A) Stacks and Queues
- What are they?
  - Containers that permit storage and retrieval of data items independent of content
  - 2 really important ones

B) Stacks
- Support retrieval by last-in, first-out (LIFO) order
- Simple to implement & very efficient
- Good to use when retrieval order doesn't matter
- Push (X, S)
  - Insert item X at the top of stack S
- Pop(S)
  - Return and remove the top item in the stack

- Example
  People in a subway exit in LIFO order

C) Queues

- Support retrieval in First in, First out (FIFO) order
- minimizes the maximum time spent waiting
- Avg. wait time is same regardless if FIFO or LIFO
- Appropriate where order matters
- Enqueue (X, q)
  - Insert item X at the back of queue q
- Dequeue (q)
  - Return and remove the front item from queue q
- Fundamental data structure controlling breadth-first searches in graphs

**Note:**

Stacks & queues can be implemented using either arrays or linked lists