Quiz: Page Replacement

Total points 60/60

Take the quiz solo, but feel free to consult a partner student, the book, the videos or other resources if needed. Re-take quiz if your score is less than 80% or if you just want some more practice.

The respondent's email (**parth2@pdx.edu**) was recorded on submission of this form.

Page Replacement Simulation

Consider the following page reference string.

A,B,C,D,A,B,B,A,C,D,B,A

Assume that there are 3 available empty page frames in physical memory and that all three page frames are empty.

Simulate these different page replacement algorithms (FIFO, LRU and OPT) and give your results below.

✓ For OPT, how many page faults? *   5/5

○ 9

● 6   ✓

○ 10

○ 4

✓ For OPT, which pages remain in memory at the end? *   5/5

◉ A,B,D   ✓

○ A,C,D

○ B,C,D

○ A,B,C

✓ For FIFO, how many page faults? *   5/5

○ 4

○ 10

◉ 9   ✓

○ 6

✓ For FIFO, which pages remain in memory at the end? *   5/5

○ A,B,C

◉ A,C,D   ✓

○ B,C,D

○ A,B,D

✓ **For LRU, how many page faults?** *   5/5

○ 10 ✓

○ 6

○ 9

○ 4

✓ **For LRU, which pages remain in memory at the end?** *   5/5

○ B,C,D

○ A,C,D

○ A,B,C

◉ A,B,D ✓

✓ **The _____ linux command can be used to trace the details of of a process's memory references.** *   5/5

○ pmap

○ vmstat

◉ valgrind ✓

○ free

✓ An OS executes its page replacement algorithm while handling page   5/5
   faults. *

○ ● True   ✓

○ False

✓ Why doesn't Linux implement the OPT algorithm? *   5/5

○ because Linus Torvalds is Benevolent Dictator for Life

● can't know the future page references of a program   ✓

○ OPT causes application programs to be more difficult to design and implement

○ it opens unacceptable security holes

✓ What is Temporal Locality? *   5/5

● that which was accessed recently will be accessed again soon   ✓

○ reads occur more frequently than writes

○ accesses to addresses are usually followed by accesses to nearby addresses

○ the memory hierarchy of a computer is extremely important for application
   performance

✓ **Why might the OS maintain a few extra empty physical frames, even when all of physical memory is used/needed? ***   5/5

○ to maximize the number of physical page frames allocated to high priority processes

○ to improve locality of reference

○ to reduce the average number of disk accesses per page fault

● so that new page references (compulsory or capacity misses) can be serviced immediately with an empty frame.   ✓

✓ **By measuring page fault frequency of a process an OS can improve its estimation of how many physical page frames to allocate to a process. ***   5/5

● True   ✓

○ False

This form was created inside of Portland State University.

Google Forms