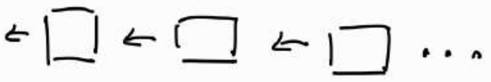
Stacks

First in Last out (FILO) ⎤ Rules to adhere to
Last in First out (LIFO) ⎦ make data structure a stack

- pop(): remove from top of stack
- push(data) : Add to top of stack
- can be implemented with both array or Linked list. ← More efficient & safer.
- Not used for scheduling tasks (some process might never be processed)

Queues



↑ first element processed first.

- First in first out. (FIFO)
- Last in Last out (LILO)

- can be built using array or Linked List (must be circular array)
  - Array with front & Back ptr
  - Must be doubly LL with tail ptr.
- Dequeue : Remove from front of queue.
- Enqueue : Add to end of queue.
- Good for Storing scheduling process.

Stack & Queue complexity

- Built off basic data structures (LLs & arrays)
  - runtime dependent on which basic structure used.

- Push, pop, enqueue, dequeue : O(1)

  Array : Must be circular array for queue., stack doesn't matter since operate at end of array.

  LL : Must have head & tail ptr.

Real World Application

- undo & Redo → using 2 stacks
  stack stack

- Scheduling tasks / deployment → Queue

- Traversing Maze (stack)