Assignment6

Q1

Description :

1、Programming Exercise10.2 No.3

(1)Create a file named employee.dat containing the following data:

Anthony A.J. 10031 7.82 12/18/1962

Burrows W.K. 10067 9.14 6/9/1963

Fain B.D. 10083 8.79 12/20/1972

(2)Write a program called fcopy to read the employee.dat file created in (1) and produce a duplicate copy of the file named employ.bak.

Code :

```
#include<stdio.h>
#include<stdlib.h>

int main()
{
 char ch;
 FILE*file1,*file2;

 file1=fopen("employee.dat","r");
 file2=fopen("copy.dat","w");
 if(file1==NULL)
   printf("file1 is not found !");
 if(file2==NULL)
   printf("file2 is not found !");

 while((ch=fgetc(file1))!=EOF)
 {
  fputc(ch,file2);
 }

 fclose(file1);
 fclose(file2);

 return 0;
 }
```

Input:

None

Output:

The content of Employee.dat:

```
Anthony A.J.    10031      7.82      12/18/1962

Burrows W.K.    10067      9.14      6/9/1963

Fain B.D.       10083      8.79      12/20/1972
```

The content of copy.dat:

```
Anthony A.J.    10031      7.82      12/18/1962

Burrows W.K.    10067      9.14      6/9/1963

Fain B.D.       10083      8.79      12/20/1972
```

Q2

Description :

2、Programming Exercise10.5 No.3

Create a function named setHoliday() that reads and displays the current list of holidays and then lets the user change,add,or delete holidays from the list. After a holiday has been modified, the function should sort the holidays and displays the new list. Finally, the function should ask the user whether the new list should be saved; if the user reponses affirmatively, the function should write the new data to the existing Holidays.txt file, overwriting the contents of the existing file.

Code :

```c
#define MAXN 10000
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <limits.h>

int cmp (const void * a, const void * b)
{
   return ( *(int*)a - *(int*)b );
```

```
}
int getChoice() {
    fflush(stdin);
    char choice;
    while(1) {
        scanf("%c", &choice);
        if(choice == 'y' || choice == 'Y') {
            return 1;
        }
        if(choice == 'n' || choice == 'N') {
            return 0;
        }
        printf("Your input is wrong. Please try again. ");
    }

}

/* Maybe you will think I put huge amount of lines of code into one function
is so stupid,
 * however the description of this problem asks us to do so. Have no choice.
*/

void setHolidays() {

    char fileName[MAXN], content[MAXN];
    FILE * fp;
    int continueFlag = 1;
    int choice;
    int date[MAXN];
    int totalNumber = 0;
    int i, j, k;
    int newHoliday = 0, modifiedDate = 0, modifyDateExistenceFlag = 1,
deleteDateExistenceFlag = 0;
    int deleteDate;

    while(1) {
        fflush(stdin);
        printf("Please input the name of the file containing holidays: ");
        scanf("%s", fileName);
        fp = fopen(fileName, "r");
        if(fp == NULL) {
            printf("The file doesn't exist. Create? (Y for your input name, N
for default name)");
            choice = getChoice();
            if(choice == 1) {
                fp = fopen(fileName, "w+");
                printf("File %s has been created.\n", fileName);
                break;
            }
```

```
            else if (choice == 0){
                fp = fopen("Holiday.txt", "r");
                if(fp == NULL) {
                    printf("File Holiday.txt has been created.\n");
                    fp = fopen("Holiday.txt", "w+");
                }
                else {
                    printf("Holiday.txt already exists.\n");
                    fp = fopen("Holiday.txt", "a+");
                    goto readContent;
                }

                break;
            }
        }
        else {
readContent:    for(i = 0; fgets(content, MAXN, fp) != NULL; i++) {
                date[i] = atoi(content);
                if(date[i] != 0){
                    totalNumber++;
                }
                else
                    i = -1; // Next for loop will let i = 0;
            }
            break;
        }
    }

    while(1) {
        printf("\n----------Welcome----------\n");
        printf("|   1. Display Holiday    |\n");
        printf("|   2. Add new holiday    |\n");
        printf("|   3. Modify holiday     |\n");
        printf("|   4. Delete holiday     |\n");
        printf("|   5. Save & exit        |\n");
        printf("---------------------------\n");
        printf("Please input your choice: ");
        scanf("%d", &choice);

        switch(choice) {

        case 1:
            if(totalNumber == 0) {
                printf("Holiday list empty.\n");
            }
            else {
                qsort(date, totalNumber, sizeof(int), cmp);
                for(i = 0; i < totalNumber; i++) {
                    printf("%d\n", date[i]);
```

```
                }
            }
            break;
        case 2:
            do {
newDate:        printf("Please input a new holiday, format like YYYYMMDD: ");
                scanf("%d", &newHoliday);
                for(i = 0; i < totalNumber; i++) {
                    if(date[i] == newHoliday) {
                        printf("This holiday exists. Please try again.\n");
                        goto newDate;
                    }
                }
                date[totalNumber++] = newHoliday;
                printf("Do you want to add a new one? (Y/N)");
                continueFlag = getChoice();
            }while(continueFlag);
            break;
        case 3:
            do {
modifyDate:     printf("Please input the holiday you want to modify, format
like YYYYMMDD: ");
                scanf("%d", &newHoliday);
                for(i = 0; i < totalNumber; i++) {
                    if(date[i] == newHoliday) {
checkModifyDate:        printf("What should it be? Please input: ");
                        scanf("%d", &modifiedDate);
                        for(j = 0; j < totalNumber; j++) {
                            if(date[j] == modifiedDate) {
                                printf("The modified date exists. Please try
again.\n");
                                goto checkModifyDate;
                            }
                        }
                        date[i] = modifiedDate;
                        break;
                    }
                }
                if(i == totalNumber) {
                    printf("The date you input doesn't exist. Please try
again.\n");
                    goto modifyDate;
                }
                printf("Do you want to modify another one? (Y/N)");
                continueFlag = getChoice();

            }while(continueFlag);
            break;
        case 4:
```

```
            do{
deleteDate:     printf("Please input the holiday you want to delete, format
like YYYYMMDD: ");
                scanf("%d", &deleteDate);
                for(i = 0; i < totalNumber; i++) {
                    if(date[i] == deleteDate) {
                        date[i] = INT_MAX;
                        totalNumber--;
                        deleteDateExistenceFlag = 1;
                        break;
                    }
                }
                if(!deleteDateExistenceFlag) {
                    printf("Not found your input date. Please try again.\n");
                    goto deleteDate;
                }
                printf("Do you want to delete another one? (Y/N)");
                continueFlag = getChoice();
            }while(continueFlag);
            break;
        case 5:
            for(i = 0; i < totalNumber; i++) {
                fprintf(fp, "%d\n", date[i]);
            }
            fclose(fp);
            printf("Thanks for use this program. Have a nice day.");
            return;
            break;
        default:
            printf("You haven't input anything. Try again.\n");
            break;
        }
    }
}

int main() {
    setHolidays();
    getchar();getchar();
    return 0;
}
```

