計算機韌體實驗（P08）
古老的密碼/Ancient Cipher

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解題要訣

- 在可重排的條件下，字母的位置不重要；重要的是每個字母出現的次數
  - 只要次數排序之後的結果相同，兩個字串即可透過重排和一一映射
  - 使用排序函數sort()

cin的用法

- cin遇檔尾(EOF)轉換為0, false

```
25      while(cin >> stringA){
26          cin >> stringB;
                  :
                  :
49      }
```

排序

```
28          memset(countA, 0, sizeof(countA)); Lib.
29          memset(countB, 0, sizeof(countB));
30
31          len = strlen(stringA);
32          for(i=0; i<len; i++){
33              countA[stringA[i] - 'A']++;
34              countB[stringB[i] - 'A']++;
35          }
36
37          sort(countA, countA+26); //sort A[0], A[1], ..., A[25] Lib.
38          sort(countB, countB+26); //sort B[0], B[1], ..., B[25]
```

判定是否可以一一映射

```
40          ans = true;
41          for(i=0; i<26; i++){
42              if(countA[i] != countB[i]){
43                  ans = false;
44                  break;
45              }
46          }
47
48          cout << (ans ? "YES" : "NO") << endl;
```

Lib. Functions (1/2)

- void *memset(void *ptr, int value, size_t num);
  - Defined in <string>
  - Fill block of memory
    - Set the first *num* bytes of the block pointed by *ptr* to the specified *value* (interpreted as an unsigned char)
    - E.g. Clear (reset) the blocks of memory, countA and countB

```
28          memset(countA, 0, sizeof(countA));
29          memset(countB, 0, sizeof(countB));
```

Lib. Functions (2/2)

- void sort(*pointerA* to the first element,
  pointerB to the last element);
  - Defined in <algorithm>
  - Sort the elements in the range [*pointerA*, *pointerB*) in ascending order
  - Overload operator <
  - E.g.

```
37          sort(countA, countA+26); //sort A[0], A[1], ..., A[25]
38          sort(countB, countB+26); //sort B[0], B[1], ..., B[25]
```