Our file system

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Creating a new file

1. Calculate the amount of needed blocks
2. Find any free blocks
3. Write an directory (dir) entry
4. At the end of every block, in addition there will be saved to address to the next block.

How does the dir actually look like ?

1. Name of file
2. Amount of total blocks used for file
3. Actual size
4. Which blocks are used (12-40, 30, 60-90)
5. Some meta data (when created, edited …)

Increase in filesize

1. Calculate new size
2. Calculate new total needed blocks to save file
3. Find any free blocks
4. Get last block written and edit the link to the new next block
5. Write blocks
6. If operations successfully completed, update file dir entry

Sequential read

1. Find entry to the file in our dir
2. Get the first block
3. Read till the end of the block and get the next address.
4. Jump to next block and read … (like linked list)
5. At the last block there is a special indicator telling us this is the EOF

Random file access

1. Lets say we want to access the file at byte 16301
2. We can simply calculate the right block and jump to it
3. In this case it's the 4^{th} block.
4. Then lets skip 301 bytes.
5. Destination reached.

Decrease in file size

1. Lets say we deleted 4500 bytes at byte 16000 out of our originally 24k file.
2. That means that the 4th block and the last 500 bytes of the 3rd block now contain useless data.
3. We calculate the new size of the file which is 19.5k. That means we need 5 blocks instead of 6.
4. The data will be moved to the right 5 blocks, the 6th will be unlinked from the block pointing to the 6th and removed from the dir. Dir will be updated.

File deleted ?

- No problem – just remove dir entry since every time you want to access a file you have to look it up here.
- No entry – no file – no problem ?

Save mode

- In this mode we will not only remove the dir entry, but also we will:
- Overwrite every once used block with random data.

Thank you for your interest