CS180 - Stacks & Queues

Note Title 9/23/2013

Announcements

- HW due tonight
- Next HW is posted (read before Wed.)

Last Week: Stacks

Ordering: Last in, first out

Operations:

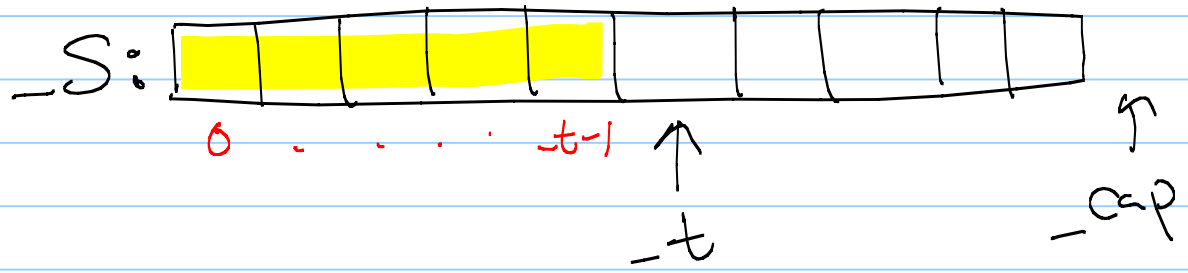
- push + pop
- top

Implementation:

- finished LinkedStack
- ArrayStack

Today:

Array-based version



Runtimes (for stacks)

push
pop
top
} O(1)

fastest operations possible

Housekeeping:

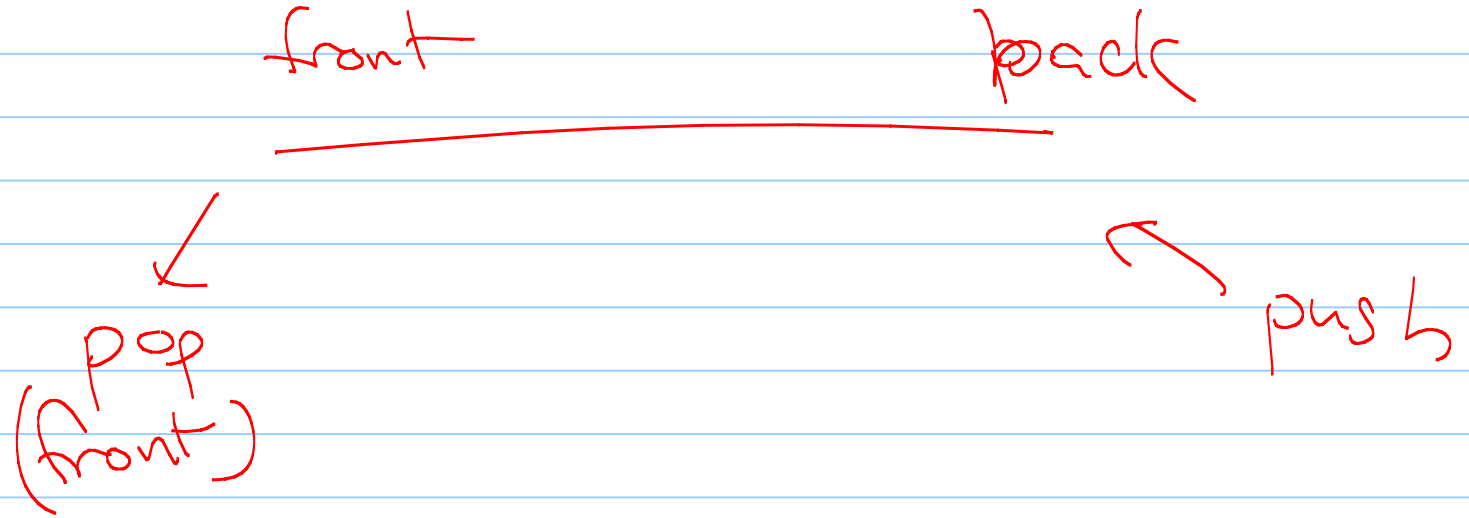
Linked: O(n)
- no max size

Array: O(1)
but - max size!

Queues

British for what? a line

FIFO — first in, first out



Behavior

```
push(5)
push(2)
push(11)
push(12)
pop()
pop()
push(3)
pop()
push(12)
```

front back

5

5 2

~~5~~, 2, 11

2, 11

⋮

Setup & Structure

Also a simple structure - similar to stacks.

(Limited functinality, but fast.)

