Deliverable 6.7

Sistemas Operativos

Grado en Ingeniería Informática

Departamento de Ingeniería Informática

Universidad de Cádiz

Deliverable 6.7 Exercise 1

40 minutes

Consider the following page-reference string for a process:

$$1\ 2\ 3\ 4^w\ 1^w\ 2^w\ 5\ 2^w\ 1\ 2\ 3\ 1\ 4\ 5$$

How many page faults would occur for the following replacement algorithms, assuming the proccess has 4 frames allocated.

1. Optimal replacement
2. FIFO
3. LRU
4. Clock
5. Improved clock

Deliverable 6.7 Exercise 2

15 minutes

Consider a paged virtual memory system, the computer has 1 MiB of physical memory and the size of physical memory frames is 8 KiB. The operating system ocuppies 223 KiB. The maximum degree of mutiprograming will be 20. The resident set is managed with a fixed allocation, local scope policy.

1. How many frames are needed by the operating system? How many frames will be avaible for the rest of processes? How many frames can be assigned to a process if we do an equal allocation among processes?
2. If we use FIFO algorithm and a process references the following page string: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 1 - 2 - 3 - 4 - 5
   Which will be the page fault rate? How many I/O operations are related with page faults?
3. If we have 20 % of processes memory for page buffering. How many frames could have a process?
4. Compute the page fault rate for this new system. How may I/O operations are realted with these page faults?