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# **COP 3540 Data Structures with OOP**

## **Chapter 4**

### **Stacks and Queues**

# A Different Kind of Structure

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- ◆ Stacks, queues, and priority queues – different kinds of storage structures.
- ◆ Different data structures have different sets of problems that they are most suited to representing.
- ◆ Consider *Arrays* – as a data storage structure:
  - very useful.
  - easy to insert into, delete from, and search for specific items.

# Access (interface)

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- Arrays: theoretically, access is immediate via index or by searching through cells sequentially.
- If ordered, can access more quickly via binary search
- Only one item can be accessed.
- 'That' is the interface.'
  
- In **abstract data structures** (stacks, queues, trees, priority queues), real access (that is, how do we get to it...) **is**:
  - defined a bit differently and **is**
  - controlled by an interface that is normally not visible to the user.