

# Mid-term Quiz Guide

This material, if not specified, guides you at the level covered at lectures.

# Quiz Specification

- Oct 17, 2019 at class time
- Closed book and closed note
- Question types:
  - 10 Short answer questions (ex. definitions)
    - 3 points each
  - 10 Yes/no questions
    - 3 points each
  - 15 Multiple choice questions
    - 2 points each
  - Long answer questions (10 points in total)
    - The questions can be made up of several small questions

# All slides are important

- Program counter
- Interrupt, interrupt vector, interrupt handling
- System Call
- Multiprogramming, timesharing
- OS transition from user to kernel mode
- OS context switching
- OS CPU scheduling
- OS fake context switching
- Signal handling

# All slides are important

- Storage structure and hierarchy, caching
- System calls, examples, implementation, API-System call-OS relationship, parameter passing, standard c library example
- Structure of a computer system
- OS interfaces (CLI, GUI, touchscreen)
- OS structure, simple structure-MS DOS, traditional UNIX system structure, layered structure, microkernel system structure, loadable kernel modules, hybrid (Mach, iOS, Android)

# All slides are important

- Process concept, the multiple parts, process in memory
- Process state, diagram of process state
- Process control block, CPU switch from process to process, process representation in Linux
- Process scheduling, ready queue, queuing diagram, schedulers (short term, long term and medium term)
- Process creation
- Process termination
- Inter-process communication, shared memory, message passing (direct and indirect communication)
- Producer-consumer problem, the buffer full and empty conditions
- Pipes, ordinary pipes and named pipes, parent-child relationship

# All slides are important

- Motivation for multithreading, multithreaded server architecture, benefits
- Parallelism and concurrency, concurrency vs. parallelism
- Single and multithreaded processes
- User threads, kernel threads, multithreading models
- Implicit threading (thread pools, openMP, grand central dispatch)
- Signal handler
- setjmp, longjmp, sigsetjmp, siglongjmp
- Address space without threading vs. address space with threads
- Thread control block

**Good Luck!**