CS 342302 Operating Systems

Fall Semester 2021

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Weekly Review 1

The questions here serve the purpose of reviewing concepts from the lecture, and expect the concepts to be tested on the midterm and final. However, they are by no means exhaustive. Anything covered in the lecture and projects can be tested.

1. Definitions and Short Answers - week 1 (9/13 lectures)

1. What is **batch processing**? What are its advantages? Disadvantages?
2. What is **multiprogramming**? What disadvantage of batch processing does it address?
3. Compare **multiprogramming** and **multitasking** in terms of number of users, number of jobs running, and need for support features. (textbook p. 23)
4. What is an **instruction set architecture** (ISA)? How is it different from a CPU or a processor?
5. What are reasons for the trend from single processor to multiprocessor architectures?
6. What makes tightly coupled multiprocessors difficult to **scale** to a large number of processors?
7. What are examples of **real-time** systems? How do they differ from **high-performance** systems?
8. What are examples of **hard real-time** vs **soft real-time** systems?

2. EdSim51 and 8051 - week 1 (9/15 lecture)

1. What is an assembler?
2. Given the sample assembly program:  
   ORG 0000H  
   MOV 90H, #24H  
   END
   1. What is a **directive** in this assembly program, and how is it different from an instruction?
   2. What is an **instruction**? What does the assembler do to an instruction?
   3. What is an **opcode** in the above example? An **operand**?
3. What does 90H refer to? What does #24H refer to? Why is there a # in front of 24H but not in front of 90H?
4. What is a **NOP**? and how do you pronounce it?
5. Why is 8051 called a **Harvard architecture**? How is it different from a **von Neumann** architecture?
6. What is a **PC** in a processor? What are the ways PC value can change?
7. How many bytes is 8051’s **code memory**? How many bits are needed to represent the code address?
8. What is **DPTR** in 8051? How is it related to **DPL** and **DPH**?
9. How big is the IDATA memory in 8051?
10. What is a special-function register (SFR)?
11. What is the meaning of **simplex**, **half-duplex**, and **full-duplex** communication? Which one is the UART (serial port)?
12. if #24H refers to hex 24 integer value (“immediate”) in Intel assembly, why #FFH does not refer to hex FF integer value? Name two ways to express 0xFF in Intel assembly syntax.
13. What is the meaning of MOV A, 17 in 8051 assembly, and how is it different from MOV A, #17 ? What about MOV A, 17H ? MOV A, #17H ?
14. What is a **general-purpose input/output** (GPIO) port? What are they called on 8051?
15. Why do you have to write a **0 bit** to **turn on** an LED segment? Why write a **1 bit** to **turn off**?
16. What is an “immediate” operand?
17. What is a "direct" operand?
18. How do you pronounce “UART”? What is another more descriptive term for UART?