# 10410EE231001 Introduction to Programming
# Assignment 2
# Due: Dec 31th, 2016 (11:59pm)

## Instructions

1. Your program should be compilable with Code::Blocks and executable on a Windows platform (PC).
2. Submit your project or your source file (main.c) to the iLms system: http://lms.nthu.edu.tw. Your code should be well-commented so that the TAs can easily understand. With proper comments, even if your program cannot be compiled, you may still get partial credits.
3. Please name your file as student ID.c (Ex: 103064533.c)
4. Late submission will incur 10% penalty per day up to 3 days. After that, assignment submission will be closed and no submissions will be accepted.

## Note and Manipulate

Your program should open a file which contains notes, read the data into memory and then manipulate it. One note is composited by following column

- ID
- Name
- Content

A file would contains millions notes(<10000000), so you must use **malloc** and **free** in order to store note data in limited memory.

A note program should support following operations

- list: list all notes on the screen
- add: let the user add a new note
- delete: let the user delete a note by ID
- sort: sort all notes by ID, and DO NOT show on the screen
- save: save all notes in memory to the new file called 'newnote.txt'(**fopen** a new file and use **fprintf** to write the notes in 'newnote.txt'), and DO NOT show on the screen
- exit: terminate the program

### File format

Each line in the file will be a note entry. All columns are separated by a comma(,) and no any spaces before and after a comma. For example:

1,John,How are you?
9,Willy Sr.,Hello world!
5,Chris,My Fork My spoon.

The length of a name is less than 50 and a content is less than 4096 characters and there are no ID duplication.

## Interactive interface

After the user execute the program, it should show '>' to prompt user to input the command, and commands are in lower-case, for 'delete', you also must show '(id)>' to prompt user to input the command. To see how it works, please download the video.zip file.

## Hint

- Use structure and pointer of structure:

```
typedef struct{
        int id;
        char name[50];
        char content[4096];
}Note;
```

- When you sort the notes, just swap the pointer of structure, hence try to use **qsort** (quick sort, please google it!!You may just copy this algorithm from internet.) and avoid to copy string when sorting will make your program effective.
- You may use **Note* note=malloc(10000000*sizeof(Note))**;

# Guidelines

1. Mark weightings: correctness 70%, Source code readability 30%.
2. Correctness: Make sure you understand what the program should do in every case, including special cases.
3. Program style:
   A. Your program should include at least 4 functions.
   B. Their functionality should be well-defined, easily understandable, and clearly documented as comments within the source code. Add sufficient and appropriate comments to your program.
4. You are welcome to discuss with each other, but DO NOT COPY OTHER PEOPLE'S WORK. Plagiarism is a serious offense. Not only will you get no points in this assignment, but you may also be reported to the university.