CPP 程式設計題

命題者：TKG

題目名稱(中文/英文)：Maximize Pulse

主要測試觀念：Array、Basic logic、Std I/O

Basics	Functions
■ C++ BASICS	☐ SEPARATE COMPILATION AND NAMESPACES
■ FLOW OF CONTROL	☐ STREAMS AND FILE I/O
☐ FUNCTION BASICS	☐ RECURSION
☐ PARAMETERS AND OVERLOADING	☐ INHERITANCE
■ ARRAYS	☐ POLYMORPHISM AND VIRTUAL FUNCTIONS
☐ STRUCTURES AND CLASSES	☐ TEMPLATES
☐ CONSTRUCTORS AND OTHER TOOLS	☐ LINKED DATA STRUCTURES
☐ OPERATOR OVERLOADING, FRIENDS,AND REFERENCES	☐ EXCEPTION HANDLING
☐ STRINGS	☐ STANDARD TEMPLATE LIBRARY
☐ POINTERS AND DYNAMIC ARRAYS	☐ PATTERNS AND UML

題目說明：

Assume that a generator outputs a signal S composed of zeros and ones, as long as it remains batteries. Each signal output consumes one battery. The number of pulses in a set of S is defined as the number of such pairs (i, j), that $i < j$ and $S_i = 1$ and $S_j = 0$.

Your classmate Xiao Ming wants to reorder the signals from generators, so as to maximize the number of pulses through a simulation program. Please help him solve the problem.

輸入說明：

The first line containing a positive integer n $(0 < n \le 10^5)$ represents the number of batteries in a generator. The following n lines contain n signals of numbers 1's and 0's, one signal per line. None of signals should be empty. All generators should be solved until EOF.

輸出說明：

Output an integer that represents maximum number of pulses.

For example, there are 18 pulses in the first sample if its output sequence were 1110010001.
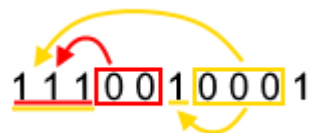
The first two zeros can be combined with those three 1's before them, producing 6 pulses. The last three zeros can be combined with the four 1's before them, producing 12 pulses. Thus, 18 pulses can be generated totally.

IO 範例：

Sample Input	Sample Output
4 110 01 1 0001	18
2 0 1	1
1 0	0

附屬資料：

☑解答程式：Source.cpp(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

□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：10 分鐘

其他註記：

The optimal sequence in the first sample is 1110010001.