1.3 / 1.4

LEC 2

BASIC DATA STRUCTURES

Array — BASIC Data structure, found in memory

Stack — LIFO (stack of books)

Queue — FIFO (line up)

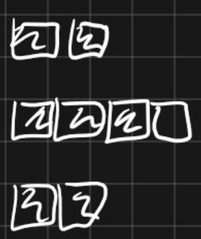
- insert
- remove
- iterate

Implemented through LL or Arrays

- Array static
- Linked-List dynamic

Dynamic Array

Pushing: Copy old array → new array 2x size
↳ when full double size



Resizing is EXPENSIVE
PUSH-POP PUSH-POP bounding.

Popping: Shrink when array is 1/4 full to shrink to half
↳ avoids freq, resizing

ALGORITHM ANALYSIS

we want to chose the most efficent algorithm

'Efficency' — Best use of finite resources available

'Resources':
- time (most important)
- memory
- energy

- embedded system may favor memory > time

Running Time — WORST CASE ANALYSIS
↳ worst case runtime of alg. of fixed size
↳ used to compare algorithms

size is measured in # of obj.