File System Test

1) Who is dumber, Ed, Edd, or Eddie?

2) (EXT2 slower/VFAT slower) I want to append to the end of a very long file. Which is slower, VFAT or EXT2?

3) What is one disadvantage of the shortest-seek-next disk scheduling method compared to the circular-scan method?

4) Suppose the following things happen in this order. What's in the file when its all done? The file system uses open-close consistency.

- The file double-d.txt has a '0' in it.
- Ed opens it for writing,
- Eddie opens it for writing.
- Ed writes an “Ed'.
- Eddie writes an 'Eddie'
- Eddie closes the file.
- Ed closes the file.

5) What would be the contents of the file in question #4 if the file system used single-image consistency?

6) Circle **all** that apply: What information is in a EXT2 inode?

File name	Length of file name	Size of file
Permissions	Archive bit	Long file name entries

7) Using EXT2, assume 4 byte pointers and 1024 byte blocks. What's the biggest file system I can ever make? Note: Not file, but file system.

8) Assume a 1024 byte block size. Suppose I have a 1GB disk to format with VFAT16. How big is each cluster? Show math!

9) Which is faster for many short writes on a ten disk array, RAID 0 or RAID 5?

10) There is a machine that makes Ed,Edd and Eddie cartoons. It's very important to keep an inventory of all cartoons ever made. This database needs to hold 50G of data. Using RAID 5 and 10G disks, how many disks would be needed to hold the data and survive simultaneous loss of one disks.

11) The cartoon machine makes LOTS of files, one for every cartoon ever created. These files are scattered throughout many subdirectories, and each file is small. One day the machine operator notices that all though the disk is not full, he cannot create any more files. What file system is this machine using?

- VFAT
- EXT2
- Neither. If there is free space, both VFAT and EXT2 can make more files.
- Both. There is an upper limit on the number of files that both VFAT and EXT2 can create.

12) On a modern operating system like Linux or Windows or MacOS, does the hard drive controller use polling?

13) What does the content of bit 12 of the second group of the block bitmap describe?

14) If bit 14 of the first group's inode bitmap is set to true, should all the bit 14s of all the groups inode bitmaps be set to true?

15) About how much does a good sized cache speed up a file system on read in general for normal work loads?

a) About 0.7% b) About 7% c) About 70%

16) Which provides the fastest file I/O?

a) Contiguous allocation b) Linked allocation c) Indexed allocation

17) In real time operating system, which process should be scheduled first?

18) I want to store the filename “1234567890.txt” into a Windows 95 VFAT file system. How many directory entries does this consume?

19) My disk has 1024,000,000 bytes free. I'm using VFAT with 512 byte blocks and a cluster size of 2 blocks per cluster Suppose I want to store a one byte file. How much space is allocated to that file?

20) I want to read the first byte of the file \autoexec.bat on my Windows VFAT system. Assume nothing is cached? Which disk reads must the file system perform? (Hint: List one or more disk reads. Say things like “read the inode bitmap, or read the boot block, or something like that.)

21) Assume identical hardware. Which likely stores more data, RAID 0 or RAID 1?

23) Which of these would likely cause an interrupt to occur? (Circle all that apply)

- The operating system computes the disk block it needs.
- The operating system searches it's cache for a needed disk block.
- The operating system gives the I/O request to the hardware disk controller.
- The data just finished coming in from the disk and is now ready to use.

24) Which likely takes longer or a normal hard drive?

Reading four blocks that are stored contiguously.
Reading two blocks that are stored separately.