## CSE 562 Assignement #2: Storage Concerns

Date: February 5th, 2014

\*\*\*\*\* Due on February 17th, 2014 at the start of the class. \*\*\*\*\*

## Please follow all the instructions given below :

- 1. This assignment has one question with four subquestions. You need to submit one hard copy at the start of the class on Monday February 17, 2014.
- 2. You need to give us the entire solution and clearly state any assumptions you have made to solve the problem.
- 3. No late submissions are allowed.

**Problem 1.** [100 pts] Consider a disk with a block size of 2048 bytes, 10 double-sided platters (i.e., 2 surfaces per platter), 200 tracks per surface, 50 blocks per track, an average seek time of 20 msec. Furthermore, consider a file containing 100,000 records of 200 bytes each to be stored on this file. (assume that records can not span multiple blocks).

- 1. If the disk platters rotate at 10800 rpm (revolutions per minute), what is the maximum rotational delay.
- 2. How many blocks are required to store the entire file? If the file is arranged sequentially on disk, what is the minimum number of surfaces required to store the file?
- 3. What time is required to read a file containing 100,000 records of 200 bytes each sequentially? How would your answer change if the disk were capable of reading/writing from all heads in parallel (and the data were arranged optimally on disk)?
- 4. Given that the file specifications remain the same as above, what should be the read time for a flash disk so that the flash disk becomes a faster option than the disk?