

# Code For Thoughtworks Homework

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## Description

Design a Badminton field management system. And there are four badminton fields, named A, B, C, D. The charge standard is below:

### Charge for booking

- Monday to Friday :
  - 9:00 ~ 12:00 30 yuan
  - 12:00 ~ 18:00 50 yuan
  - 18:00 ~ 20:00 80 yuan
  - 20:00 ~ 22:00 60 yuan
- Saturday to Sunday:
  - 9:00 ~ 12:00 40 yuan
  - 12:00 ~ 18:00 50 yuan
  - 18:00 ~ 22:00 60 yuan

### Fee for canceling the booking:

- Weekday: 25%
- Workday: 50%

### Input command demo:

- U123 2016-06-02 20:00~22:00 A
- U123 2016-06-02 20:00~22:00 A C

## Environment of the Program

- This program is developed in [Dev-C++5.11](#).
- Language: **C++**
- Operating system: **Window 10**.
- This program is not depended on any library package which is not included in the system.
- All the code is developed by myself. This program could satisfy all the requirement of this homework. And I have done some unit tests successfully.

## Design of the Program

To satisfy the requirement, there are some classes developed as following:

- **ConfigTool**: This class is used to read the configuring file which is universal.
- **ConfigBadminton**: This class is inherited from ConfigTool, and its member method can resolve configuring variables for Badminton field from the configuring file.
- **record**: This class is basic type for recording booking or canceling information.
- **BadmintonField**: Main class. Each object of this class is corresponding to Badminton field entity. It should be configured with basic charge information. And it contains some indispensable method, such as booking, canceling and so on.
- **BadmintonContainer**: This is a container or factory for BadmintonField.
- **ResolveCommand**: Resolve the command string from standard input stream.
- **BadmintonRun**: This class only have one member method for driving all the modules.

This program is configured by a configure file, named 'badmintonManager.config'. And its usage is shown in the annotation of the file. You could change the value of the variables in the configure file to satisfy new requirement. The meaning of the variables are below:

- **field**: string for the name of the badminton field. For example, "ABCD" is for field A, B, C, D.
- **timeStart1**, **timeEnd1**, **weekFee1**, **workFee1**: The charge standard for a time interval in weekend and workday.
- **weekendCancel**: charge for canceling on the weekend.
- **workdayCancel**: charge for canceling on the workday.

To validate all the modules, I develop a simple Unit test engine referred to gtest and a blog article.

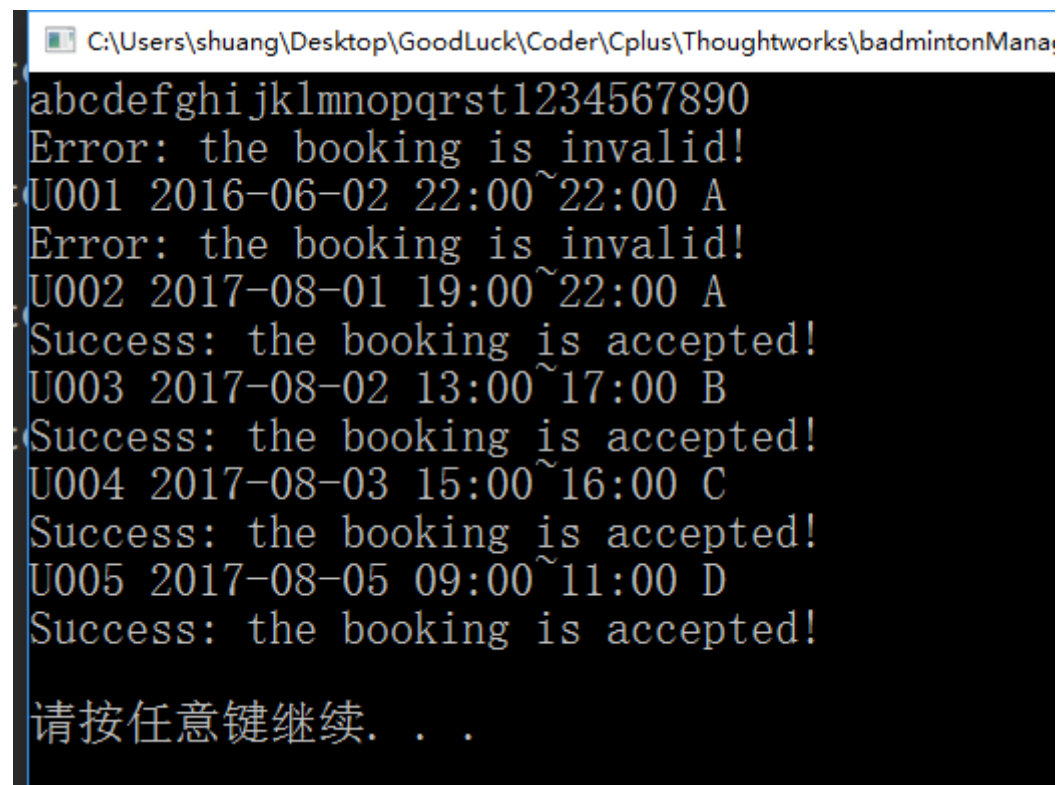
If you need to test one class, you could just add a source file according to standard format, and then compile the test project again.

