CS 421 Quiz #1 Topics List

The quiz will be 35 multiple choice questions.

In order to study for the quiz, write down the answer to each question or the related definition. Then quiz your friends!

Chapter 1:

What are the goals of an OS?
What is a bootstrap program?
What is an interrupt, how are they caused, and how are they handled?
What is a trap/exception/software interrupt? How are they caused and handled?
What is DMA and when is it useful?
What is the goal of multiprogramming? How is it implemented? Under what circumstances does a process give up the CPU?
What is the goal of time-sharing system? How is it implemented? Under what circumstances does a process give up the CPU?
What is a process and how does one differ from a program?
What is dual-mode operation and why is it necessary? What are privileged instructions?
What is a system call and how does one work?
What tasks are part of process management, memory management, storage management, I/O systems management, and protection and security?

Chapter 2

Difference between command line interface and GUI.
APIs versus system call interfaces. A&D.
System programs – what are they? Execute in kernel or user space? Why?
OS structure:
Layered approach versus modular approach versus micro-kernel versus monolithic vs hybrid kernel. Explain how each works and advantages and disadvantages of each.
Idea behind virtual machines. How useful? A&D.

Chapter 3

Typical contents of Process control block (PCB)
What are possible process states and how can a process transition between them?
What is process context along with important examples?
What is a context switch?
Long-term, medium-term, and short-term scheduling. When done, why, and from which set of processes are decisions made?
I/O bound versus CPU-bound processes. Definition. Why is mix of two beneficial to system?

What do fork() and exec() do? How are address space, resources, initialization data and execution sequence handled?
Wait() function.
Exit() and kill() functions. Voluntary versus involuntary termination.
Independent versus cooperative processes. Definitions.
Why cooperation is useful. Disadvantages.
Shared memory versus message passing. How implemented. A&D.
Direct versus indirect communication.
Pipes – how do they work? Ordinary vs. named.
Mailboxes.
Synchronization. Blocking versus non-blocking sends and receives. Rendezvous. How do work?
Communication in client/server systems: sockets versus RPCs versus RMI. A&D.
Marshalling, stubs, External Data Representation.
