

## INF 559 – Spring 2020

### Quiz 3: RAID & File Systems (10 points)

10 minutes

1. You have stored a stripe of binary data along with its parity. However, one of the bits in the stripe gets corrupted and it now looks like: 0011 1000 11?0 1011 (? = corrupted bit). If the value of the parity bit is 1, what is the value of the corrupted bit? [1 point]
  - a. 0
  - b. 1
  - c. Cannot be determined from given information
2. Which RAID level stores 2 parity blocks per stripe of data? [1 point]
  - a. RAID 10
  - b. RAID 5
  - c. RAID 6
3. Give 1-word answers for each of the following [3 points]
  - a. Which structure keeps track of the inodes available in the inode table?  
**Inode bitmap (imap)**
  - b. Which structure keeps track of the blocks available in the data region?  
**Data bitmap (dmap)**
  - c. Which structure stores file system information such as size of partition, number of inode blocks, etc.?  
**Superblock**
4. List all the steps required to open the file **‘/foo/bar/data.txt’** (assume that we are only opening the file, not reading or writing data to the file) [5 points]
  - a. **Find inode and content of root (usually root's inumber = 2)**
  - b. **Look for “foo” in the directory -> foo's inumber -> foo's inode**
  - c. **Read inode and content of foo directory**
  - d. **Look for “bar” in the directory -> bar's inumber -> bar's inode**
  - e. **Read inode and content of bar directory**
  - f. **Look for “data.txt” in the directory -> data.txt's inumber -> data.txt's inode**
  - g. **Permission check + allocate file descriptor**