Worksheet 17

3/3/2025

10 Points Possible

Attempt 1

3/3/2025

NEXT UP: Review Feedback

Attempt 1 Score: N/A

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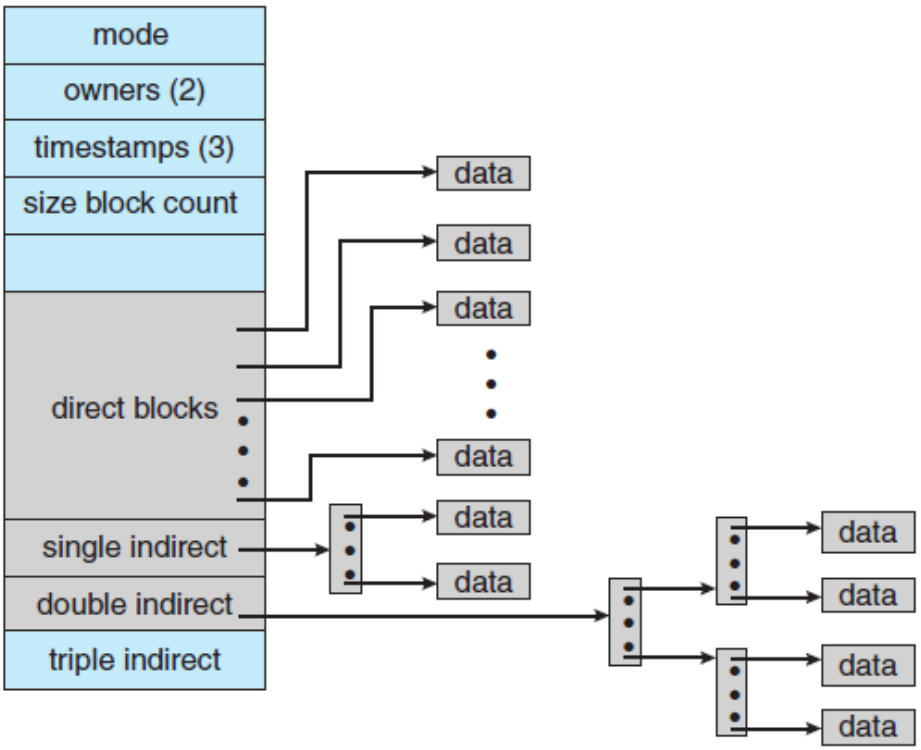
Unlimited Attempts Allowed

Details

In an ext2 file system an inode consists of only 15 block pointers.

- The first 12 block pointers are direct block pointers.
- The 13th pointer is an indirect pointer.
- The 14th pointer is a double indirect pointer.
- The 15th pointer is a triple indirect pointer.
- Block size of 4KB
- 32-bit addressing for the blocks

1. Which of these pointers will be utilized when the inode represents a file of size 64 KB?
2. Which of these pointers will remain unutilized?



Answer1:
Given,
File size = 64 KB
Block size = 4 KB
Blocks needed for the file = 64 KB / 4 KB = 16 blocks

So, to make up 16 blocks, we will use all 12 direct blocks available. This leaves us with 4 more blocks to think about.
For the rest of the 4 blocks, we need to navigate the single indirect.

In single indirect, [8 bits = 1 bytes]
file size / system bits = 4 KB / 32 bits = (4 x 1024 bytes) / 4 bytes = 1024 , this is the number of blocks it points to.
We will use 4 of these to make up the final 16 blocks.

So, the utilized pointers would be,
a) 12 direct block pointers and
b) 4 pointers from the single indirect block

Answer2:
The unutilized pointers would be,

a) The rest of the single indirect (1020) excluding the used 4 blocks
b) Entirety of double indirect
c) Entirety of double indirect

New Attempt