What happen when power loss or system crash?

✓ Sectors (but not a block) are **written atomically** by the hard drive device

◉ But an FS operation might modify several sectors

- modify metada blocks (free bitmaps and inodes)

- modify data blocks

➡ Crash-consistency problem
a crash has a high chance of corrupting the file system

Solution 1 - Unix fsck (File System Checker)

When system boot, check system looking for inconsistencies
 e.g. inode pointers and bitmaps, directory entries and inode reference counts

➡ Try to fix errors automatically

◉ Cannot fix all crash scenarios

◉ Poor performance
- Sometimes takes hours to run on large disk volumes
- Does fsck have to run upon every reboot?

◉ Not well-defined consistency