Homework 13

Objective :

Learning how to use *array, header and file IO*.

Exercise :

13

Binary search is a kind of searching ways. If you want to find something in an array, you can just full search. But it is time-consuming. The consuming of time will reduce if use the Binary search. However, Binary search works only when you give a sorted-array. The conception is the target will compare with the middle element of array, from small to big for example, if the target is smaller, reduce the array size to left side of the middle element, and vice versa. Therefore, every time you compare, the data will reduce to half. This homework you need to write a Binary search. The input of array will use a file. The format of file is two rows: first row has one number for array size. Second row is the number set with space between each number. After sorted, user will keep input target until input EOF, the program stop. This homework has two function below:

1. *void mysort(int* array, int size)*: this function needs two parameters: the array should be sorted, the array size, and this function has no return value. The function need to sort the input array. You can use any sorting way to get the goal. But you can't use build-in sort().

2. *int myBinarySearch(int* array, int target, int head, int tail)*: this function needs four parameters: the array for searching, the target to find in array, the head of the array, the tail of the array, and this function has to return an integer. The function need to use Binary search to find target in array. You can use loop or recursive to find target. If find, return the index in the array. Otherwise return -1.

This homework need to use the header you made, therefore you should hand in three files:

1. main.c/.cpp: you should include your header. In this file, there is no other definition except main function. You can't define global variables and functions.

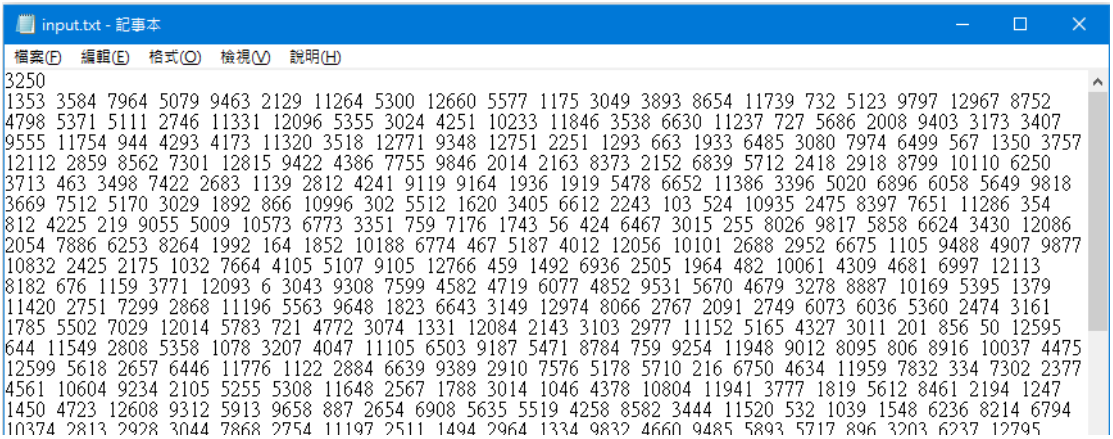
2. (student id).h: include what build-in header you need and define the two functions mentioned above.

3. (student id).c/.cpp: you should include your header. In this file, describe how the two functions work.

Note: make sure there are three required files.

Note: You can change the parameters of the function. However, make sure your format in three files is the same.

input.txt



First row is array size. Second is the number set.

(student id).h:

main.cpp | myheader.cpp | myheader.h

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

void mysort(int* array, int size);
int myBinarySearch(int* array, int target, int head, int tail);
```

Include other headers you need and define function name.

(student id).c/.cpp:

main.cpp | [*] myheader.cpp | myheader.h

