

Prepare your answers to this assignment using a word processor or text formatting system. Acceptable formats are MS Word, Open Office, and PDF. Turn in this assignment electronically using the digital dropbox on Blackboard.

Name your file as indicated below. Points will be deducted for improperly formatted filenames.

<youronyen>-hw5.<ext>

Questions

Eight questions, points as indicated:

1. [12 points] Suppose that a disk file is stored on 5 contiguous blocks on one track and 6 contiguous blocks on the next track. The disk has the following parameters: average seek time = 4 msec, track-to-track seek time = 0.5 msec, block read time = 1.3 msec, spindle speed = 7200 rpm. Calculate the time it will take to read all 11 blocks of the disk file. Be sure to show the steps you took to arrive at your answer.
2. [12 points] Redo #1 assuming that all 11 blocks are located at random locations on the disk (i.e. none of the blocks are contiguous).
3. [12 points] Elmasri and Navathe, Exercise 13.27. If needed, use open addressing for collision resolution.
4. [12 points] Redo #3 using disk blocks that hold only one record, a hash function of $h(K) = (((K \bmod 10) + (K \bmod 100) + 5) \bmod 18)$, and open addressing for collision resolution. Use 18 buckets, numbered 0 to 17.
5. [12 points] Draw a graphical representation of the binary search tree that would result from inserting the following key values in the order shown: 28, 67, 12, 72, 24, 31, 14, 17, 8, 55, 29
6. [12 points] Starting with the binary search tree at the end of #5, draw the tree that would result from deleting the following key values in the order shown: 14, 8, 31, 28
7. [14 points] Using a B+-tree with $p = 3$ and $p_{\text{leaf}} = 2$, draw a graphical representation of the tree that would result from inserting the key values from #5 in the order shown.
8. [14 points] Redo #7 with $p = 4$ and $p_{\text{leaf}} = 3$.