

## C++ Standard Library

```
graph TD; A([C++ Standard Library]) --> B[ALGORITHMS]; A --> C[CONTAINERS]; A --> D((Iterators & Ranges)); D --> B; D --> C;
```

### ALGORITHMS

1. Search Algorithms
2. Comparison Algorithms
3. Counting Algorithms
4. Sequence Modifying Algorithms
5. Operational Algorithms
6. Swap Algorithms
7. Partition Algorithms
8. Sorting Algorithms
9. Binary Search Algorithms
10. Minimum/Maximum Algorithms
11. Numerical Processing Algorithms
12. Permutation Algorithms

### CONTAINERS

1. vector
2. list
3. forward\_list
4. deque
5. array
6. queue
7. priority\_queue
8. stack
9. set
10. multiset
11. map
12. multimap
13. unordered\_map
14. unordered\_multimap
15. unordered\_set
16. unordered\_multiset
17. bitset

Iterators  
&  
Ranges

## **1. Search Algorithms**

1. adjacent\_find()
2. find()
3. find\_if()
4. find\_first\_of()
5. find\_if\_not()
6. find\_end()
7. search()
8. search\_n()

## **2. Comparison Algorithms**

1. equal()
2. mismatch()
3. lexicographical\_compare()
4. lexicographical\_compare\_three\_way()

### **3. Counting Algorithms**

1. `all_of()`
2. `any_of()`
3. `none_of()`
4. `count()`
5. `count_if()`

#### **4. Sequence Modifying Algorithms**

1. `copy()`
2. `copy_backward()`
3. `copy_if()`
4. `copy_n()`
5. `fill()`
6. `fill_n()`
7. `generate()`
8. `move()`
9. `move_backward()`
10. `remove()`
11. `remove_if()`
12. `remove_copy()`
13. `remove_copy_if()`
14. `replace()`
15. `replace_if()`

#### **... 4. Sequence Modifying Algorithms**

- 16. `replace_copy()`
- 17. `replace_copy_if()`
- 18. `reverse()`
- 19. `reverse_copy()`
- 20. `rotate()`
- 21. `rotate_copy()`
- 22. `sample()`
- 23. `shift_left()`
- 24. `shift_right()`
- 25. `shuffle()`
- 26. `random_shuffle()`
- 27. `transform()`
- 28. `unique()`
- 29. `unique_copy()`

## **5. Operational Algorithms**

1. `for_each()`
2. `for_each_n()`

## **6. Swap Algorithms**

1. `iter_swap()`
2. `swap_ranges()`

## **7. Partition Algorithms**

1. `is_partitioned()`
2. `partition()`
3. `stable_partition()`
4. `partition_copy()`
5. `partition_point()`

## **8.    Sorting Algorithms**

1.    is\_sorted()
2.    is\_sorted\_until()
3.    nth\_element()
4.    partial\_sort()
5.    partial\_sort\_copy()
6.    stable\_sort()
7.    sort()

## **9.    Binary Search Algorithms**

1.    lower\_bound()
2.    upper\_bound()
3.    equal\_range()
4.    binary\_search()



## **10. Set Algorithms**

1. `inplace_merge()`
2. `merge()`
3. `includes()`
4. `set_union()`
5. `set_intersection()`
6. `set_difference()`
7. `set_symmetric_difference()`

## **11. Heap Algorithm**

1. `is_heap()`
2. `is_heap_until()`
3. `make_heap()`
4. `push_heap()`
5. `pop_heap()`
6. `sort_heap()`

## **12. Minimum/Maximum Algorithms**

1. clamp()
2. min()
3. max()
4. minmax()
5. min\_element()
6. max\_element()
7. minmax\_element()

