Insight into STL containers

Let’s say we want to represent a set of integers

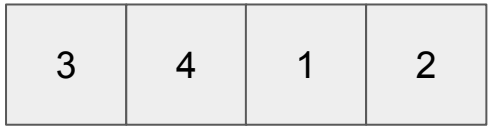
`{3, 4, 1, 2}`

`Let’s consider:`

- `std::vector`
- `std::set`
- `std::unodered_set`

std::vector

{3, 4, 1, 2}

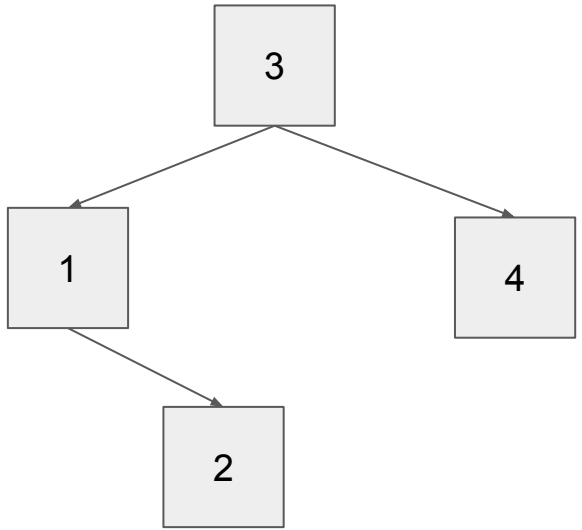


- Linear memory
- O(1) insertion
- O(n) lookup
- Most efficient iteration in context of memory system

std::set

{3, 4, 1, 2}

- Binary tree
- Each element has value plus pointer to left and right nodes
- O(log n) insertion
- O(log n) lookup
- Have very little idea of memory access pattern in iteration



std::unordered_set

```
{3, 4, 1, 2}
```

- Hash table
- Values assigned to buckets based on hash function
- O(1) insertion
- O(1) lookup
- Have very little idea of memory access pattern in iteration