```cpp
#include"myheader.h"

void mysort(int* array, int size){
    ...
}

int myBinarySearch(int* array, int target, int head, int tail){
    ...
}
```

describe how the two functions work.

main.c/.cpp:

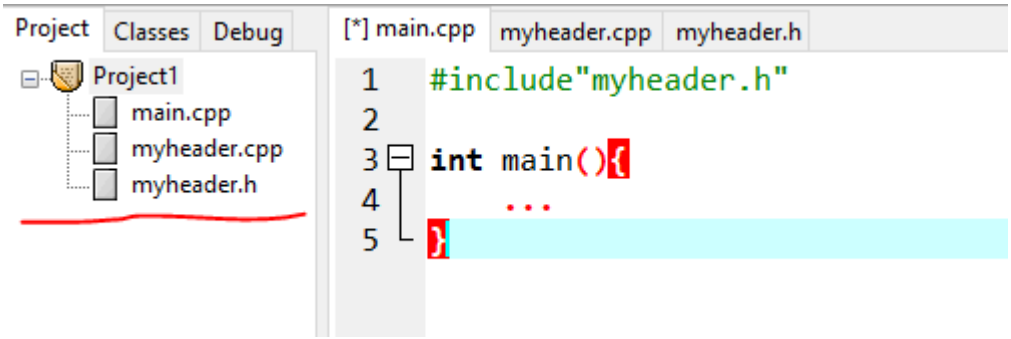
[*] main.cpp | myheader.cpp | myheader.h

```cpp
#include"myheader.h"

int main(){
    ...
}
```

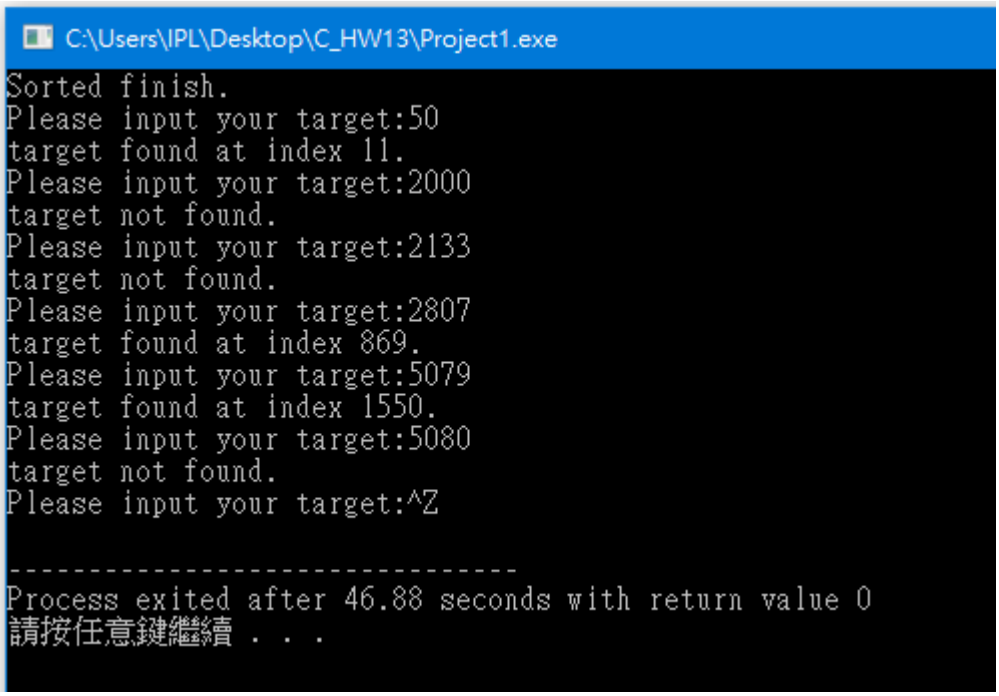
Can only include your header and describe main function.

File location:



Need to be in the same project.

Output:



Rule and Format：

Comment in your program will get addition point in consider.

Please hand in .c file and name your .c file with your student number.

Compress all the .c file and name with your student number.

Upload the compressed file finally.

Example:

If your student number is B073040055, the file name will be B073040055.c.

Compressed file is B073040055.rar/.zip.

Deadline is **2018.12.27** (Thur.) before class.

No input/output will get 0 point.

Please upload homework to Cyber University:

1. Go to NSYSU Cyber University http://cu.nsysu.edu.tw/
2. Sign in and select C program design(I)
3. Click “Assessment Center”

4. Click “Do assignment”

5. Click ”Start”

6. Click ”選擇檔案” -> upload file .cpp -> submit