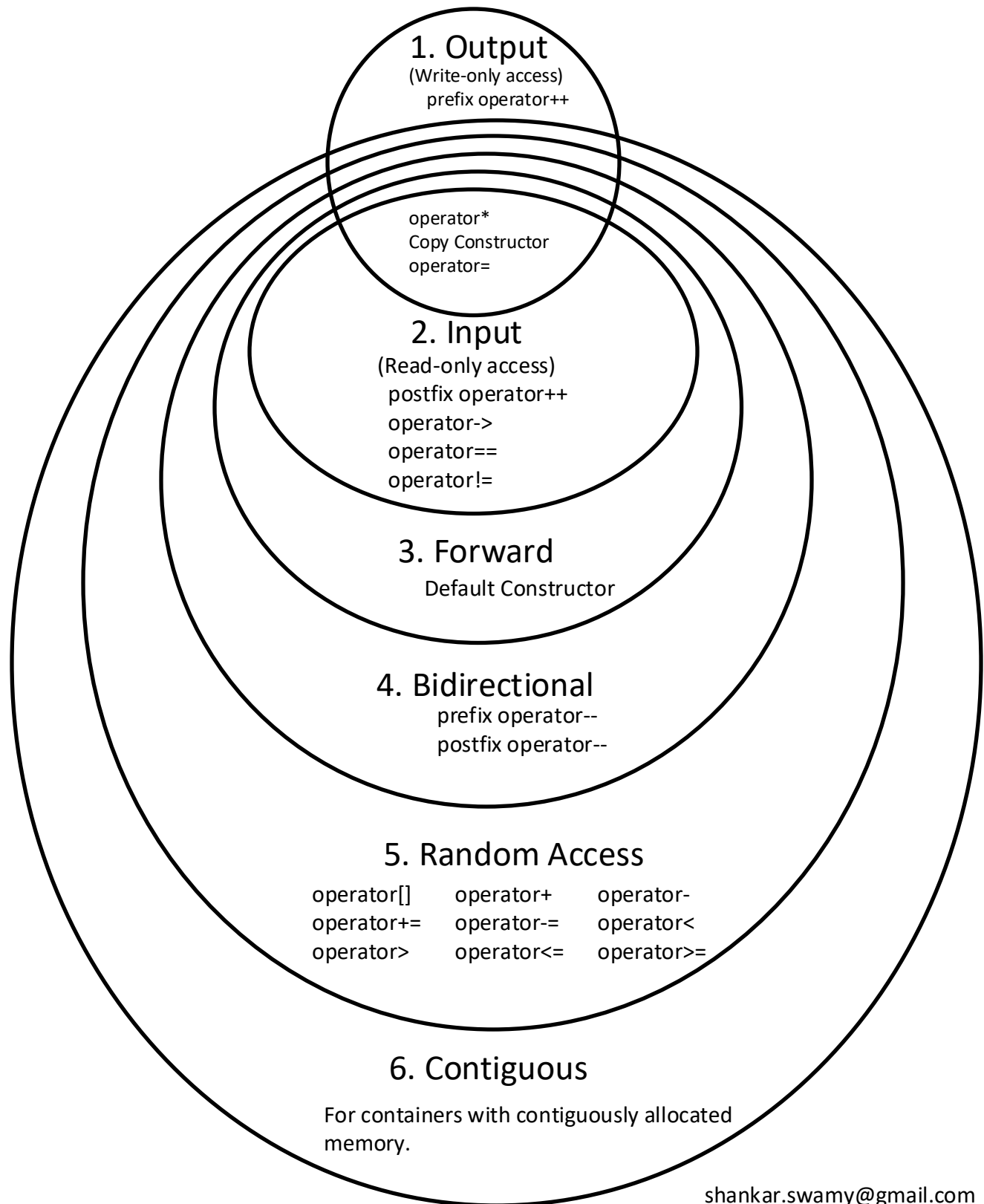
### **13. Numerical Processing Algorithms**

1. `iota()`
2. `adjacent_difference()`
3. `partial_sum()`
4. `exclusive_scan()`
5. `inclusive_scan()`
6. `transform_exclusive_scan()`
7. `transform_inclusive_scan()`
8. `accumulate()`
9. `inner_product()`
10. `reduce()`
11. `transform_reduce()`

### **14. Permutation Algorithms**

1. `is_permutation()`
2. `next_permutation()`
3. `prev_permutation()`

# Iterator Concepts in C++20



	<b>Containers</b>	
1	vector	
2	list	
3	forward_list	
4	deque	
5	array	
6	queue	
7	priority_queue	
8	stack	
9	set	
10	multiset	
11	map	
12	multimap	
13	unordered_map	
14	unordered_multimap	
15	unordered_set	
16	unordered_multiset	
17	bitset	

## Algorithms

1	Search	
2	Comparison	
3	Counting	
4	Sequence Modifying	
5	Operational	
6	Swap	
7	Partition	
8	Sorting	
9	Binary Search	
10	Set	
11	Heap	
12	Minimum/Maximum	
13	Numerical Processing	
14	Permutation	

## 1. Search Algorithms

adjacent\_find()

find()

find\_if()

find\_first\_of()

find\_if\_not()

find\_end()

search()

search\_n()

## 2. Comparison Algorithms

equal()	
mismatch()	
lexicographical_ compare()	
lexicographical_ compare_three_way()	



### 3. Counting Algorithms

all\_of()

any\_of()

none\_of()

count()

count\_if()

## 4. Sequence Modifying Algorithms

copy() copy_backward()	
copy_if()	
copy_n()	
fill()	
fill_n()	
generate()	
move() move_backward()	
remove() remove_if() remove_copy() remove_copy_if()	
replace() replace_if() replace_copy() replace_copy_if()	

## **... 4. Sequence Modifying Algorithms (contd.)**

reverse()

reverse\_copy()

rotate()

rotate\_copy()

sample()

shift\_left()

shift\_right()

shuffle()

random\_shuffle()

transform()

unique()

unique\_copy()

<b>5. Operational Algorithms</b>	
for_each()	
for_each_n()	

<b>6. Swap Algorithms</b>	
iter_swap() swap_ranges()	

<b>7. Partition Algorithms</b>	
is_partitioned()	
partition()	
stable_partition()	
partition_copy()	
partition_point()	

<b>8.     Sorting Algorithms</b>	
is_sorted()	
is_sorted_until()	
nth_element()	
partial_sort()	
partial_sort_copy()	
stable_sort()	
sort()	

<b>9.     Binary Search Algorithms</b>	
lower_bound()	
upper_bound()	
equal_range()	
binary_search()	

<b>10. Set Algorithms</b>	
inplace_merge()	
merge()	
includes()	
set_union() set_intersection() set_difference() set_symmetric_difference()	

<b>11. Heap Algorithm</b>	
is_heap()	
is_heap_until()	
make_heap()	
push_heap() pop_heap()	
sort_heap()	

## **12. Minimum/Maximum Algorithms**

clamp()	
min() max()	
minmax()	
min_element()	
max_element()	
minmax_element()	

## **13. Numerical Processing Algorithms**

iota()	
adjacent_difference()	
partial_sum()	
exclusive_scan() inclusive_scan()	
transform_exclusive_scan() transform_inclusive_scan()	
accumulate()	
inner_product()	
reduce()	
transform_reduce()	

## 14. Permutation Algorithms

is_permutation()	
next_permutation()	
prev_permutation()	