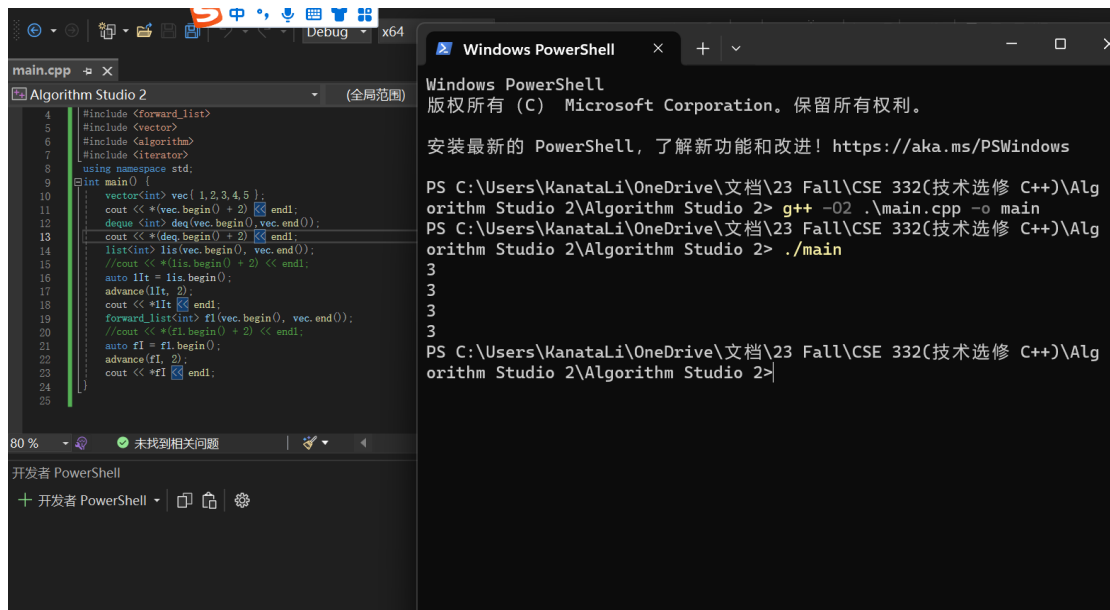


1.



```
main.cpp
#include <forward_list>
#include <vector>
#include <algorithm>
#include <iterator>
using namespace std;

int main() {
    vector<int> vec{ 1, 2, 3, 4, 5 };
    cout << *(vec.begin() + 2) << endl;
    deque<int> deq(vec.begin(), vec.end());
    cout << *(deq.begin() + 2) << endl;
    list<int> lis(vec.begin(), vec.end());
    //cout << *(lis.begin() + 2) << endl;
    auto lit = lis.begin();
    advance(lit, 2);
    cout << *lit << endl;
    forward_list<int> fl(vec.begin(), vec.end());
    //cout << *(fl.begin() + 2) << endl;
    auto fl = fl.begin();
    advance(fl, 2);
    cout << *fl << endl;
}
```

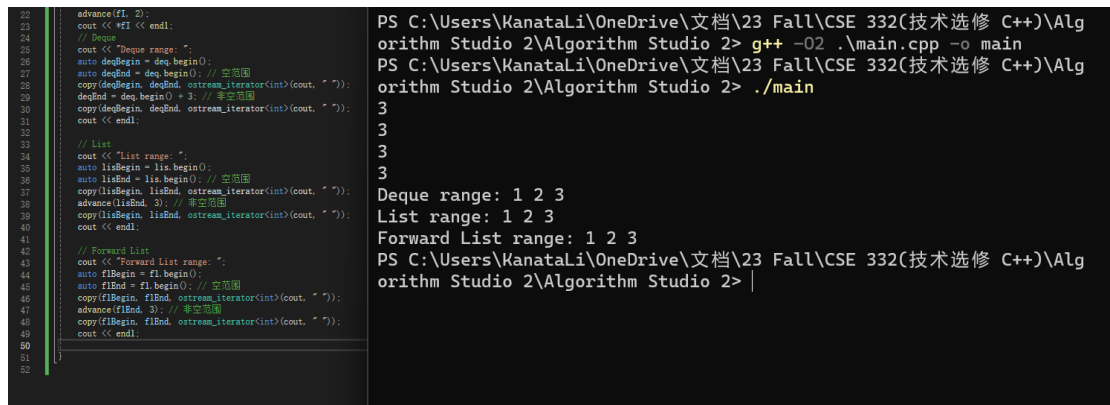
```
Windows PowerShell
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安装最新的 PowerShell，了解新功能和改进！ https://aka.ms/PSWindows

PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> g++ -O2 .\main.cpp -o main
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> ./main
3
3
3
3
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2>
```

