**物件導向程式設計**

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| **題目名稱(中文/英文)：Row Transposition Cipher** |
| **主要測試觀念：**   |  |  | | --- | --- | | **Basics** | **Functions** | | ■ C++ BASICS  □ FLOW OF CONTROL  ■ FUNCTION BASICS  □ PARAMETERS AND OVERLOADING  ■ ARRAYS  □ STRUCTURES AND CLASSES  □ CONSTRUCTORS AND OTHER TOOLS  □ OPERATOR OVERLOADING, FRIENDS, AND REFERENCES  ■ STRINGS  □ POINTERS AND DYNAMIC ARRAYS | □ SEPARATE COMPILATION AND NAMESPACES  □ STREAMS AND FILE I/O  □ RECURSION  □ INHERITANCE  □ POLYMORPHISM AND VIRTUAL FUNCTIONS  □ TEMPLATES  □ LINKED DATA STRUCTURES  □ EXCEPTION HANDLING  ■ STANDARD TEMPLATE LIBRARY  □ PATTERNS AND UML | |
| **題目說明：**  In a row transposition, the plaintext is written out in columns of a fixed length, and then read out again row by row, and the row are chosen in some scrambled order.  Follow the example below, the plaintext is “**Row Transposition”** that written out in columns. The **white space** should be replaced by **underline.** The counts of rows depending on your input keys, then reorder the rows by input key to get **ciphertext**.  **Example:**  　　Plaintext : **Row Transposition**  　　Key : **3 0 6 1 2 5 4**   |  |  | | --- | --- | | 0 Rni  1 oso  2 wpn  3 \_o  4 Ts  5 ri  6 at |  |   　　Ciphertext : \_oRniatosowpnriTs  **輸入說明：**  Given a **plaintext** and a **numeric key**, encrypt the given text using Row transposition Cipher. The **plaintext** consists of ASCII characters, and the key is a shuffled integer sequence from 0 ~ N (0 < N < 231 - 1).  **輸出說明：**  Output the ciphertext encrypted by plaintext and key.  **IO範例 :**   |  |  |  | | --- | --- | --- | |  | **Sample Input** | **Sample Output** | | 第一組測資與輸出 | Row Transposition  3 0 6 1 2 5 4 | \_oRniatosowpnriTs |  | | 第二組測資與輸出 | int main(void){return 0;}  3 0 4 1 2  Apple  0 1 2 3 4 5 6 7 8 9 10 | \_()u;iaornmv{r}niie\_tndt0  Apple | | … | … | … | |
| **附屬資料︰**  🗹 解答程式： 02\_ RowTranspositionCipher.cpp  🗹 測試資料：input1.txt, output1.txt, input2.txt, output2.txt, input3.txt, output3.txt |
| □易，僅需用到基礎程式設計語法與結構  ■中，需用到多項程式設計語法與結構  □難，需用到多項程式結構或較為複雜之資料型態或結構 |
| **解題時間： 20**分鐘。 |
| **其他註記：**Make good use of **string::find**, **string::replace**, **std::stringstream** etc. |