Input:

None

Output:

```
Please input the name of the file containing holidays: holiday.dat
```

```
The file doesn't exist. Create? (Y for your input name, N for default name)Y
File holiday.dat has been created.

----------Welcome----------
|   1. Display Holiday    |
|   2. Add new holiday    |
|   3. Modify holiday     |
|   4. Delete holiday     |
|   5. Save & exit        |
---------------------------
Please input your choice: 1
Holiday list empty.

----------Welcome----------
|   1. Display Holiday    |
|   2. Add new holiday    |
|   3. Modify holiday     |
|   4. Delete holiday     |
|   5. Save & exit        |
---------------------------
Please input your choice: 2
Please input a new holiday, format like YYYYMMDD: 20200501
Do you want to add a new one? (Y/N)Y
Please input a new holiday, format like YYYYMMDD: 20200502
Do you want to add a new one? (Y/N)N

----------Welcome----------
|   1. Display Holiday    |
|   2. Add new holiday    |
|   3. Modify holiday     |
|   4. Delete holiday     |
|   5. Save & exit        |
---------------------------
Please input your choice: 1
20200501
20200502

----------Welcome----------
|   1. Display Holiday    |
|   2. Add new holiday    |
|   3. Modify holiday     |
|   4. Delete holiday     |
|   5. Save & exit        |
---------------------------
Please input your choice: 3
Please input the holiday you want to modify, format like YYYYMMDD: 20200501
What should it be? Please input: 20200503
Do you want to modify another one? (Y/N)Y
Please input the holiday you want to modify, format like YYYYMMDD: 20200502
```

```
What should it be? Please input: 20200504
Do you want to modify another one? (Y/N)N

----------Welcome----------
|   1. Display Holiday    |
|   2. Add new holiday    |
|   3. Modify holiday     |
|   4. Delete holiday     |
|   5. Save & exit        |
--------------------------
Please input your choice: 1
20200503
20200504

----------Welcome----------
|   1. Display Holiday    |
|   2. Add new holiday    |
|   3. Modify holiday     |
|   4. Delete holiday     |
|   5. Save & exit        |
--------------------------
Please input your choice: 4
Please input the holiday you want to delete, format like YYYYMMDD: 20200503
Do you want to delete another one? (Y/N)N

----------Welcome----------
|   1. Display Holiday    |
|   2. Add new holiday    |
|   3. Modify holiday     |
|   4. Delete holiday     |
|   5. Save & exit        |
--------------------------
Please input your choice: 5
Thanks for use this program. Have a nice day.
```

The holiday.dat:

```
2147483647
```

Q3

Description :

3、Programming Exercise10.6 No.5

(1)Write a C program that creates a binary file named grades.bin, and writes the following three lines of data to the file:

(2)Using the data in the grads.bin file created in (1), write a C program that reads,computes, and displays the average of each group of four grades.

Code :

```
#include <stdio.h>
#include <stdlib.h>
FILE * fin;
FILE * fout;

int createBinFile() {
    fout = fopen("grades.bin", "wb") ;
    if(fout == NULL) {
        return 0;
    }
    else {
        fprintf(fout,
"90.3\t92.7\t90.3\t99.8\n85.3\t90.5\t87.3\t90.8\n93.2\t88.4\t93.8\t75.6\t82.4\
t95.6\t78.2\t90.0\n93.5\t80.2\t92.9\t94.4");
        fclose(fout);
        return 1;
    }
}

int readBinFile() {
    double sum = 0;
    double tmp;
    int i, j, k;
    fin = fopen("grades.bin", "rb");
    if(fin == NULL) {
        return 0;
    }
    else {
        for(j = 0; j < 5; j++) {
            sum = 0;
            for(i = 0; i < 4; i++) {
                fscanf(fin, "%lf", &tmp);
                sum += tmp;
            }
            printf("%.2f\n", sum / 4);
        }
        return 1;
    }

}
```

```
int main() {
    if(createBinFile() == 0) {
        printf("File creating error!");
        return 0;
    }
    if(readBinFile() == 0) {
        printf("File reading error!");
        return 0;
    }
    return 0;

}
```

Input:

None

Output:

```
93.28
88.48
87.75
86.55
90.25
```