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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
4 int main() {
5
6     // Functions
7     // String conversion
8     double atof (const char* str); //
9         Convert string to double; return 0.0
10         if no conversion
11     int atoi (const char * str); //
12         Convert string to integer;
13     long int atol ( const char * str ); //
14         Convert string to long integer;
15         return 0 if no conversion
16     long long int atoll ( const char * str );
17         // Convert string to long long
18         integer; return 0 if no conversion
19     double strtod (const char* str, char**
20         endptr); // Convert string to double;
21         return 0.0 if no conversion,
22         HUGE_VAL(cmath) if out of range
23     float strtof (const char* str, char**
24         endptr); // Convert string to float
25
26     strtol
27         Convert string to long integer (function)
28
29     strtold
30         Convert string to long double (function)
31
32     strtoll
33         Convert string to long long integer (function)
34
35     strtoul
36         Convert string to unsigned long integer (function)
```

```
27 strtoull
28     Convert string to unsigned long long integer
29     (function)
30
31 Pseudo-random sequence generation
32
33 rand
34     Generate random number (function)
35
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37     Initialize random number generator (function)
38
39 Searching and sorting
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44 qsort
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48
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51
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53     Integral division (function)
54
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56     Absolute value (function)
57
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59     Integral division (function)
60
61 llabs
62     Absolute value (function)
63
64 lldiv
65     Integral division (function)
66
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68
69 NULL
70     Null pointer (macro)
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72 RAND_MAX
73     Maximum value returned by rand (macro)
74
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76
77 div_t
78     Structure returned by div (type)
79
80 ldiv_t
81     Structure returned by ldiv (type)
82
83 lldiv_t
84     Structure returned by lldiv (type)
85
86 size_t
87     Unsigned integral type (type)
88
89 return 0;
90 }
91
```

2.2 algorithm

```
1 #include <algorithm>
```

```

2 using namespace std;
3
4 int main() {
5     // FI(ForwardIterator)
6     // RAI(RandomAccessIterator)
7     // BI(BidirectionalIterator)
8     void sort(RAI first, RAI last);
9
10    FI lower_bound(FI first, FI last, const T& k);
11    /* 最左邊 ≥ k 的位置 */
12
13    FI upper_bound(FI first, FI last, const T& k);
14    /* 最左邊 > k 的位置 */
15
16    pair<FI,FI> equal_range(FI first, FI last, const
17        T& k);
18    /* 等於 k 的範圍 [lower_bound, upper_bound) */
19
20    bool next_permutation(BI first, BI last);
21    /* 使用已經排序(由小到大)的資料，產生下一組排列 */
22
23    bool prev_permutation(BI first, BI last);
24    /*
25     * 針對已經「逆向」排序(由大到小)的資料，產生上一組排序
26     */
27
28    return 0;
29 }

```

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

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