C and C++ Minor Project #1

Calendar

Program:

#include <stdio.h>

#include <stdlib.h>

int isLeapYear( int year ); /\* True if leap year \*/

int leapYears( int year ); /\* The number of leap year \*/

int todayOf( int y, int m, int d); /\* The number of days since the beginning of the year \*/

long days( int y, int m, int d); /\* Total number of days \*/

void calendar(int y, int m); /\* display calendar at m y \*/

int getDayNumber(int d,int m,int y);

char \*getName(int day);

// Copied from

// https://stackoverflow.com/questions/35103745/read-a-string-as-an-input-using-scanf

void flush()

{

int c;

while ((c = getchar()) != '\n' && c != EOF);

}

typedef struct {

int day;

int month;

int year;

char note[255];

} Note;

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

int year,month, day;

char choice;

Note note;

FILE \*fp;

fp = fopen("note.bin", "r");

if (fp == NULL) {

fp = fopen("note.bin", "w");

}

fclose(fp);

while(1) {

printf("1. Find the day\n");

printf("2. Print calendar of a month\n");

printf("3. Add Note\n");

printf("4. Exit\n");

printf("Enter your choice: ");

scanf("\n%c", &choice);

switch(choice) {

case '1':

printf("Enter the day, month and year: ");

scanf("%d %d %d", &day, &month, &year);

printf("The day is : %s\n", getName(getDayNumber(day, month, year)));

break;

case '2':

printf("Enter the month and year: ");

scanf("%d %d", &month, &year);

printf("Please enter 's' to see the notes\n Press any other key to continue\n");

calendar(year, month);

break;

case '3':

printf("Enter the day, month and year: ");

scanf("%d %d %d", &note.day, &note.month, &note.year);

flush();

printf("Enter the note: ");

fgets(note.note, 255, stdin);

fp = fopen("note.bin", "a+");

if (fp == NULL) {

printf("File note.bin can not be opened\n");

exit(1);

}

fwrite(&note, sizeof(Note), 1, fp);

printf("Note added sucessfully\n");

fclose(fp);

break;

case '4':

printf("Bye!!");

exit(0);

break;

default:

printf("Not a valid option\n");

break;

}

}

return 0;

}

int isLeapYear( int y ){

return(y % 400 == 0) || ((y % 4 == 0) && (y % 100 != 0));

}

int leapYears( int y ){

return y/4 - y/100 + y/400;

}

int todayOf( int y, int m, int d) {

static int DayOfMonth[] =

{ -1,0,31,59,90,120,151,181,212,243,273,304,334};

return DayOfMonth[m] + d + ((m>2 && isLeapYear(y))? 1 : 0);

}

long days( int y, int m, int d){

int lastYear;

lastYear = y - 1;

return 365L \* lastYear + leapYears(lastYear) + todayOf(y,m,d);

}

void calendar(int y, int m){

FILE \*fp;

Note\* notes, note;

int len, j, hasNote = 0;

char choice;

const char \*NameOfMonth[] = { NULL/\*dummp\*/,

"January", "February", "March", "April", "May", "June",

"July", "August", "September", "October", "November", "December"

};

char Week[] = "Su Mo Tu We Th Fr Sa";

int DayOfMonth[] =

{ -1,31,28,31,30,31,30,31,31,30,31,30,31 };

int weekOfTopDay;

int i,day;

weekOfTopDay = days(y, m, 1) % 7;

fp = fopen("note.bin", "rb");

if (fp == NULL) {

printf("Couldn't read notes\n");

}

len = 0;

while(fread(&note, sizeof(Note), 1, fp)) {

if (note.year == y && note.month == m) {

len++;

}

}

rewind(fp);

j = 0;

notes = (Note\*) malloc (sizeof(Note) \* len);

while(fread(&note, sizeof(Note), 1, fp)) {

if (note.year == y && note.month == m) {

notes[j] = note;

j++;

}

}

fclose(fp);

if(isLeapYear(y))

DayOfMonth[2] = 29;

printf("\n %s %d\n%s\n", NameOfMonth[m], y, Week);

for(i=0;i<weekOfTopDay;i++)

printf(" ");

for(i=weekOfTopDay,day=1;day <= DayOfMonth[m];i++,day++){

hasNote = 0;

for (j = 0; j < len; j++) {

if (notes[j].day == day) {

printf("|%2d| ",day);

hasNote = 1;

break;

}

}

if (hasNote == 0) {

printf("%2d ",day);

}

if(i % 7 == 6)

printf("\n");

}

printf("\n");

scanf("\n%c", &choice);

if (choice == 's') {

printf("Here are list of notes for %d %d\n", m, y);

for (j = 0; j < len; j++) {

printf("%d: %s\n", notes[j].day, notes[j].note);

}

} else {

return;

}

}

int getDayNumber(int d, int m, int y){ //retuns the day number

static int t[] = {0, 3, 2, 5, 0, 3, 5, 1, 4, 6, 2, 4};

y -= m < 3;

return (y + y/4 - y/100 + y/400 + t[m-1] + d) % 7;

}

char \*getName(int day){ //returns the name of the day

switch(day){

case 0 :return("Sunday");

case 1 :return("Monday");

case 2 :return("Tuesday");

case 3 :return("Wednesday");

case 4 :return("Thursday");

case 5 :return("Friday");

case 6 :return("Saturday");

default:return("Error: Invalid Argument Passed");

}

}

