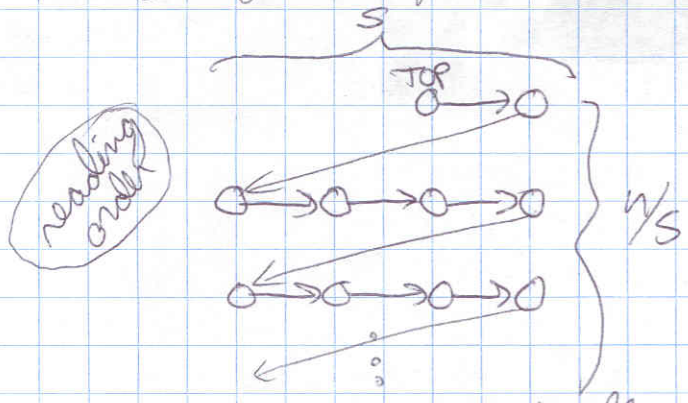
Stack

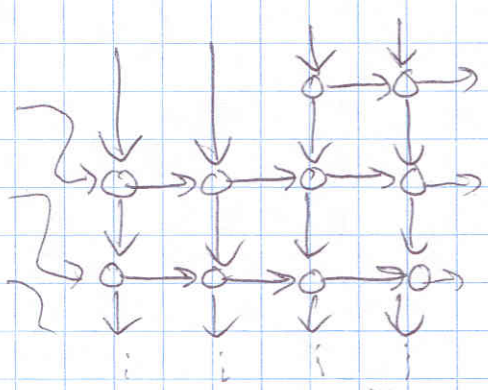
6.897
L19.2
May 5, 2003

- divide n elements into $\lceil n/s \rceil$ layers of consecutive elements
- every layer except ~~bottom~~ top has exactly s elements



HORIZONTAL LINKS (list order)
are not actually stored

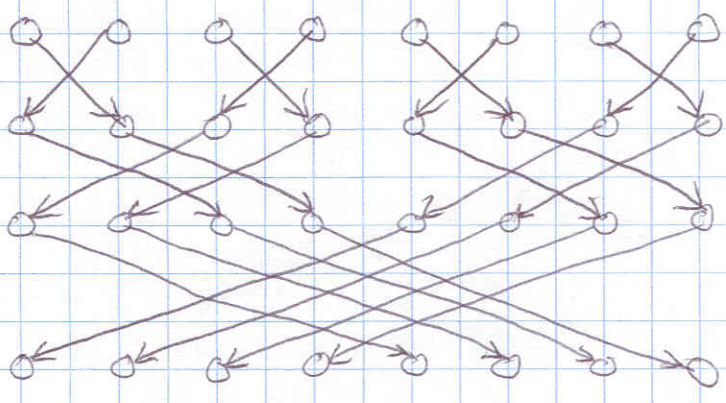
- connect layers vertically
- safe storage points to top element in each column



VERTICAL LINKS

(even with horizontal links, can easily lose $\Omega(s^2)$ nodes with $O(s)$ faults)

- connect every $\lceil \lg s \rceil + 1$ layers with butterfly exchange network
  i.e. connect x to $x \oplus 2^i$ at level i
  flip lowest-order bit, then next bit, ..., highest-order bit



DIAGONAL LINKS

⇒ every node has 2 outgoing pointers
& every node has either 2 incoming pointer
or 1 secure incoming pointer