

Computer Architecture





101001100010111
000111010111001
011010101001010
110110110101010
101010101001010



101001100010111
000111010111001
011010101001010
110110110101010
101010101001010



bit - 0 or 1



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101001100010111
000111010111001
011010101001010
110110110101010
101010101001010
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bit - 0 or 1

byte - 8 bits (A, 1)



101001100010111
000111010111001
011010101001010
110110110101010
101010101001010



bit - 0 or 1

byte - 8 bits (A, 1)

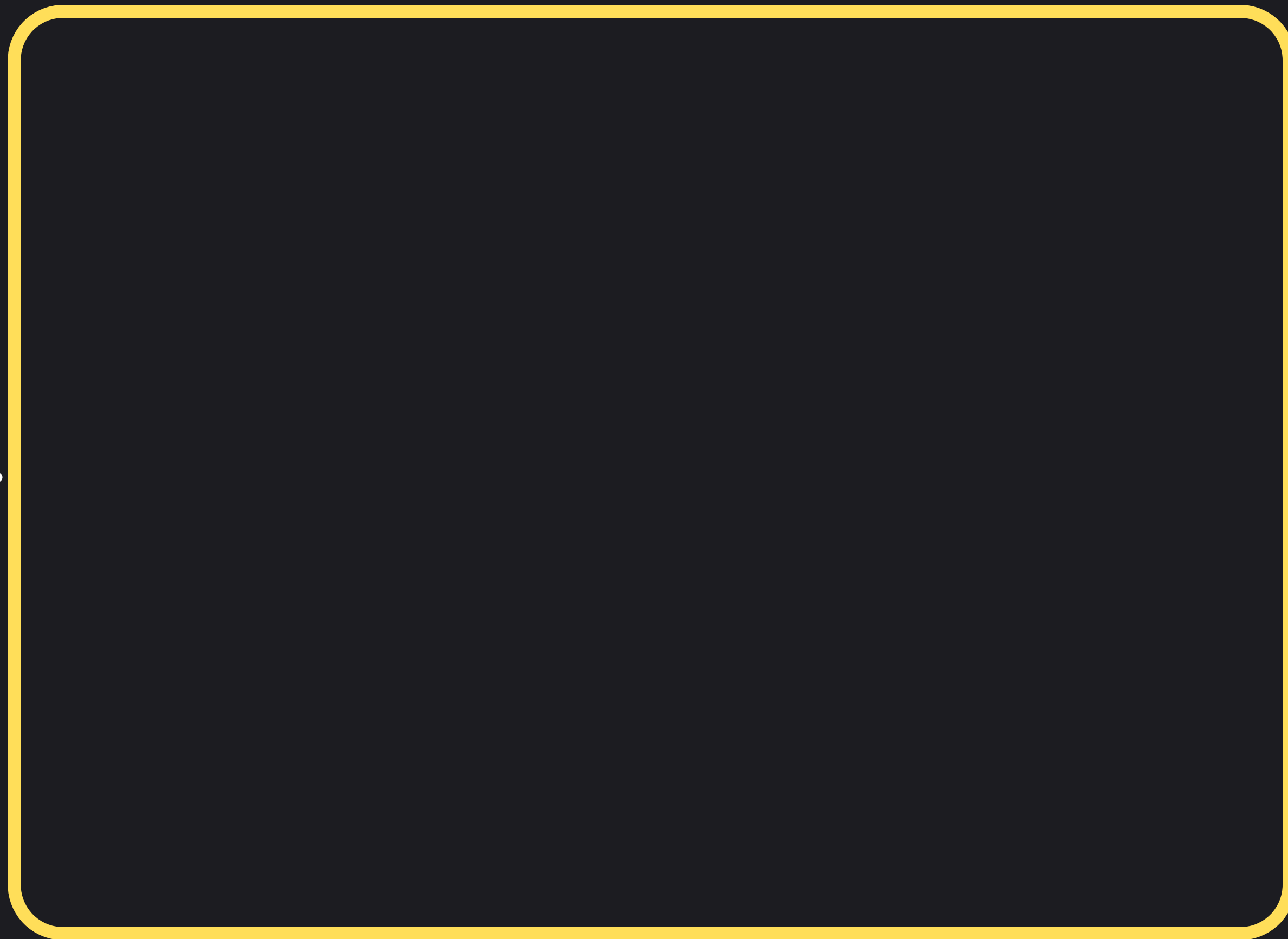
