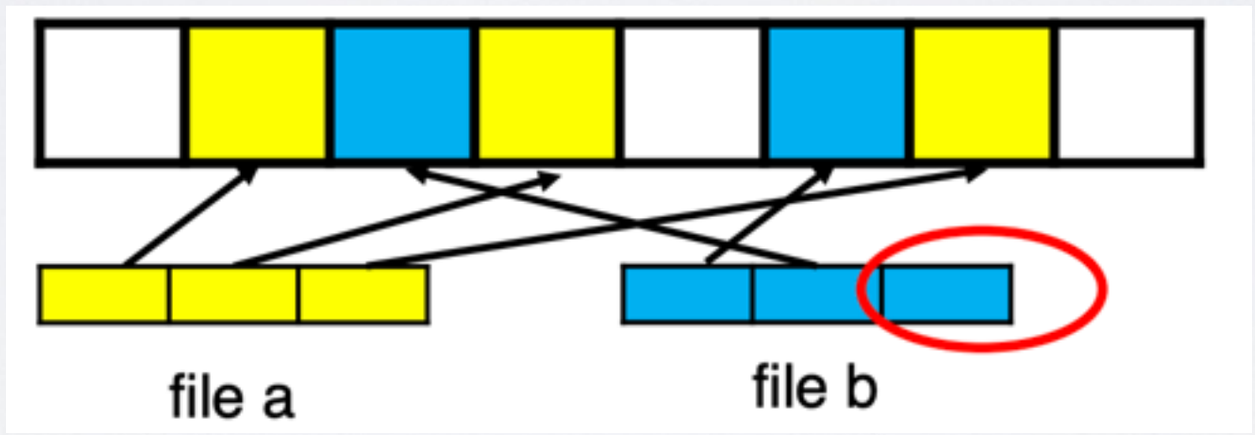
Another Approach : Indexed Files

Each file has a table holding all of its block pointers

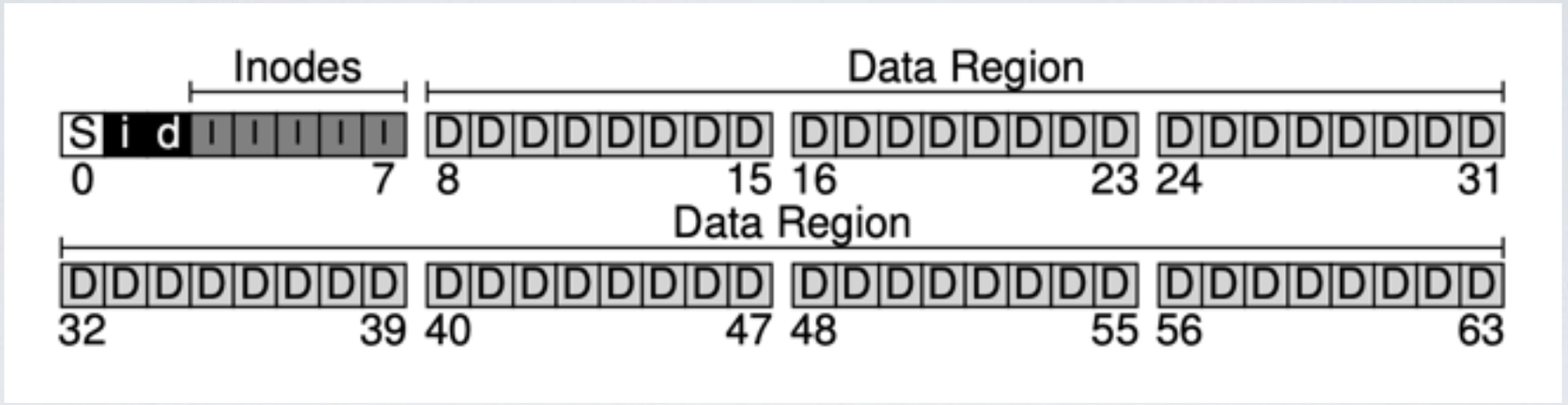
- Max file size fixed by table's size
- Allocate table to hold file's block pointers on file creation
- Allocate actual blocks on demand using free list



✓ Both sequential and random access easy

◉ Mapping table requires large chunk of contiguous space

Unix File System



The disk is (physically) divided into sectors (usually 512 bytes per sector)

The file system is (logically) divided into blocks (e.g., 4 KB per block)

➡ Disk space is allocated in granularity of blocks

1. The data blocks "D" stored files (and directories) content
2. The inodes blocks "I" stores the inode table
3. The data bitmap "d" block d tracks which data block is free or allocated (one bit per block on the disk)
4. The inode bitmap "i" block i tracks which inode is free or allocated (one bit per inode)
5. The Superblock "S" (a.k.a Master Block or partition control block) contains:
   - a magic number to identify the file system type
   - the number of blocks dedicated to the two bitmaps and inodes