//Name: Mehmet Fatih Çelik

//ID: 2385268

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

struct record{

char name[15];

int deaths, recovered, activeCases, totalCases;

double population;

};

int Load\_CoronavirusTable(struct record\*, char[]);

void Display\_CoronavirusTable(struct record\*, int);

int Search(struct record\*, int, char\*);

void Sort(struct record\*, int);

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

struct record \*CoronavirusTable;

int fileFlag = 1;

char name[15];

strcpy(name,argv[1]);

while(fileFlag){

if(!strcmp(name,"corona.txt"))

fileFlag = 0;

else{

printf("This file does not exist, please enter again: ");

scanf("%s",&name);

}

}

FILE \*inFile;

inFile = fopen(name,"r");

if (inFile == NULL){

printf("Error occured while reading the file!");

exit(1);

}

int size = 0;

char line[1024];

while((fscanf(inFile,"%[^\n]\n",line))!=EOF) //for calculating the number of lines in the file

size++;

fclose(inFile);

CoronavirusTable = (struct record\*)malloc(size\*sizeof(struct record));

if(CoronavirusTable == NULL){

printf("Error occured while allocating the memory!\n");

exit(1);

}

size = Load\_CoronavirusTable(CoronavirusTable, name);

printf("Coronavirus records file (corona.txt) has been successully loaded!\n");

Display\_CoronavirusTable(CoronavirusTable, size);

int option;

do{

fflush(stdin);

printf("\nPress 1 for search, 2 for sort and 3 for exit: ");

scanf("%d",&option);

if(option == 1){

char name[15];

printf("\nEnter the name of the country: ");

scanf("%s",&name);

int position, flag = 1;

do{

position = Search(CoronavirusTable, size, name);

if(position != -1)

flag = 0;

else{

printf("That country is unknown! Please try again!\n");

printf("Enter the name of the country: ");

scanf("%s",&name);

}

}while(flag);

printf("\n%s with %.0lf population has %d total cases (%d deaths, %d recovered and %d active cases)\n",CoronavirusTable[position].name,CoronavirusTable[position].population,CoronavirusTable[position].totalCases,CoronavirusTable[position].deaths,CoronavirusTable[position].recovered,CoronavirusTable[position].activeCases);

}

else if(option == 2)

Sort(CoronavirusTable, size);

else{

if(option == 3)

printf("\nBye!");

else

printf("Please enter a valid choice!\n");

}

}while(option != 3);

return 0;

}

int Load\_CoronavirusTable(struct record \*table, char name[]){

int i=0;

FILE \*inFile;

inFile = fopen(name,"r");

if (inFile == NULL){

printf("Error occured while reading the file!");

exit(1);

}

while(fscanf(inFile,"%s %d %d %d %lf\n",table[i].name,&table[i].deaths,&table[i].recovered,&table[i].activeCases,&table[i].population) != EOF)

i++;

fclose(inFile);

return i;

}

void Display\_CoronavirusTable(struct record \*table, int size){

double totalCases;

int i;

static int a = 0; /\* We display this sentence only first we load the file, after the sorting according to sample output,

we do not display this, so as we learnt in the class, I used static int to retain the value, when we load, it will be displayed,

and incremented by 1, and after the sorting, we wont be displaying the sentence.

\*/

if(a == 0){

printf("Following records have been loaded:\n");

a++;

}

printf("\nCountry\t\tDeaths\t\tRecovered\tActive Cases\tPopulation\tTotal Cases\n");

for(i=0;i<size;i++){

table[i].totalCases = table[i].deaths+table[i].recovered+table[i].activeCases;

printf("%-16s%-16d%-16d%-16d%-16.0lf%-16d\n",table[i].name,table[i].deaths,table[i].recovered,table[i].activeCases,table[i].population,table[i].totalCases);

}

}

int Search(struct record \*table, int size, char \*name){

int i, position = -1;

for(i=0;i<size;i++){

if(strcmp(table[i].name,name) == 0)

position = i;

}

return position;

}

void Sort(struct record \*table, int size){

char opSort;

fflush(stdin);

printf("Sort by (T: total cases, A: active cases): ");

scanf("%c",&opSort);

int i,j;

struct record temp;

if(opSort == 'T'){

for(i=1;i<size;i++){

temp = table[i];

for(j=i; j>0 && temp.totalCases > table[j-1].totalCases; j--)

table[j] = table[j-1];

table[j] = temp;

}

}

else if(opSort == 'A'){

for(i=1;i<size;i++){

temp = table[i];

for(j=i; j>0 && temp.activeCases > table[j-1].activeCases; j--)

table[j] = table[j-1];

table[j] = temp;

}

}

Display\_CoronavirusTable(table, size);

}