C 程式設計題

命題者：TWK

題目名稱(中文/英文)：write a poker evaluation program

主要測試觀念：

Basics

- ☐ Keywords and Identifier
- ☐ Variables and Constants
- ☐ Programming Data Types
- ☐ Expressions
- ☐ Basic Input/Output
- ☐ Programming Operators

Decision and Loops

- ☐ Programming if...else
- ■ Programming for Loops
- ☐ do...while Loops
- ☐ break and continue
- ☐ switch...case Statement
- ☐ Programming goto

Functions

- ■ User-defined Functions
- ☐ Function Types
- ☐ Programming recursion
- ■ Storage Class (variable life)

Arrays and Strings

- ■ Arrays
- ☐ Multi-dimensional Arrays
- ☐ Arrays and Functions
- ☐ Strings and Functions

Pointers

- ■ Pointers And Arrays
- ☐ Pointers And Functions
- ☐ Dynamic Memory Allocations

Structure and Union

- ☐ Structures and Pointers
- ☐ Structure and Function
- ☐ Programming Unions

Files I/O

- ☐ Files Input/Output basics
- ☐ Character I/O and String I/O
- ☐ Block I/O
- ☐ Advanced File I/O manipulations

Miscellaneous

- ☐ Enumeration
- ☐ Preprocessor
- ☐ Low level programming
- ☐ Error handling
- ☐ Standard/advanced library

Other

- ☐ Programming logic training
- ☐ Programming structure/design training
- ☐ Localization issues
- ☐ _____

題目說明：Please write an evaluator for 5-card poker games. Given 5 cards which are randomly draw from a full deck of 52 card (without Jokers). Each card in the hand will have both a suit (clubs, diamonds, hearts. or spades) and a rank (two, three, four, five, sir, seven, eight, nine, ten, jack, queen, king, or ace). We'll assume that aces are high. The hand is classified into one of the following categories (listed in order from best to worst): ① Straight Flush (both a straight and a flush), ② Four-Of-A-Kind (four cards of the same rank), ③ Full House (a three-of-a-kind and a pair), ④ Flush (five cards of the same suit), ⑤ Straight (five cards with consecutive ranks), ⑥ Three-Of-A-Kind (three cards of the same rank), ⑦ Two Pairs, ⑧ Pair (two cards of the same rank), ⑨ High Card (any other hand).

If a hand falls into two or more categories, the program will choose the best one. Note that for input purpose, we'll abbreviate ranks and suits as follows (in the ascending order and letters must be lower-case):

    Ranks: 2 3 4 5 6 7 8 9 t j q k a

    Suits: c d h s

If the user enters an illegal card or tries to enter the same card twice, the program will issue an error message "Illegal card", "Duplicate card", or "Illegal and Duplicate cards".

Note: There are no external variables allowed in your program. That means functions in your program have to communicate by passing arguments.

輸入說明： 5 cards each represented by rank and suit; for instance 2s 3d 4h 5c 6d.

輸出說明： One of the category mentioned above and five cards in the ascending order or error messages.

IO 範例 ：

測資與輸出	Sample Input	Sample Output
第一組	2s 5s 4s 3s 6S	Straight Flush 2s 3s 4s 5s 6s
第二組	10 as 8C ad d2	Illegal card
第三組	6s 2d 9c 4h ts	High Card 2d 4h 6s 9c ts

附屬資料：
☑解答程式： ClassifyAPokerHand.c(檔名)
☑測試資料：input.txt, output.txt

☐易，僅需用到基礎程式設計語法與結構（如單迴圈等）
■中，需用到多項程式設計語法與結構（如雙層迴圈等）
☐難，需用到多項程式結構或較為複雜之資料型態或結構（如遞迴、串連等）

解題時間：30 分鐘。

其他註記：