Contents

1 basic

1.1 binarySearch

```cpp
#include <bits/stdc++.h>
using namespace std;

int binary_search(const vector<int> &data, int key)
{
    int low = 0;
    int high = data.size()-1;
    while (low <= high)
  {
        int mid = int((low + high) / 2);
        if (key == data[mid])
            return mid;
        else if (key > data[mid])
            low = mid + 1;
        else
            high = mid - 1;
    }
    return -1;
}

int main()
{
    vector<int> data = {1, 9, 2, 7, 4, 10, 3, 8, 5, 6};
    int key = 7;

    sort(data.begin(), data.end());

    int ret = binary_search(data, key);
    if (ret == -1)
        cout << "找不到\n";
    else
        cout << "找到索引值" << ret << "\n";
  //lower_bound(a, a + n, k);      //最左邊 ≥ k 的位置
  //upper_bound(a, a + n, k);      //最左邊 > k 的位置
  //upper_bound(a, a + n, k) - 1; //最右邊 ≤ k 的位置
  //lower_bound(a, a + n, k) - 1; //最右邊 < k 的位置
  //[lower_bound, upper_bound) //等於 k 的範圍
  //equal_range(a, a+n, k);
}
```

1.2 stringstream

```cpp
#include <sstream>
using namespace std;

int main()
{
  stingstream ss;
  int num = 1234;
  string output;

  ss << num;
  ss >> output; //integer to string

  string_to_int << ss;
  string_to_int >> num; //string to integer

  ss.str("");
  ss.clear(); //initialization

  return 0;
}
```

2 Section1

2.1 basic

```cpp
// c++ code
#include <bits/stdc++.h>
using namespace std;

int main() {
    // test comment
    cout << "test string\n";
}
```

3 Section2

3.1 thm

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