# Test for the Program

This main program is designed to accept lines of commands and output the total incoming information to txt file. In this program, the txt file named "output.txt" is located in the root directory of the project. And the executable program is also located in the root directory. If your computer is window operating system, you can execute it and test this program.

## Test case 1

Command input

A screenshot of a Windows command prompt window. The title bar shows the file path: C:\Users\shuang\Desktop\GoodLuck\Coder\Cplus\Thoughtworks\badmintonMana. The command prompt has a black background with yellow text. The output shows a series of commands and responses. The first line is a long string of characters: 'abcdefghijklmnopqrst1234567890'. The next two lines are 'Error: the booking is invalid!'. Then 'U001 2016-06-02 22:00~22:00 A' is followed by 'Error: the booking is invalid!'. Then 'U002 2017-08-01 19:00~22:00 A' is followed by 'Success: the booking is accepted!'. Then 'U003 2017-08-02 13:00~17:00 B' is followed by 'Success: the booking is accepted!'. Then 'U004 2017-08-03 15:00~16:00 C' is followed by 'Success: the booking is accepted!'. Then 'U005 2017-08-05 09:00~11:00 D' is followed by 'Success: the booking is accepted!'. The final line is '请按任意键继续. . .' in Chinese.

```
C:\Users\shuang\Desktop\GoodLuck\Coder\Cplus\Thoughtworks\badmintonMana:
abcdefghijklmnopqrst1234567890
Error: the booking is invalid!
U001 2016-06-02 22:00~22:00 A
Error: the booking is invalid!
U002 2017-08-01 19:00~22:00 A
Success: the booking is accepted!
U003 2017-08-02 13:00~17:00 B
Success: the booking is accepted!
U004 2017-08-03 15:00~16:00 C
Success: the booking is accepted!
U005 2017-08-05 09:00~11:00 D
Success: the booking is accepted!

请按任意键继续. . .
```

Output txt file

1	收入汇总
2	---
3	场地:A
4	2017-08-01 19:00~22:00 200元
5	小计: 200元
6	
7	场地:B
8	2017-08-02 13:00~17:00 200元
9	小计: 200元
10	
11	场地:C
12	2017-08-03 15:00~16:00 50元
13	小计: 50元
14	
15	场地:D
16	2017-08-05 9:00~11:00 80元
17	小计: 80元
18	---
19	总计: 530元

## Test case 2

Command input

```

C:\Users\shuang\Desktop\GoodLuck\Coder\Cplusplus\Thoughtworks\badmintonManager\badmintonManager.exe
U002 2017-08-01 19:00~22:00 A
Success: the booking is accepted!
U003 2017-08-01 18:00~20:00 A
Error: the booking conflicts with existing bookings!
U002 2017-08-01 19:00~22:00 A C
Success: the booking is accepted!
U002 2017-08-01 19:00~22:00 A C
Error: the booking being cancelled does not exist!
U003 2017-08-01 18:00~20:00 A
Success: the booking is accepted!
U003 2017-08-02 13:00~17:00 B
Success: the booking is accepted!

请按任意键继续. . .

```

Output txt file

1 收入汇总

2 ---

3 场地:A

4 2017-08-01 18:00~20:00 160元

5 2017-08-01 19:00~22:00 违约金 100元

6 小计: 260元

7

8 场地:B

9 2017-08-02 13:00~17:00 200元

10 小计: 200元

11

12 场地:C

13 小计: 0元

14

15 场地:D

16 小计: 0元

17 ---

18 总计: 460元

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