KB - 1024 bytes

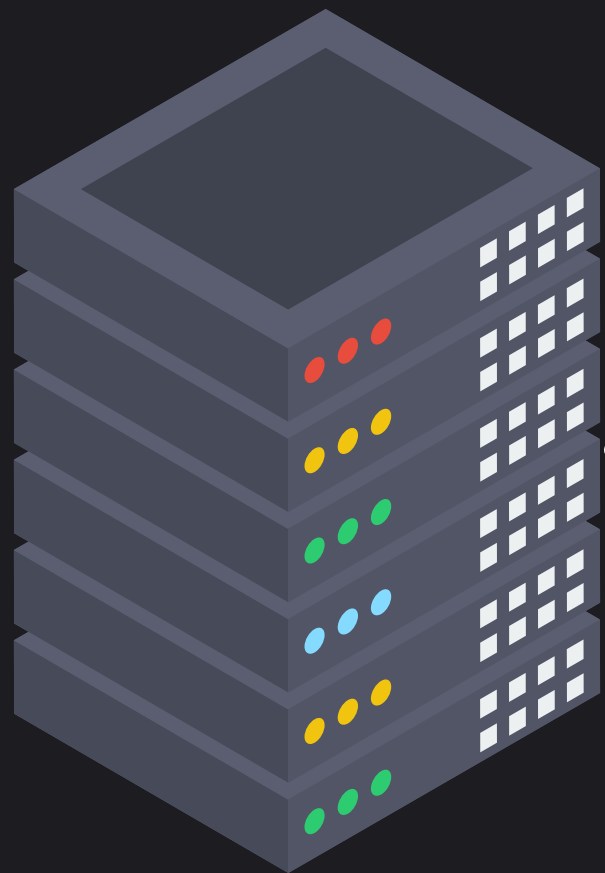
MB - 1024 KBs

GB - 1024 MBs

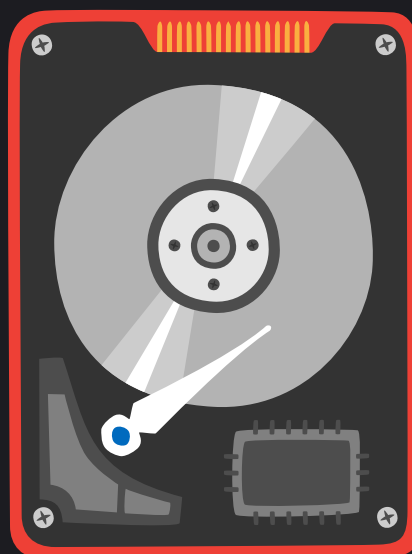
TB - 1024 GBs

Disk Storage



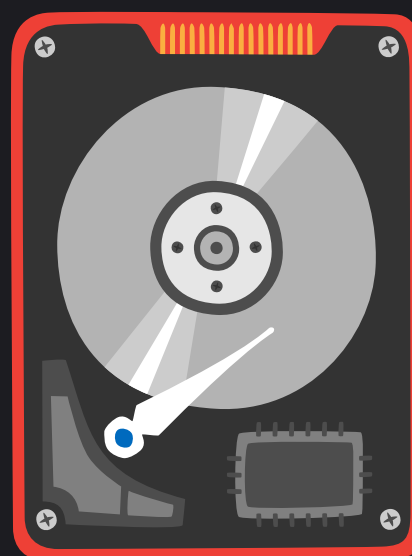


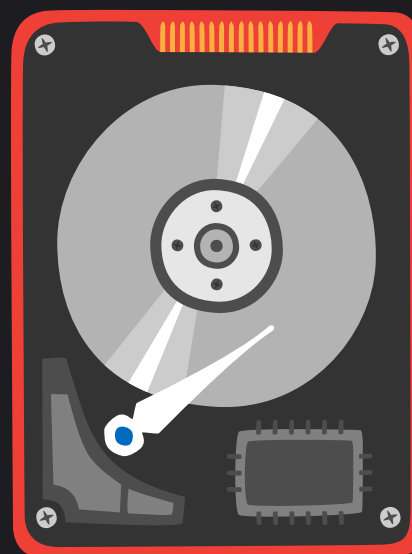
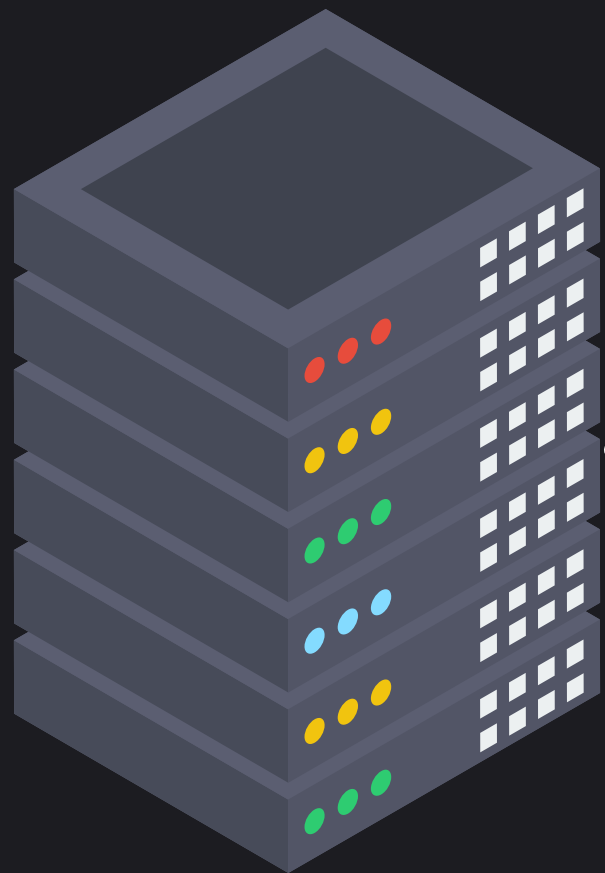
Disk Storage



