Midterm 2 Review

Sets

- Holds *unique* elements
- Ordered Set
- Unordered Set
- Iterate via *Iterators*
- Efficient at **find, insert, remove**

Maps

- Associating *keys* with *values*
- Keys must be *unique;* values may be anything
- Ordered / Unordered Maps
- Efficient at getting a value given a key, putting a key/value pair, remove key/value pair, update value given key, and determine if map has a key
- Pair class
- Difference between .insert(), .emplace(), []
- Editing values without making copies

Hashtables

- O(1) table lookups
- Basic idea: convert key to hash code, find index, store key at index
- Collisions (and chaining)
- What constitutes a `good' hash function?
- What data structures use hashtables?

Dynamic Allocation of Memory

- Array variables are pointers
- Pointer arithmetic
- Array limitations conquered by Dynamic Array Allocation
- Where does memory come from?
- Difference between creating new objects in Stack vs Heap
- Dynamic Memory Don'ts
- Deleting Dynamical Allocated Memory

Operator Overloading

- Member vs Non-member functions
- Mixed Overload
- How to overload

Big 3

- Copy Constructor
- Assignment Operator
- Destructor
- Shallow vs Deep Copy
- Default behaviors and how to fix them

Templates

- Purpose of templates
- Function vs Class Templates
- How to apply templating