the same, since I thought in C, 1 represents true. But I forgot in class, we are told that the syntax of strcmp is that it returns 0 when two strings are equal, and returns some positive number if airport1 is bigger than airport2. Thus after I modified it to strcmp(airport1,airport2)==0, whole program works correctly then. Besides, when I tried to scan the response of whether continue searching, I need to use two scanf function otherwise the response is not recorded. Then I found adding a space before %c will solve the problem,we also did that in a past homework.

**Questions:**

1. How many airports in the database are not in the US? Give at least one example.

There are two airports in the database are not in the US, they are:

ROP - Prachinburi, NA NA (Thailand)

ROR - Babelthoup/Koror, NA NA (Palau)

1. Why did we specify a limit of 30 chars for country name?

Since there is a country called Federated States of MicronesiaV, which is a very long name but still no more than 30 characters. So approximately, we would say that all country name will have no more than 30 characters(we need to be sure that all country names’ length are restricted in that limit), thus we choose 30 to be the limit of country name’s length.

1. How would you determine the limit on the number of airports for your program's data structure?

I would quickly scan the data file first to see approximately how many data are there, and then round up the size to next hundred or thousand. For example, in this assignment, we know there are 3376 airports exactly, thus we round it up to 4000 to be the limit on the number of airports.