

EE345M Quiz 2 study guide (Spring 2009):

Lecture notes View06 through View13

Lab Important Topics

Lab 3g, CAN, sampling jitter, real time debugging

Lab 4i, FFT, Nyquist Theorem, aliasing, Fifo queues

Lab 5h, Real time OS, semaphores, critical sections, synchronization, communication

Chapter Topic

4 fifo, statically allocated linked lists, dynamically allocated linked lists, interrupts, latency, real time interrupts, periodic polling, critical sections

14 CAN interface, interrupts

5 scheduling, stack, semaphore implementation, semaphore applications

Guarantees

Interrupt program (arm, enable, protocol, fifo)

Network Concept (bandwidth, synchronization, priority, latency, error detection)

OS scheduler program

OS Concept (bounded waiting, deadlock, aging, starvation, mutual exclusion)

Semaphore application (study the book examples)

Study ideas

Collision prevention/arbitration used by CAN

Could you design a mechanism to detect and correct all single-bit errors?

Add sleep, create, kill, fork, join

Could you design an OS that was a pure cooperative scheduler?

(this system would have separate stacks, but no thread switch OC interrupt)

Can you write a software interrupt handler?

Fixed-point implementation of FFT

Real time OS, semaphores, critical sections, synchronization, communication

Spring 2001, Quiz2, Question 2, Sleep primitive

Fall 2001, Quiz2, Question 4, Priority scheduler, deadlock

Spring 2002, Quiz1, Question 3, Dynamic thread allocation, thread Kill

Fall 2002, Quiz2, Question 2, application of semaphores

Fall 2002, Final, Question 4, use of semaphores

Fall 2002, Final, Bonus questions 1,2,6, assembly language used in OS programming

Fall 2003, Quiz1, Question 2, use of semaphores

Fall 2003, Quiz1, Question 3, changing the TCB

Fall 2003, Quiz1, Question 4, definition of time jitter

Fall 2003, Quiz1, Question 5, implementation of OS_Wait

Fall 2003, Final, Question 14, definitions of OS concepts/terms

Fall 2004, Quiz2, Question 2, Three thread rendezvous

Fall 2004, Quiz2, Question 3, Binary semaphore

Fall 2004, Final, Question 9, Path expression

Fall 2005, Quiz2, Question 4, Reader/writer problem

Fall 2005, Quiz2, Question 5, Cooperative thread scheduler

Fall 2006, Quiz2, Question 9, Fork

Fall 2006, Quiz2, Question 5, Resource allocation graph

Fall 2006, Final, Question 5, Exponential Queue or multi-level feedback queue scheduling

Spring 2008, Quiz2, Question 4, use of semaphores
Spring 2008, Final, Question 2, Effect of OS on time-jitter while sampling an ADC
Spring 2008, Final, Question 5, Critical section, design new instruction

CAN programs

Fall 2005, Quiz2, Question 1, CAN protocol
Fall 2005, Quiz2, Question 2, CAN bandwidth
Fall 2006, Quiz2, Question 1, CAN synchronization
Fall 2006, Quiz2, Question 2, CAN bandwidth
Fall 2006, Quiz2, Question 3, CAN voltage protocol
Fall 2005, Final, Question 4, CAN bandwidth
Fall 2005, Final, Question 5, CAN interrupt latency requirements
Fall 2006, Final, Question 3, CAN protocol
Spring 2008, Quiz2, Question 1, CAN latency requirement on RXF
Spring 2008, Final, Question 1, CAN noise detection/recovery
Spring 2008, Final, Question 7, CAN bandwidth

FFT questions

Spring 2008, Quiz2, Question 2, Implementing FFT on the 9S12 in binary fixed point
Spring 2008, Final, Question 6, FFT interpretation

General questions

Fall 2003, Quiz1, Question 1, SCI interrupts and use of fifo
Fall 2003, Final, Question 7, Sequence of events in a SCI interrupt
Fall 2003, Final, Question 8, SCI data flow graph
Fall 2004, Quiz2, Question 4, Time-jitter
Fall 2004, Quiz2, Question 5, Definitions and a word bank
Fall 2005, Quiz2, Question 6, Time-jitter
Fall 2006, Final, Question 4, Critical section
Spring 2008, Quiz2, Question 3, Determine the step response of an RC circuit (411 review)