

Solution - Bitmaps

Periodical compact/defragment disk

- locks up disk bandwidth during operation

Keep adjacent free blocks together on freelist

- costly to maintain

➔ FFS - bitmap of free blocks (same idea as Indexed File System)

- Each bit indicates whether block is free
e.g., 1010101111111000001111111000101100
- Easier to find contiguous blocks
- Small, so usually keep entire thing in memory
- Time to find free blocks increases if fewer free blocks

Bits in map	XXXX	XXOO	OOXX	OOOO
Fragment numbers	0-3	4-7	8-11	12-15
Block numbers	0	1	2	3

Using a Bitmap

Allocate block close to block x

- Check for blocks near $\text{bmap}[x/32]$
 - If disk almost empty, will likely find one near
 - As disk becomes full, search becomes more expensive and less effective
- ➔ Trade space for time (search time, file access time)

