Abstract

Modern operating systems use virtual memory concept because of its advantages but they use different page replacement techniques. An efficient page replacement technique is required so
Histogram based Analysis of Page Replacement Techniques

as to produce minimum number of page faults. Some of the page replacement techniques are FIFO, LRU, OPTIMAL etc. Optimal has been proven to be best producing minimum number of page faults. LRU approximates optimal. Considerable research has been done to evaluate these policies and to develop new ones based on recency, frequency, token, and locality model parameters etc. This paper uses a histogram based approach to compare FIFO, LRU, LRU2, OPTIMAL policies. Simulation results show that histograms for all policies equalize as the number of frames increases. Also histogram for optimal policy equalizes more rapidly then other policy’s histograms. Also pages of large frequency of occurrences contribute much to the total number of page faults in both LRU and optimal page replacement algorithms.

Reference

- Peter J. Denning, Working Sets Past and Present, 1980 IEEE.
- Ben Juurlink, Approximating the Optimal Replacement Algorithm, CF’04, April 14–16, 2004, ACM 1581137419/04/0004.
- Sedigheh Khajoueinejad, Mojtaba Sabeghi, Azam Sadeghzadeh, A Fuzzy Cache Replacement Policy and its Experimental Performance Assessment, 2006 IEEE.
- Elizabeth J. O’Neil1, Patrick E. O’Neil1, Gerhard Weikum, the LRU-K Page Replacement Algorithm For Database Disk Buffering, SIGMOD Washington, DC, USA 1993 ACM.

Index Terms

Computer Science Operating Systems

Key words

Operating system virtual memory page fault
replacement techniques

histogram

matlab