Exam #2

CSE 3320.002

Spring 2017

Name: _____

UTA ID:_____

"I certify that the following work is my work alone and I will follow the highest standards of integrity and uphold the spirit of the Honor Code"

Signature:_____

Directions: This is a closed book, closed notes exam. You may use a hand written 3x5 note card with notes. Please answer the questions briefly. Complete sentences are not necessary. Write your answers legibly. Unreadable answers will be counted wrong. There is a powers of 2 table on the last page.

1. [8pts] What is deadlock?

2. [9pts] Given a file system that uses inodes to represent files. Disk blocks are 8KB in size, and 16 bit pointers. This file system's index nodes have 11 direct disk blocks, as well as 2 indirect disk blocks and 3 double indirect block and a triple indirect block. What is the largest file that can be held using this inode layout?

3. [6pts] Describe the structure of the low level formatting applied to sectors. (3 parts).

4. [9pts] The FAT-32 is a variation of which of the three allocations schemes we discussed? Give an advantage and a disadvantage of FAT-32.

5. [8pts] List the two schemes we discussed for tracking free disk blocks. Give an advantage of each.

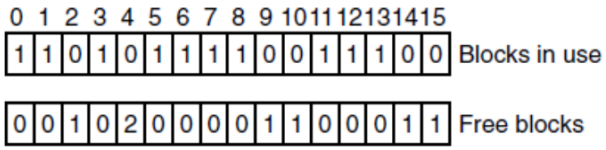
6. [6pts] What is a precise and an imprecise interrupt?

7. [8pts] How much cylinder skew is needed for a 7200-RPM disk with a track-to-track seek time of 3 msec? The disk has 200 sectors of 512 bytes each on each track

8. [8pts] Give two strengths of memory mapped I/O.

9. [8pts] Describe the four conditions for a deadlock

10. [7pts] When performing a file system consistency check, the following occurred. How would you correct it?



11. [8pts] Structurally, the ISO 9660 disk format differs from the normal disk layout in one significant manner. What is it?

12. [8pts] Given the following request queue -- 8, 17, 4, 76, 42, 20 90, 41, 94, 97 with the disk head initially at the track 50 initially moving in the negative direction (towards 0). The beginning of the disk at 0 and the end of the disk is at 100. Calculate the travel time for the C-SCAN algorithm. Assume all reads are made in the negative direction if applicable.

13. [7pts] Give 3 of the 4 key concepts of I/O software that we discussed.

Bonus [5 points a piece]:

A. For Linux device drivers what is the purpose of the file_operations structure?

B. What is the purpose of the ioctl() system call?

n	2^n	n	2^n	n	2^n
0	1	11	2,048	22	4,194,304
1	2	12	4,096	23	8,388,608
2	4	13	8,192	24	16,777,216
3	8	14	16,384	25	33,554,432
4	16	15	32,768	26	67,108,864
5	32	16	65,536	27	134,217,728
6	64	17	131,072	28	268,435,456
7	128	18	262,144	29	536,870,912
8	256	19	524,288	30	1,073,741,824
9	512	20	1,048,576	31	2,147,483,648
10	1,024	21	2,097,152	32	4,254,967,296