

OHJ-4106 Operating Systems

Exam 7.5.2007

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: (2 p/item):
 - a) What are the main functions of an operating system?
 - b) Address space.
 - c) Memory space.
 - d) Virtual address.
 - e) Page replacement policy.
 - f) Privileged instruction.
 - g) Pre-emptive scheduling.
 - h) File system permissions (in Unix and similar systems).
2. A system using paging virtual memory has the following usage measurements:
 - CPU: 20 %
 - Paging disk: 97,7 %
 - Other I/O-devices: 5 %

Which of the following changes will increase the CPU usage and which do not? Give a brief argumentation in each case. (1 p/item).

- a) Faster CPU.
- b) Bigger paging disk.
- c) Increase of multiprogramming degree.
- d) Decrease of multiprogramming degree.
- e) Bigger main memory.
- f) Faster paging disk or several disk controllers using several paging disks.
- g) Enabling prefetch on paging algorithms.
- h) Increase of page size.

continues ...

3. PCB (Process Control Block) is a kernel data structure which contains information about a process. What information does it typically contain concerning: *(3 p/item)*
- a) Process scheduling.
 - b) Virtual memory.
 - c) System protection.
 - d) File manipulation.