


A+ will be down for a version upgrade on Tuesday 03.01.2023 at 9-12.

This course has already ended.

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Threads, Memory exercises

Exercise 1

 The deadline for the assignment has passed (Sunday, 6 November 2022, 23:59).

Threads, Memory Management, Virtual Memory questionnaire

1. Review questions. Please consult Chapter 4,7 & 8 from "Operating Systems - Internals and Design Principles" by William Stallings

Question 1 2 / 2

What are valid examples of the use of threads in a single-user multiprocessing system.

- ☒ **Foreground/background work**
- ☒ **Asynchronous processing**
- ☐ Device independence
- ☒ **Modular program structure**

✓ Correct!

Question 2 2 / 2

What are the advantages of using multithreading over multiple processes?

- ☒ **Multithreading saves the overhead of two mode switches(user to kernel; kernel back to user)**
- ☒ **In multithreading the scheduling algorithm can be tailored to the application without disturbing the underlying OS scheduler**
- ☐ Multithreading system code is easier to understand and decreases the potential for race conditions

✓ Correct!

Question 3 2 / 2

Which of the statements are valid for threads/threading in the context of Clouds operating system?

- ☒ **The approach provides an effective way of insulating both users and programmers from the details of the distributed environment**
- ☒ **Threads may move from one address space to another, and actually span computer boundaries**
- ☒ **A thread in clouds is a unit of activity from the users perspective**

✓ Correct!

Question 4 2 / 2

What requirements is memory management intended to satisfy?

- ☒ **Relocation**
- ☒ **Logical organization**
- ☒ **Sharing**

✓ Correct!

Question 5 2 / 2

Explain thrashing.

- ☒ **It is a phenomenon in which the processor spends most of its time swapping pieces rather than executing instructions**
- ☐ It is possible to make intelligent guesses about which pieces of a process will be needed in thrashing
- ☐ When the OS brings one piece in, it must throw another out. If it throws out a piece just before it is used it will just have to go get that piece again almost immediately

✓ Correct!

Question 6 2 / 2

What are the advantages of organizing programs and data into modules?

- ☒ **Modules can be written and compiled independently**
- ☒ **With modest additional overhead, different degrees of protection can be given to different modules**
- ☒ **It is possible to introduce mechanisms by which modules can be shared among processes**

✓ Correct!

Question 7 2 / 2

What are some reasons to allow two or more processes to all have access to a particular region of memory?

- ☒ **Processes that are cooperating on some task may need to share access to the same data structure**
- ☒ **If a number of processes are executing the same program, it is advantageous to allow each process to access the same copy of the program rather than have its own separate copy**
- ☐ It makes the processes complete their tasks faster

✓ Correct!

Question 8 2 / 2

What is the difference between internal and external fragmentation?

- ☐ Internal fragmentation refers to the fact that a large number of small areas of main memory external to any partition accumulates
- ☐ Internal fragmentation is a phenomenon associated with dynamic partitioning
- ☒ **Internal fragmentation refers to the wasted space internal to a partition due to the fact that the block of data loaded is smaller than the partition**

✓ Correct!

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