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## 1 Shell Script

```

1 #!/bin/bash
2 clear
3 g++ $1.cpp -DDBG -o $1
4 if [[ "$?" == "0" ]]; then
5     echo Running
6     ./$1 <$1.in> $1.out
7     echo END
8 fi

```

## 2 Libraries

### 2.1 cstdlib

```

1 #include <cstdlib>
2 using namespace std;
3 // Function: String conversion
4 double atof(const char* str);
5     // Convert string to double
6 int atoi(const char* str);
7     // Convert string to integer
8 long int atol(const char* str);
9     // Convert string to long integer
10 long long int atoll(const char* str);
11     // Convert string to long long integer
12 double strtod(const char* str, char** endptr);
13     // Convert string to double;
14 float strtof(const char* str, char** endptr);
15     // Convert string to float
16 long int strtol(const char* str, char** endptr,
17     int base);
18     // Convert string to long integer
19 long double strtold(const char* str, char**
20     endptr);
21     // Convert string to long double
22 long long int strtoll(const char* str, char**
23     endptr, int base);
24     // Convert string to long long integer
25 unsigned long int strtoul(const char* str, char**
26     endptr, int base);
27     // Convert string to unsigned long integer
28 unsigned long long int strtoull(const char* str,
29     char** endptr, int base);
30     // Convert string to unsigned long long
31     integer
32 // Function: Integer arithmetics
33 int abs(int n);
34 long int llabs(long int n);
35 long long int llabs(long long int n);
36     // Absolute value

```

### 2.2 algorithm

```

1 #include <algorithm>
2 using namespace std;
3 // FI(ForwardIterator)
4 // RAI(RandomAccessIterator)
5 // BI(BidirectionalIterator)
6 void sort(RAI first, RAI last);
7
8 FI lower_bound(FI first, FI last, const T& k);
9     /* 最左邊 ≥ k 的位置 */
10
11 FI upper_bound(FI first, FI last, const T& k);
12     /* 最左邊 > k 的位置 */
13
14 pair<FI, FI> equal_range(FI first, FI last, const
15     T& k);
16     /* 等於 k 的範圍 [lower_bound, upper_bound) */
17
18 bool next_permutation(BI first, BI last);
19     /* 使用已經排序(由小到大)的資料，產生下一組排列 */
20
21 bool prev_permutation(BI first, BI last);
22     /* 針對逆向排序(由大到小)的資料，產生上一組排列 */

```

### 2.3 map

### 2.4 set

### 2.5 vector

### 2.6 string

## 3 Algorithms

### 3.1 最短路

#### 3.1.1 Bellman-Ford

#### 3.1.2 Dijkstra's

### 3.2 LIS - Longest Increasing Subsequence

## 4 Formula

### 4.1 thm

- 中文測試

$$\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$$