# Program Design - Final Project

Team by 隨便

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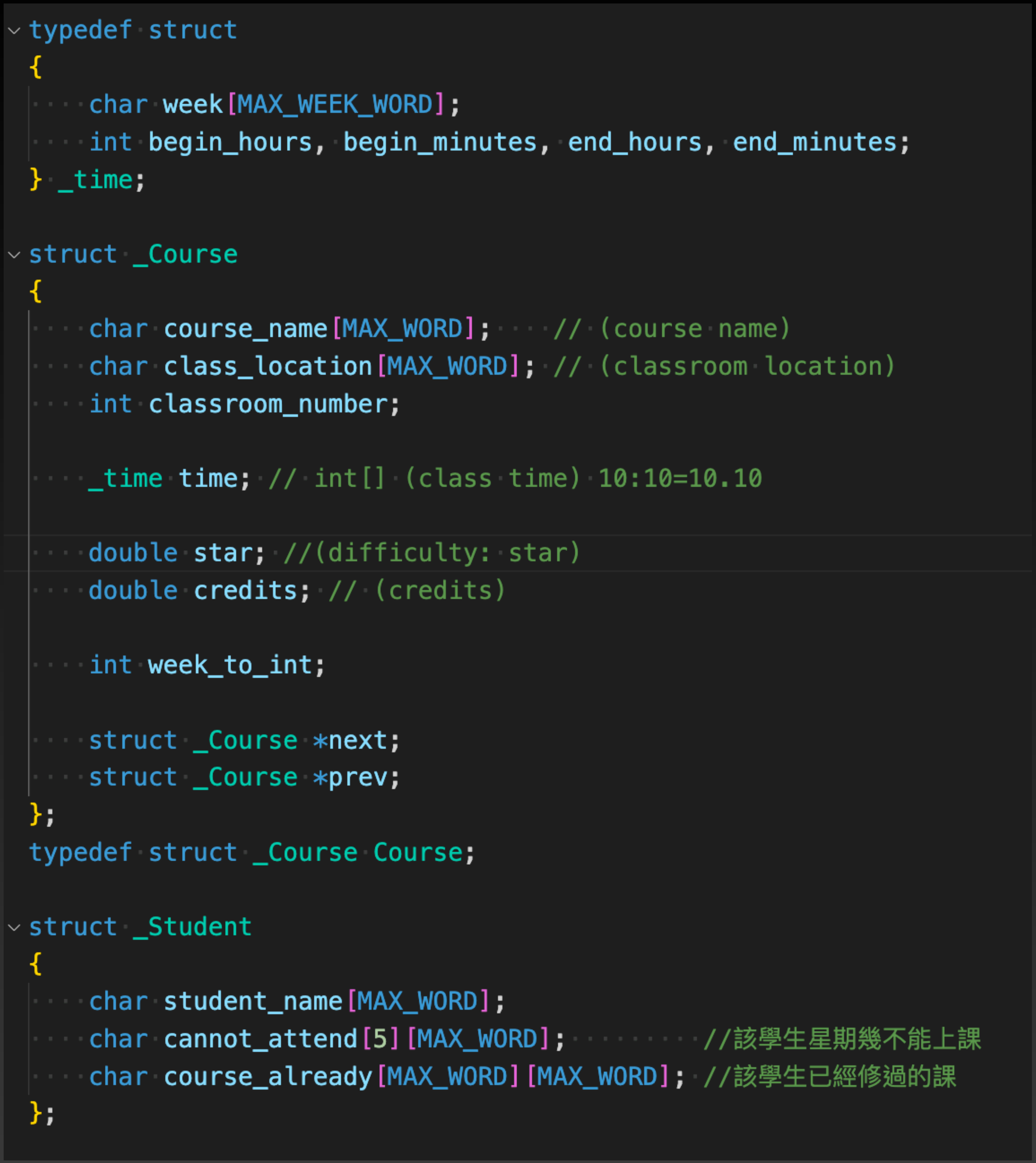
# Completed Project

- Database: we use two main structures , one for course materials, and one for student
- Basic requirements : Add , Delete , Traverse , Search , Sort
- Advanced parts : Dynamic Programming activity-select , Graph(DFS-find shortest path, and print out the shortest path visit process)

# Database

- Structure for course materials include : course_name, class_location, classroom_number, time(Nested Structures), star(課程難度), credits(學分) , week_to_int, *next, *prev
- Structure for course student include: student_name, cannot_attend(星期幾無法上課), course_already(已經修過的課)



```c
typedef struct
{
    char week[MAX_WEEK_WORD];
    int begin_hours, begin_minutes, end_hours, end_minutes;
} _time;

struct _Course
{
    char course_name[MAX_WORD];    // (course name)
    char class_location[MAX_WORD]; // (classroom location)
    int classroom_number;

    _time time; // int[] (class time) 10:10=10.10

    double star; //(difficulty: star)
    double credits; // (credits)

    int week_to_int;

    struct _Course *next;
    struct _Course *prev;
};
typedef struct _Course Course;

struct _Student
{
    char student_name[MAX_WORD];
    char cannot_attend[5][MAX_WORD];        //該學生星期幾不能上課
    char course_already[MAX_WORD][MAX_WORD]; //該學生已經修過的課
};
```

# Basic Requirements

- Add : Add courses to linked list
- Delete : Delete courses from linked list
- Traverse : Print all course in the linked list
- Search :Entering a course name to search for whether this course is in the linked list
- Sort : Sort all courses by course start time

# Advanced Parts

- Dynamic programming activity-select
  This situation is as follows : The student is very busy so he cannot schedule classes on Monday and Tuesday, but he want to  finish the class as soon as possible, so how should he arrange the class schedule? (He will also prefer to choose courses with high cost performance ratio).
  Problem :  overlapping time, and cost performance ratio selection
- Graph : Enter two course name, then it will print out the shortest route from course A to course B, and how to get there.

# Work Distribution

- Database - Course : 410530049_陳宏葦
- Database - Student : 409510049_孫渝鈞
- Basic requirements - Add, Delete, Traverse : 410530049_陳宏葦
- Basic requirements - Sort : 407115049_林永晏
- Dynamic programming activity-select : 409510049_孫渝鈞
- Graph - Creat a campus map: 409335047_江若綾
- Graph - Basic map template : 409515032-蘇冠瑋
- Graph - DFS : 409510049_孫渝鈞
- Program optimization : 409335047_江若綾、409510049_孫渝鈞