Lecture 22
Memory management in good languages

CS 241: Foundations of Sequential Programs
Winter 2018
Deferred reclamation
Using a dual-core processor
An even better idea
Comparison of copy/compaction
Implicit reclamation

Sometimes called *garbage collection*.

- Traditionally:

- Contemporarily:
Copy collector

- Idea: when running a high-level program, lots of small objects/structures/… are used only for a short amount of time and can be recycled
- Determine those objects which are no longer reachable and thus can be recycled
- Split memory into two halves:
Determining reachability
Generational garbage collection

- Objects in memory tend to have *temporal persistence*
  - objects that have been in memory for a long time will likely continue to stay around
  - objects that have recently been created will likely be discarded very soon
- Instead of just two regions, make $n$ regions.
- Use region $G_1$ until it gets full: copy live objects to $G_2$ and free $G_1$
- When $G_2$ gets full, copy live objects from $G_2$ to $G_3$. 