Operations:

- empty
- size
- push
- pop
- front

(Housekeeping)

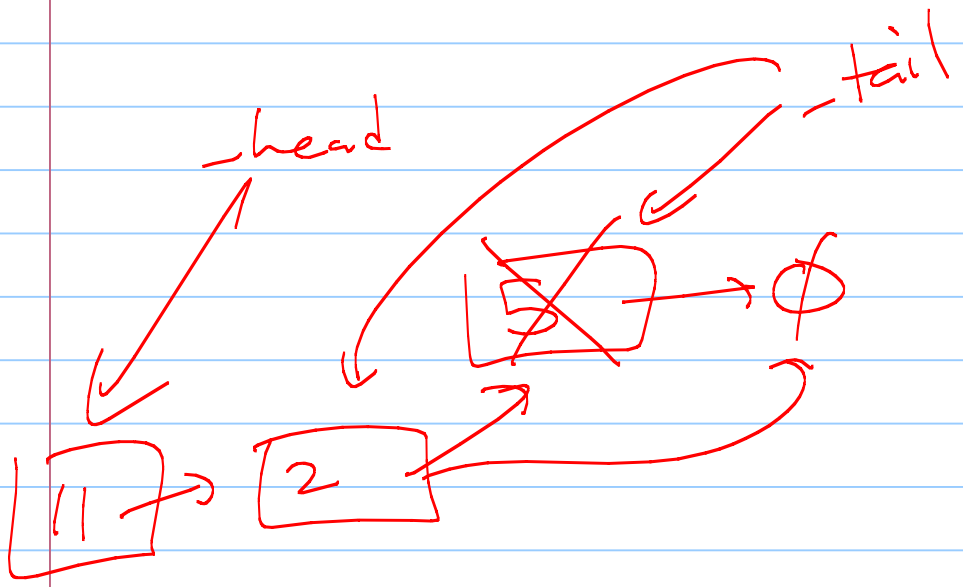
Implementation

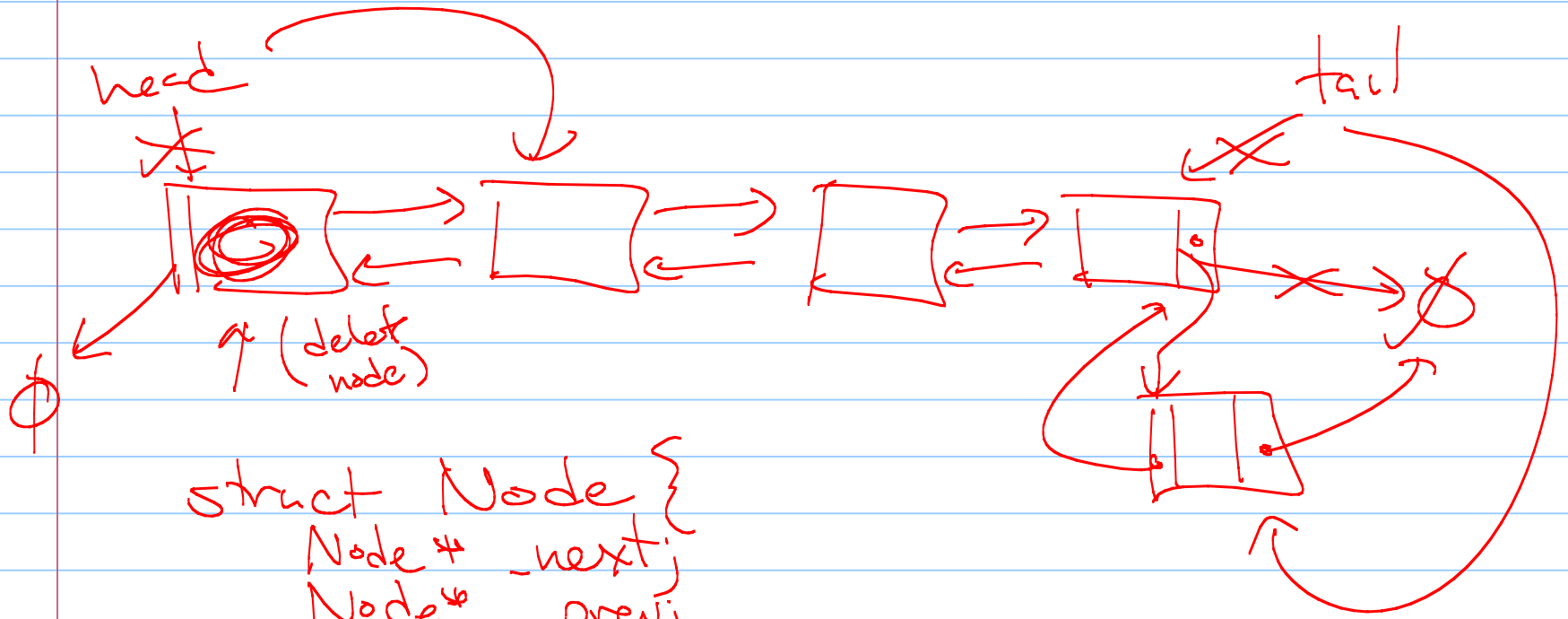
Same choice:

Array

* Linked structure

In Slinked List: not good enough






```
struct Node {
    Node*  _next;
    Node*  _prev;
    Object _data;
}
```