

Assignment 4  
(Due date: Thursday, 3/5/2009, in class)

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|------------|--------|
| Your name: | Grade: |
|------------|--------|

Complete the following questions at the end of (textbook) Chapter 4 on pages 142—144.

- For exercises 1–16, match the power of 10 to its name or use (using **A**, **B**, ... through **I**):

**A.**  $10^{-12}$

**B.**  $10^{-9}$

**C.**  $10^{-6}$

**D.**  $10^{-3}$

**E.**  $10^3$

**F.**  $10^6$

**G.**  $10^9$

**H.**  $10^{12}$

**I.**  $10^{15}$

- 1. Nano
- 2. Pico
- 3. Micro
- 4. Milli
- 5. Tera
- 6. Giga
- 7. Kilo
- 8. Mega
- 12. Latin for “thousand”
- 13. Spanish for “little”
- 14. Peta
- 15. Roughly equivalent to  $2^{10}$

- For Exercises 17–23, match (using **A, B, .. F**) the acronym with its most accurate definition .

- A. CD-ROM**
- B. CD-DA**
- C. CD-WORM**
- D. DVD**
- E. CD-RW**
- F. CD**

17. Generic compact disk that is recorded during manufacturing

18. Data is stored in the sectors reserved for timing information in another variant

19. Can be read many times, but written after its manufacture only once

20. Can be both read from and written to any number of times

21. Format used in audio recordings

22. There is one tract that spirals from the inside out

23. A newer technology that can store large amounts of multimedia data

- **Exercises 24–64 are problems or short answer exercises.**

24. Define the following terms:

a. Pentium IV processor

b. hertz

c. random access memory

25. What is the word length in the Pentium IV processor?
  
26. What does it mean to say that a processor is 1.4 GHz?
  
27. What does it mean to say that memory is 133 MHz?
  
28. How many bytes of memory are there in the following machines?
  - a. 128MB machine
  
  - b. 256MB machine
  
29. Define RPM and discuss what it means in terms of speed of access to a disk.  
  
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30. What is the stored-program concept, and why is it important?

31. What does “units that process information are separate from the units that store information” mean in terms of a computer architecture?

32. Name the components of a von Neumann machine.

33. What is the addressability of an 8-bit machine?

34. What is the function of the ALU?

35. Which component in the von Neumann architecture acts as the stage manager. Explain.

37. What is an instruction register, and what is its function?

38. What is a program counter, and what is its function?

39. List the steps in the fetch-execute cycle.

40. Explain what is meant by “fetch an instruction.”

41. Explain what is meant by “decode an instruction.”

42. Explain what is meant by “execute an instruction.”

43. Compare and contrast RAM and ROM.

44. What is a secondary storage device, and why are such devices important?

46. Draw one surface of a disk showing the tracks and sectors.

48. What is a cylinder?

51. Describe a parallel architecture that uses synchronous processing.

52. Describe a parallel architecture that uses pipeline processing.

53. How does a shared-memory parallel configuration work?

54. How many different memory locations can a 16-bit processor access?

64. What is the difference between 1K of memory and 1K transfer rate.