Queue&deque, since the iterators are random-accessible, I did it by pointer arithmetic,  $O(1)$   
List & forward\_list, since the iterators are not random-accessible, I did it by iterate through it  $O(n)$

2.



```
main.cpp
#include <forward_list>
#include <vector>
#include <algorithm>
#include <iterator>
using namespace std;

int main() {
    vector<int> vec{ 1, 2, 3, 4, 5 };
    cout << *(vec.begin() + 2) << endl;
    deque<int> deq(vec.begin(), vec.end());
    cout << *(deq.begin() + 2) << endl;
    list<int> lis(vec.begin(), vec.end());
    //cout << *(lis.begin() + 2) << endl;
    auto lit = lis.begin();
    advance(lit, 2);
    cout << *lit << endl;
    forward_list<int> fl(vec.begin(), vec.end());
    //cout << *(fl.begin() + 2) << endl;
    auto fl = fl.begin();
    advance(fl, 2);
    cout << *fl << endl;
}
```

```
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> g++ -O2 .\main.cpp -o main
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> ./main
3
3
3
3
Deque range: 1 2 3
List range: 1 2 3
Forward List range: 1 2 3
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2>
```

When using the empty range i.e. [begin, begin), nothing is outputted

When using a non-empty range, corresponding content, namely, [begin, end-1] is outputted

3.

```
main.cpp x
Algorithm Studio 2 (全局范围)
41 copy(fibBegin, fibEnd, ostream_iterator<int>(cout, " "));
42 cout << endl;
43 // Forward List
44 cout << "Forward List range: ";
45 auto fibBegin = fl.begin();
46 auto fibEnd = fl.begin(); // 空范围
47 copy(fibBegin, fibEnd, ostream_iterator<int>(cout, " "));
48 advance(fibEnd, 3); // 非空范围
49 copy(fibBegin, fibEnd, ostream_iterator<int>(cout, " "));
50 cout << endl;
51 //
52 int arr[] = {-2, 19, 80, -47, 80, 80, -2};
53 int arrSize = sizeof(arr) / sizeof(arr[0]);
54 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
55 std::cout << std::endl;
56
57 std::sort(arr, arr + arrSize, std::greater<int>());
58 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
59 std::cout << std::endl;
60 return 0;
61
62
63
64
65
66
67
68
66 % 未找到相关问题

Windows PowerShell
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> g++ -O2 .\main.cpp -o main
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> g++ -O2 .\main.cpp -o main
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> ./main
-2 19 80 -47 80 80 -2
80 80 80 19 -2 -2 -47
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> |
```

