

# Solutions

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## Solution 4.1

- a. HDD sectors: the tracks are divided into logical units (segments of a circle), which are called blocks or sectors. Sectors are the smallest addressable units of HDDs.
- b. HDD tracks: the disc surfaces are magnetized in circular tracks by the heads.
- c. HDD cylinders: all tracks on all disks at a specific arm position are part of a cylinder.

## Solution 4.2

Advantages:

- a. Fast access time
- b. Low power consumption
- c. No noise generation
- d. Mechanical robustness
- e. Low weight

Disadvantages:

- a. Higher price compared with HDDs of the same capacity
- b. Secure delete or overwrite is hard to implement
- c. Limited number of program/erase cycles

## Solution 4.3

- a. True. A frame is defined as the size of a disk page.
- b. False. The dirty bit is used to track whether the page has been modified before it's written back to disk. The pin is used to track popularity.
- c. False. Reference bits are not used for LRU policy. They are used for the Clock policy.

## Solution 4.4

Access Pattern	LRU	MRU	Clock
ABC DAB CD	8	5	8
JKL MLJ NK	7	6	7