

CIS 350 – INFRASTRUCTURE TECHNOLOGIES

IN-CLASS SMALL GROUP ACTIVITY # 5

Names of group
members: _____

Topic: Peripheral Devices

Logistics

1. Get in group of 3 or 4.
2. Discuss and complete the assignment together.
3. Choose a recorder to prepare the final copy to hand in to instructor, one per group.
4. Be sure all group members' names are on final copy. Do not add names of your classmates who missed this class and did not participate in the assignment.

Work the following problems.

1. A hard disk contains 25 platters. The data is recorded on both surfaces of each platter. Each surface has 2,000 tracks. One track can hold 3,000,000 bytes of information.

What is the capacity (expressed in Bytes, Kilobytes, and Megabytes) of one cylinder?

To convert bytes to kilobytes, divide the number of bytes by 1024.

To convert kilobytes to megabytes, divide the number of kilobytes by 1024.

To convert megabytes to gigabytes, divide the number of megabytes by 1024.

What is the capacity (expressed in Kilobytes, Megabytes, and Gigabytes) of the entire hard disk?
Show your computations.

2. Assume that the average seek time for the hard disk from problem 1 is 12ms (milliseconds), there are 500 sectors on each track, and the disk rotates with 9000 revolutions per minute.

A. Compute the average rotational delay (latency time). Compute the transfer time for 1 sector. Express both times in milliseconds. Then compute the total disk access time required to access 1 sector which is the sum of the three times: the average seek time, the average rotational delay (latency time), and the transfer time for 1 sector.

B. Compute the transfer time for 200 sectors. Express this time in milliseconds. Then compute the total hard disk access time required to read 200 sectors which is the sum of the three times: the average seek time, the average rotational delay (which you have already computed in step 5A above), and the transfer time for 200 sectors.

Notes:

- The average seek time is constant = 12 ms
- The average rotational delay is the same for 2A and 2B above
- The transfer time for problem 2B should be greater than for problem 2A because it takes more time to transfer 200 sectors than 1 sector
- Distinguish between the time units: minutes, seconds, and milliseconds
 - 1 minute = 60 seconds
 - 1 second = 1,000 milliseconds