Practice S11P05: Class Schedule

http://www.comp.nus.edu.sg/~cs1010/4_misc/practice.html

Week of release: Week 11

Objectives: Array of structures

Task statement:

Write a program **schedule.c** that uses the **interval_t** structure which contains two integer members: **start** and **finish** of an interval. The program is to read the following data:

- The first integer contains a positive value *n* representing the number of lessons. You may assume there are at most 20 lessons.
- This is followed by data for the *n* lessons. For each lesson, two non-negative integers *start* and *finish*, where *start* < *finish*, represent the start time and finish time of the lesson. You may assume that the latest finish time is 1000.

Assuming that the following data have been prepared by the user:

```
9
200 240
210 230
30 60
80 100
10 40
200 260
260 280
150 180
160 170
```

Your program is to compute the following:

- The duration of the longest lesson. In the above example, the longest lesson is from 200 to 260 with duration of **60**.
- The number of free periods from the time the first lesson starts to the time the last lesson ends. In the above example, there are **3** free periods: 60 to 80, 100 to 150, and 180 to 200. (0 to 10, and 280 to 1000 are not considered free periods.)
- The most number of concurrent lessons. In the above example, there are **3** concurrent lessons going on during the period 210 to 230.

You may create additional array(s) and/or functions if necessary.

Sample runs:

```
Enter number of intervals: 9
Enter 9 intervals:
200 240
210 230
30 60
80 100
10 40
200 260
260 280
150 180
160 170
Duration of longest lesson = 60
Number of free periods = 3
Most number of concurrent lessons = 3

Enter number of intervals: 3
Enter 3 intervals:
10 20
20 30
30 40
Duration of longest lesson = 10
Number of free periods = 0
Most number of concurrent lessons = 1
```