Integer data structures

(seen: hashing)

6.897
L 9.1
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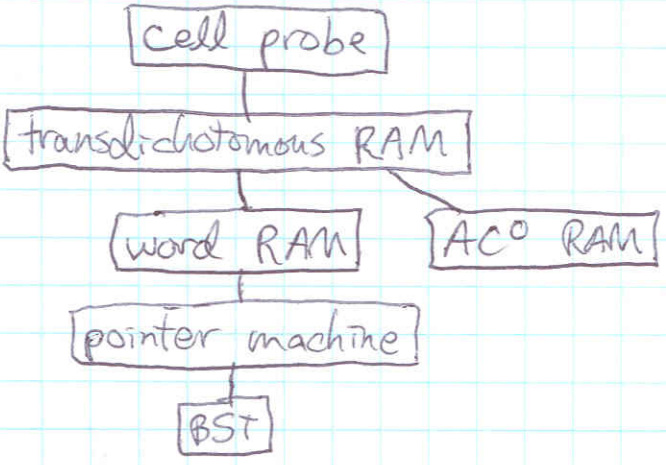
- elements (inputs, outputs, memory cells) are w-bit integers $\Rightarrow$ between 0 & $u-1$, $u = 2^w$.
  universe $U = \{0, 1, \ldots, u-1\}$
- assume RAM where each operation works on $O(1)$ words
  $\Rightarrow$ integers can be used as pointers
- transdichotomous RAM: assume $w \geq \lg n$
  - idea: necessary just to address the n elements
- word RAM: transdichotomous + only "C-style" operations
  $(+, -, *, /, \%, \&, |, \hat{}, \sim, <<, >>)$
- AC^0 RAM: transdichotomous + only "AC^0" operations
  - excludes multiplication
  - allows other "weird stuff"
  ↳ const. depth circuit, unbounded fan-in
- Pentium RAM, etc...