بسم الله الرحمن الرحیم

۲۱۸

«سیستم عامل»

جلسه ۲۱: مدیریت حافظه (۹)

Not frequently used algorithm (NFU)

- Bases decision on frequency of use rather than recency
- Associate a counter with each page
- On every clock interrupt, the OS looks at each page.
    - If the Reference Bit is set...
        - Increment that page's counter & clear the bit.
- The counter approximates how often the page is used.
- For replacement, choose the page with lowest counter.

Not frequently used algorithm (NFU)

❑ **Problem:**

  ❖ Some page may be heavily used

   • **---> Its counter is large**

  ❖ The program's behavior changes

   • **Now, this page is not used ever again (or only rarely)**

  ❖ This algorithm never forgets!

   • **This page will never be chosen for replacement!**

  ❖ We may want to combine frequency and recency

Modified NFU with aging

- Associate a counter with each page
- On every clock tick, the OS looks at each page.
  - Shift the counter right 1 bit (divide its value by 2)
  - If the Reference Bit is set...
    - Set the most-significant bit
    - Clear the Referenced Bit

T_1 100000 = 32

T_2 010000 = 16

T_3 001000 = 8

T_4 000100 = 4

T_5 100010 = 34