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Project 8, OS

Q.1.

The indirect block can hold 128 disk addresses. Together with the 10 direct disk addresses, the maximum file has 138 blocks. Since each block is 1 KB, the largest file is 138 KB.

Indirect Block holds = 128 disk addresses

We have 10 direct disk addresses

Maximum File contains 138 blocks

So, since each block is 1 KB, the largest file is = 138 \*1 = 138 KB

Q.2.

I- Node holds total of 10 pointers.

Single indirect block holds 1024 pointers.

The double indirect block 10242 pointers.

The triple indirect block 10243 pointers.

So the total maximum possible file size 1,074,791,434 blocks = 16.06 GB

Q.3.

Seek time = 5 msec

Rotational delay = 4msec

So time to start transfer = 9msec

File size = 8 kb = 213 bytes

Time to read 213 bytes with transfer rate of 8 MB/sec = 0.977msec

So, total time to seek + rotate + transfer = 9 + 0.977msec = 9.977msec

Then since we want to write it as well it takes 9.977msec more

So, Total time to copy average file = 19.954 msec

Since it takes an average of 19.954 msec to copy a fie of size 8KB

1GB = 1024 MB = 1024 \* 1024 KB = 2^20 KB

So, for 1 GB it takes = (2^20)/2^3 \* 19.954 = 2615.41 sec