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OS

Lab Assignment 7

Title: Memory Management (Page Replacement Algorithms)

FAQ's.

Ans 1] Page table:

Entire page table may take up too much main memory.
Page tables are also stored in virtual memory.
When a process is running, part of its page table is in main memory.
It is a data structure used by a virtual memory system in a computer operating system to store the mapping between virtual addresses and physical addresses

Frame table:

The simplest page table system often maintain a frame table and page table.
The frame table holds information about which frames are mapped. In more advanced systems the frame table can also hold information about which address space a page belongs to, statistics information or other background information.

Hardware support required to implement paging.
In simplest case the page table is executing as a set of dedicated registers. These registers must be built with very high-speed logic to make the paging-address translation efficient.

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Ans 2) First-fit Algorithm:

- Scans memory from the beginning and chooses the first available block that is large enough.
It is fastest.
May have many processes loaded in the front end of memory that must be searched over when ~~typing~~ trying to find a free block.

Best-fit Algorithm:

- Chooses the block that is closer in size to request
Worst performer overall
Since smallest block is found for process, the smallest amount of fragmentation is left. Memory compaction must be done more often.

Worst-fit Algorithm.

- Allocates a process to the partition which is largest sufficient among the freely available partitions available in the main memory.
If a larger process comes at a ~~larger~~ later stage then memory will not have space to accomodate it.

Ans 3) Main memory is partitioned into equal fixed size chunks that are relatively small called frames.
Each process is divided into small fixed chunks of same size called pages. At a given point of time, some frames are in use and some are free.
Suppose process A stored on ~~list~~ disk, consists of 4 pages. When process is to be loaded, OS finds 4 free frames and loads A' pages. These frames need not to be contingous. OS maintains a page table for each process

Page table consists of frame location for each page of the process. Paging in OS uses a data structure called as Page table.

Ans 4) Virtual memory is a memory management technique where secondary memory can be used as if it were a part of main memory. It uses both hardware and software to enable a computer to compensate for physical memory shortages, temporarily transfering data from random access memory to disk storage.

Memory references are dynamically translated into physical addresses at run time. A process may be broken up into pieces that do not need to located contigously in main memory. All pieces of a process do not need to be loaded in main memory during execution.

Abd 25/11/22