4.

```
using namespace std;
bool cmp(int a, int b) {
    return a > b;
}
```

```
main.cpp x
Algorithm Studio 2 (全局范围)
46 cout << endl;
47 // Forward List
48 cout << "Forward List range: ";
49 auto fibBegin = fl.begin();
50 auto fibEnd = fl.begin(); // 空范围
51 copy(fibBegin, fibEnd, ostream_iterator<int>(cout, " "));
52 advance(fibEnd, 3); // 非空范围
53 copy(fibBegin, fibEnd, ostream_iterator<int>(cout, " "));
54 cout << endl;
55 //
56 int arr[] = {-2, 19, 80, -47, 80, 80, -2};
57 int arrSize = sizeof(arr) / sizeof(arr[0]);
58 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
59 std::cout << std::endl;
60
61 std::sort(arr, arr + arrSize, cmp);
62 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
63 std::cout << std::endl;
64 return 0;
65
66
67
68
69
66 % 未找到相关问题

Windows PowerShell
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> g++ -O2 .\main.cpp -o main
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> ./main
-2 19 80 -47 80 80 -2
80 80 80 19 -2 -2 -47
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> |
```

5.

```
struct Comparator {
    bool operator()(int a, int b) const {
        return a > b;
    }
};
int main() {
```

```
main.cpp x
Algorithm Studio 2 (全局范围)
61 int arr[] = {-2, 19, 80, -47, 80, 80, -2};
62 int arrSize = sizeof(arr) / sizeof(arr[0]);
63 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
64 std::cout << std::endl;
65
66 std::sort(arr, arr + arrSize, Comparator());
67 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
68 std::cout << std::endl;
69 return 0;
70
71
72
73
66 % 未找到相关问题

Windows PowerShell
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> g++ -O2 .\main.cpp -o main
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> ./main
-2 19 80 -47 80 80 -2
80 80 80 19 -2 -2 -47
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> |
```

6.

```
main.cpp x
Algorithm Studio 2 (全局范围)
63 // Forward List
64 auto flBegin = fl.begin();
65 auto flEnd = fl.end(); // 空范围
66 copy(flBegin, flEnd, ostream_iterator<int>(cout, " "));
67 advance(flEnd, 3); // 非空范围
68 copy(flBegin, flEnd, ostream_iterator<int>(cout, " "));
69 cout << endl;
70
71 int arr[] = {-2, 19, 80, -47, 80, 80, -2};
72 int arrSize = sizeof(arr) / sizeof(arr[0]);
73
74 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
75 std::cout << std::endl;
76
77 std::sort(arr, arr + arrSize, [](const int& a, const int& b) { return a > b; });
78 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
79 std::cout << std::endl;
80
81 return 0;
82 }
```

```
Windows PowerShell
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> g++ -O2 .\main.cpp -o main
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> ./main
-2 19 80 -47 80 80 -2
80 80 80 19 -2 -2 -47
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> |
```

7.

```
main.cpp x
Algorithm Studio 2 (全局范围)
63 // Forward List
64 cout << "Forward List range: ";
65 auto flBegin = fl.begin();
66 auto flEnd = fl.end(); // 空范围
67 copy(flBegin, flEnd, ostream_iterator<int>(cout, " "));
68 advance(flEnd, 3); // 非空范围
69 copy(flBegin, flEnd, ostream_iterator<int>(cout, " "));
70 cout << endl;
71
72 int arr[] = {-2, 19, 80, -47, 80, 80, -2};
73 int arrSize = sizeof(arr) / sizeof(arr[0]);
74
75 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
76 std::cout << std::endl;
77
78 std::sort(arr, arr + arrSize, [](const int& a, const int& b) { return a > b; });
79 std::copy(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "));
80 std::cout << std::endl;
81
82 auto greaterThanZero = std::bind(&greater, std::placeholders::_1, 0);
83
84 // Use std::copy_if with the adapted predicate to print positive integers
85 std::copy_if(arr, arr + arrSize, std::ostream_iterator<int>(std::cout, " "), greaterThanZero);
86 std::cout << std::endl;
87
88 return 0;
89 }
```

```
Windows PowerShell
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> g++ -O2 .\main.cpp -o main
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> ./main
-2 19 80 -47 80 80 -2
80 80 80 19 -2 -2 -47
80 80 80 19
PS C:\Users\KanataLi\OneDrive\文档\23 Fall\CSE 332(技术选修 C++)\Algorithm Studio 2\Algorithm Studio 2> |
```