Practice Problems on File Systems

1. In a disk, there are 4 platters where both upper and lower surfaces are being used. On each surface there are 64 tracks, and 128 sectors are within each track. Each sector can store 128 kb data. What is the total size of the disk?
   How many numbers of bits are required to represent the size of the disk?

   Answer: Disk size = 8 GB, number of bits required = 33.

2. Consider, in a disk average seek time is 20 ms, disk rotation 1000 rpm. There are 8 platters in the disk and both surfaces are being used. Platters have 128 tracks in each surface and 64 sectors in each track. Each sector can store 128 kb data. Find out average access time for transferring 1024 bytes data.

   Answer: 50.00045767213744751 ms.

3. A file system uses UNIX inode data structure which contains 8 direct block addresses, 2 single indirect block, 2 double indirect block and 2 triple indirect block. The size of each block is 32 Bytes and size of each block address is 4 Bytes. Find the maximum possible file size?

   Answer: 37632 Bytes or 36.75 KB.