CS314 Operating System
Fall 2020
Exercise Questions for Week #1

EXERCISE #1

In multitasking OS, each OS performs “context switching” to switch from a program to another in multitasking. What must a multitasking OS do in context switching?

EXERCISE #2

Are the following statements true or false?

(a) A multitasking OS is a time-sharing OS.

(b) A time-sharing OS is a multitasking OS.

EXERCISE #3

Which of the following types of operating need short-term process scheduling? Select all that apply. For those you do NOT select, explain why it (they) do not need short-term scheduling?

(a) Pre-OS
(b) Batch system
(c) Multi-tasking
(d) Time sharing

EXERCISE #4

What problems will we have if our operating systems do not have a PCB for each process (mention at least three problems)?
**EXERCISE #5**

Mention 6 examples for what are contained in PCB.

**EXERCISE #6**

Compare monolithic, external-commands, and micro-kernel architecture operating systems by completing the following table.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Monolithic</th>
<th>External Commands</th>
<th>Microkernel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory Footprint Size</td>
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<td></td>
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<tr>
<td>Bug Fixes</td>
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<tr>
<td>Robustness</td>
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<td>Execution Speed</td>
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<td>Major Advantage(s)</td>
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<tr>
<td>Major Disadvantage(s)</td>
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</tbody>
</table>
EXERCISE #7

“Virtual machine” and “multi-boot (computer) systems” are two different concepts, while some people are confused about the two terms. What is the primary difference between the two concepts?

(example of “multi-boot”)

EXERCISE #8

(Microsoft) Windows were designed with the micro-kernel architecture. There were (are) two technical reasons. What were they?