

Name _____

ECE 3055, COMPUTER NETWORKS, QUIZ 2

Quiz No. 2: April 7, 2000

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RULES.

- i This quiz is closed book, except for two personally prepared handwritten sheets.
- ii. Calculators may be used.
- iii Answer all questions and show all work to receive full credit.
- iv All questions have the same weight. (20 Points). All sub-questions within a question are weighted equally.
- v Please do not ask the proctors any questions during the exam about exam questions. Part of the test is understanding the question as written, without supplemental information. If you feel additional data is needed to solve the problem, make (and state) an assumption and then work the problem.

Question 1 - Interrupts.

Answer the following questions with a single word in the brackets at the left.

- [driven] Modern operating systems are "interrupt _____."
- [handler, routine] An interrupt causes a block of code to run called an interrupt _____."
- [trap] An interrupt caused by a software (rather than a hardware signal) is called a _____.
- [preemptive] If a user process can disable all interrupts, the operating system is not a _____ operating system.
- [user] At the end of a process's time slot, a non-maskable interrupt is used to switch the computer from _____ mode
- [monitor] to _____ mode.
- [program] When an interrupt occurs, the operating system must save the value of the _____ (note: no comma or – between these two words)
- [counter] _____, and
- [registers] some of the _____.
- [I/O] A hardware interrupt is generated by a _____ device when it needs attention.

Question 2 – Input / Output

- [system] To read data from a file, a user process must do a _____ call, because
- [monitor, supervisor] access to I/O devices is only possible when the system is in _____ mode.
- [driver] Each hardware device has to have a block of code which interfaces it to the operating system, called a device _____.
- [buffer] The operating system accumulates data from a I/O device in a _____ which is then made available to the user process.
- [scheduled, queued, delayed, reordered] In the case of hard-disk access, different requests may be _____ to minimize the average access time.

Question 3 – Memory Management

- [memory] Swap-space on a disk is used to temporarily store a page removed from _____.
- [disks] RAID is a system that protects against errors when multiple small _____ are used to implement a storage system.
- [demand] When pages are loaded into memory as they are needed, it is called _____ paging
- [context] When a process stops running and is replaced by a different process, this is called a "_____ change (or _____ switch)".
- [absolute] When a program file is loaded into memory, before it can run the operating system (loader) must change some relative addresses in the instructions to _____ addresses.

Question 4 - Files

- [name] File attribute kept in human-readable form so users can select and identify a file.
- [type] Name four other file attributes (any order).
- [location] " (additional answers: permissions, owner, group)
- [size] "
- [time/date] "
- [text] A file that contains only ASCII characters is a ____ file.
- [binary] A file that contains data in machine format is a ____ data file.
- [executable] A file that contains program code is an ____ file. (also: source, program)
- [directory] Files are organized in hierarchial grouping called _____.
- [path] The designation of a file that differentiates between files with the same basic name includes the full _____.

Question 5 – Operating System Services

Name the five basic operating system services (can be several words). Hints are on the right.

- [executes programs] what the user wants
- [I/O control] gets or delivers data to devices
- [file-system management] clerical
- [interprocess communication] mailman
- [error detection] oops

Names the five states that a process can be in:

- [new] - Initial
- [running] - doing its thing
- [waiting] - after a blocking I/O call
- [ready] - I/O done
- [terminated] - Final