

OHJ-4106 Operating Systems

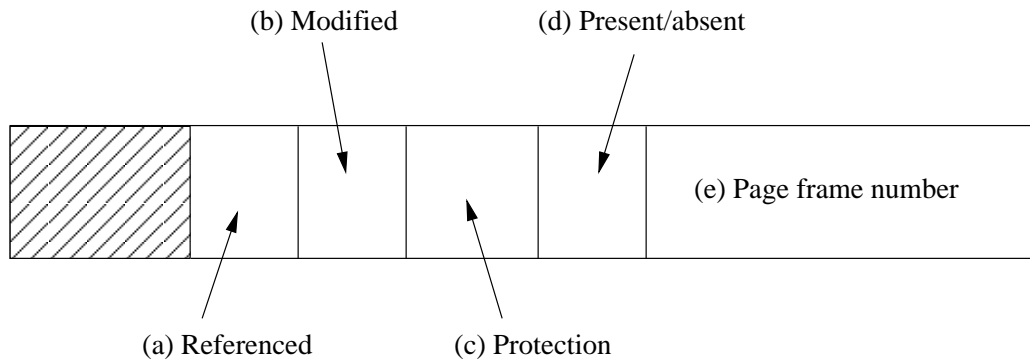
Exam 27.4.2009

Calculators, computers or literature are NOT allowed in this exam.

1. Describe shortly (as to someone not familiar with this particular software systems subject) what these concepts are:
 - a) What are the main functions of an operating system?
 - b) Page fault
 - c) Virtual memory
 - d) Global and Local page replacement algorithms.
 - e) Pre-emptive scheduling.
 - f) Software Interrupt (SVC)
2. Are the following statements true or false? If false give a correct explanation of the matter.
 - a) Dispatcher a kernel routine which changes process state between states RUN, READY and WAIT.
 - b) TLB (table lookaside buffer) will speed up paging virtual memory access even over 95% of memory references.
 - c) One should not use device drivers when implementing a file system.
 - d) Processors (CPU) usually do not offer any support for implementing a operating system.
 - e) Interrupts have to be disabled always when a user process is executing.
 - f) The function of a Page replacement algorithm is to remove any process which has been running for too long.

continues ...

3. Alternative. Answer **either** question a **or** b.
- a) Explain how a two level page table works in paging virtual memory.
 - b) Explain characteristics of how a paging virtual memory behaves (terminology associated with this: program locality, life time, space-time integral, trashing).
4. The page table of processor X uses Page Table Entries shown in Figure 1. For each of the fields (a to e) explain for what it is used in implementing a paging virtual memory.



Kuva 1: a typical Page Table Entry