

Assignment 5: “Hardware, Part II”

due in section during the week of 9 March 1999

Please write or type your answers on one or more separate pieces of paper.

Note that the deadline for this assignment coincides with the extended deadline for Assignment 4 : “Hardware, Part I.” That is, both assignments are due in section during the week of 9 March 1999.

Like its predecessor, this assignment requires use of the Web.
This assignment also requires use of a printer.

If, for some reason, you simply cannot obtain access to the Web or to a printer before this assignment’s deadline, please speak with your teaching fellow prior to the deadline, lest you be penalized for incomplete and/or late work.

If you have never used a printer before, please do not be intimidated by this assignment. Simply contact me or your teaching fellow for assistance. No worries.

Short answers. (6 points each.)

Please answer each of the seven questions below in one or more words or sentences.

1. About how many bytes of data can one CD-ROM disc store?
2. Suppose that you own a laptop that doesn’t have an built-in modem. You want to connect your laptop to the Internet via an ISP, and so you decide to buy an expansion card for your laptop. But what kind of expansion card must you buy? That is, what kind of expansion bus do most laptops have?
3. The most common kind of floppy disk is 3.5 inches in width. Yet this disk isn’t really floppy; that is, it’s not very bendable. In fact, it’s made mostly of fairly firm plastic. So why is the 3.5-inch floppy disk called a “floppy” disk?
4. As you know, it’s a bad idea to keep 3.5-inch floppy disks near magnets, as the latter can corrupt or erase the former. Technically speaking, though, how can something silly like a refrigerator magnet possibly affect a disk?

questions continue on opposite side...

5. Suppose that you are the CEO of Microsoft (for better or for worse) and plan to release a new version of the Windows operating system, dubbed Windows 99, next month. But this new operating system takes up hundreds of megabytes of space. And so you must decide on what sort of media to ship Windows 99 to consumers. Your warehouses' shelves are replete with blank Zip disks, 3.5-inch floppy disks, Jaz disks, DVD-ROM discs, and CD-ROM discs.

Before you make your decision, however, you decide to rearrange your warehouses' shelves so that these media are sorted according to their storage capacities.

Rank these five media according to their storage capacities; specifically, tell us which medium can hold the most data, which can hold the next most, and so on.

6. Suppose that you own a computer with a 2x-speed CD-ROM drive. Exasperated by the drive's slow speed, you head to CompUSA to purchase a faster one. You find a 32x-speed CD-ROM drive on sale and decide to buy it.

Theoretically, your new drive is 16 times faster than your old drive. But exactly how fast was your old drive? That is, what is the transfer rate (in bytes per second) of a 2x-speed CD-ROM drive?

7. Consider the write-protect tab on an ordinary 3.5-inch floppy disk. If that tab is positioned such that it is not covering up the small, square hole in the disk (*i.e.*, you can see through the disk via the square hole), is the disk locked (write-protected) or unlocked (not write-protected)?

Browsing a catalogue for a new computer. (2 points each.)

The following sixteen questions are designed to give you experience in reading and understanding printed computer ads. The answers to these questions can be found in the attached excerpts from MicroWarehouse's catalogue. MicroWarehouse is one of the largest mail-order sources for computer hardware.

8. What is the speed of the CD-ROM drive that ships with the Compaq Armada 1700 Series? (If the series has two or more options for CD-ROM drive speed, what are they?)
9. How big is the hard drive that ships with the Compaq Armada 1700 Series? (If the series has two or more options for hard drive capacity, what are they?)
10. What is the speed of the processor that ships with the Compaq Armada 1700 Series? (If the series has two or more options for processor speed, what are they?)
11. Who manufactures the processor that Compaq uses in its Armada 1700 Series?
12. What is the maximum amount of RAM that computers in the Compaq Armada 1700 Series can have?
13. What operating system do computers in the Compaq Armada 3500 Series come with?
14. How much level-2 cache do computers in the Compaq Armada 3500 Series come with?
15. How heavy are the computers in the Compaq Armada 3500 Series?
16. How much RAM does the Compaq Prosignia 140 come with?

questions continue on next page...

17. How fast is the modem that comes with computers in the Compaq Armada 6500 series?
18. Note that you can order an IBM ThinkPad 390 with either a 233MHz Pentium processor with MMX capabilities or a 233MHz Pentium II processor. Keeping in mind our discussion of CPUs last week, which is faster?
19. How many PCMCIA cards does the IBM ThinkPad 390 support? Which type?
20. Does the IBM Aptiva E Series support USB?
21. Who manufactures the processor that IBM uses in its Aptiva E 240 computers?
22. Does the IBM Aptiva E 570 come with a CD-ROM drive or a DVD-ROM drive?
23. What secondary storage devices do computers in the IBM Aptiva E 240 Series come with?

Browsing the Web for a new computer. (23 points.)

The following question requires that you print out a Web page (described below). You may print out the page from a computer at home, a computer at work, a computer in one of Harvard's computer labs, or any other computer that is connected to the Internet and to a printer. For directions on how to print from a Harvard lab computer, please visit the URL below.

`http://www.fas.harvard.edu/computing/guides/printing.html`

If you need further help printing from one of Harvard's lab computers, please speak with either your teaching fellow or with one of the user assistants at the Help Desk in room B-13 of the Science Center.

Again, if you have never used a printer before, do not be intimidated by this question. Simply contact me or your teaching fellow for assistance.

24. Not only can you buy computers from catalogues nowadays, you can also shop for new computers online. In particular, companies like Dell (<http://www.dell.com/store>), Gateway (<http://www.gw2k.com>), Micron (<http://www.micronpc.com>), and Apple (<http://store.apple.com>) allow users to price and purchase machines over the Web.

Suppose that I am interested in buying an Apple Macintosh computer with the following specs:

- 300 MHz PowerPC G3 CPU with 512 KB of level-2 cache
- 64 MB RAM
- 6 GB HD
- Zip drive
- CD-ROM drive
- SCSI support
- 10/100Base-T built-in Ethernet support
- 56K modem
- 16-inch monitor (a.k.a. display)

question continues on opposite side...

Your job is to price a computer with these specs for me and to print out your findings. Specifically, you must do the following.

1. Go to <http://store.apple.com> with a Web browser.

2. On the page that appears, click the “Power Macintosh G3” image (shown at right) at the top of the page.



3. On the page that then appears, click on the picture of the computer underneath the word “Good” next to the phrase “300 Mhz” (shown below).



4. On the “Build to Order” page that then appears, use the pull-down menus to “build to order” a computer with the specs that I have required above. When you are done “building,” click on the “Continue” button at the bottom of the page (shown at right).



5. On the “Info & Options” page that then appears, you will see a summary of your customized computer. (Toward the bottom of the page, there will also be a list of “add-on items.” You can ignore those—*i.e.*, don’t check off any of the boxes next to add-on items.) Proceed directly to the bottom of the page and click the “Add to Order” button (shown at right).



6. On the “Your Order” page that then appears, you will see a review of your customized “order” along with your order’s subtotal. These are your findings for me! Print out this page by selecting **Print** from your Web browser’s **File** menu, following any on-screen prompts. Submit this print-out as your answer to this question.

questions continue on next page...

Survey. (1 point each.)

- 25. About how long did it take you to answer the 24 questions above?
- 26. What did you enjoy about this assignment, if anything?
- 27. What did you dislike about this assignment, if anything?

Extra credit. (5 points.)

- 28. What number, in decimal notation, is represented by the 32-bit binary number below?

01110000000011100000011001100101

How do you write the number 4,294,967,294 (given in decimal notation) in binary notation?