COMP 530 Quiz #3

My name is _____

Only one answer per question. If you feel that a question has more than one answer, choose the one that you feel is the best answer.

(1) Consider the following extendible hashing file:

gd = 2

Directory

H(*k*); ptr

0	2
1	1
2	3
3	1

Data

address	ld	data			
1	1	1	3	5	7
2	2	0	8	12	
3	2	2	6	22	

Say I add the data item 9. Then, what is one possible configuration for the second and fourth entries in the directory, respectively?

(a) | 1 | 1 | and | 3 | 1 |

(b) | 1 | 1 | and | 3 | 3 |

(c) | 1 | 1 | and | 3 | 4 |

(d) | 1 | 2 | and | 3 | 3 |

(e) None of the above, since the directory would have doubled

(2) Say I then add the data items 20, 26, and 4. At this point, what will the directory look like?

(a)

$H(k)$	ptr
0	2
1	1
2	3
3	1

(b)

$H(k)$	ptr
0	2
1	1
2	3
3	3

(c)

$H(k)$	ptr
0	2
1	1
2	3
2	5
3	4

(d)

$H(k)$	ptr
0	2
1	1
2	3
3	4
4	5
5	1
6	3
7	4

(e)

$H(k)$	ptr
0	2
1	1
2	3
3	4
4	2
5	1
6	3
7	5

(f)

$H(k)$	ptr
0	2
1	1
2	3
3	1
0	2
1	1
2	3
3	2

(3) What will the global depth be at this point?

(a) 0
(b) 1
(c) 2
(d) 3
(e) 4

(4) What could be the contents of bucket 2 at this point?

(a)

0	8		

(b)

0	12		

(d)

0	26		

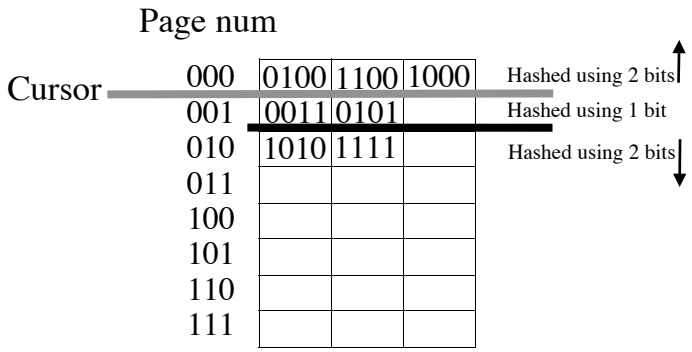
(e)

0	16		

(5) If the global depth of an extendible hashing file is 5, and the local depth of a bucket (disk block) is 3, then how many pointers to that disk block will there be?

(a) 1
(b) 3
(c) 4
(d) 5
(e) 8

(6) In the following linear hashing file, one of the records is in the wrong place. Which one is it?



(a) 1100
(b) 0101
(c) 0011
(d) 1010
(e) 1111

(7) Say that I reinsert the "incorrect" record into its correct slot, and then I add a record with key value 1101 into the file. If the maximum fill percentage for the file is 80%, then what will the contents of the second bucket or block in the file be?

(a) It will remain unchanged
(b) It will have items 0011, 0101, 1111, and 1101, with one of them attached via a chain
(c) It will have items 0101 and 1101
(d) It will have items 0011 and 0101
(e) None of the above

(8) Continuing the last question, say I then add the items 1011 and 0111 to the file. What will the contents of the fourth block in the file be?

(a) It will have items 1111 and 0111
(b) It will have items 0011 and 1011
(c) It will have items 0011, 1111, 1011, and 0111, with one of them attached via a chain.
(d) None of the above

(9) Again continuing the with the same problem, what will the contents of the first block be?

(a) It will be empty
(b) 0100, 1100, 1000
(c) 0100 and 1000
(d) only 1000
(e) None of the above

(10) What is the big advantage of linear hashing as opposed to static hashing?

(a) Linear hashing can handle a dynamically growing file size.
(b) Linear hashing guarantees no more than 2 disk I/Os per lookup.
(c) Linear hashing can more easily handle long runs of key values.
(d) Static hashing does not require that the hash function be known beforehand.

(11) What is the big advantage of linear hashing as opposed to extendible hashing?

(a) Linear hashing can handle a dynamically growing file size.
(b) Linear hashing does not require a directory file.
(c) Extendible hashing will have big problems with long runs of identical key values.
(d) Extendible hashing does not have to make use of chaining.

(12) What is the big advantage of a B+-Tree as opposed to all of the various hashing schemes?

(a) Hashing schemes cannot work with long strings as key values.
(b) The B+-Tree can more efficiently handle insertions.
(c) The B+-Tree can handle range queries with relative efficiency.
(d) The B+-Tree can handle a dynamically growing file size.