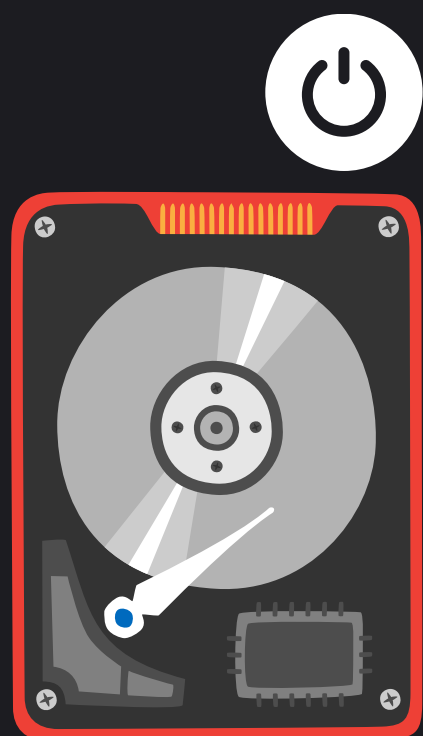


HDD | SSD

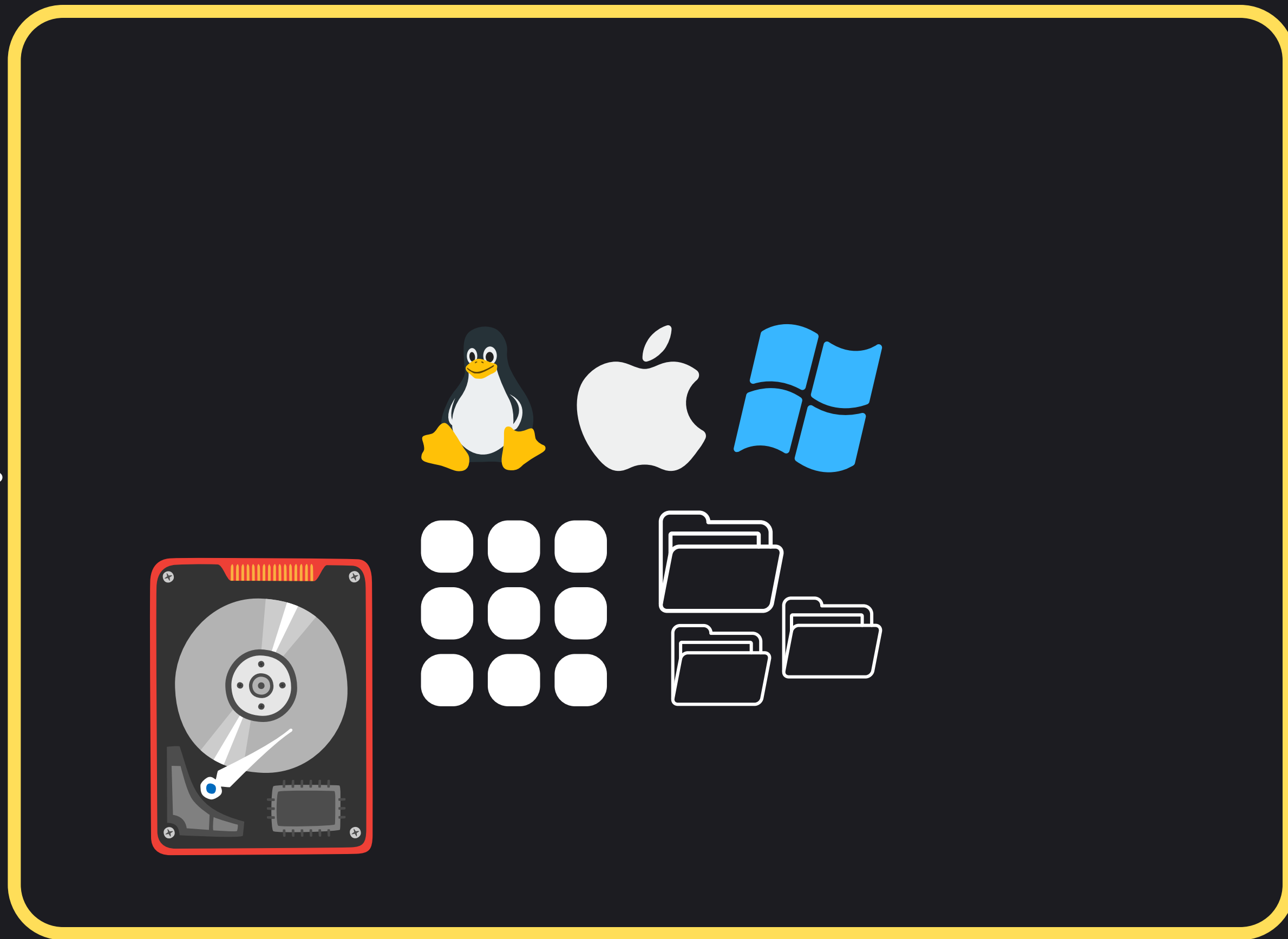


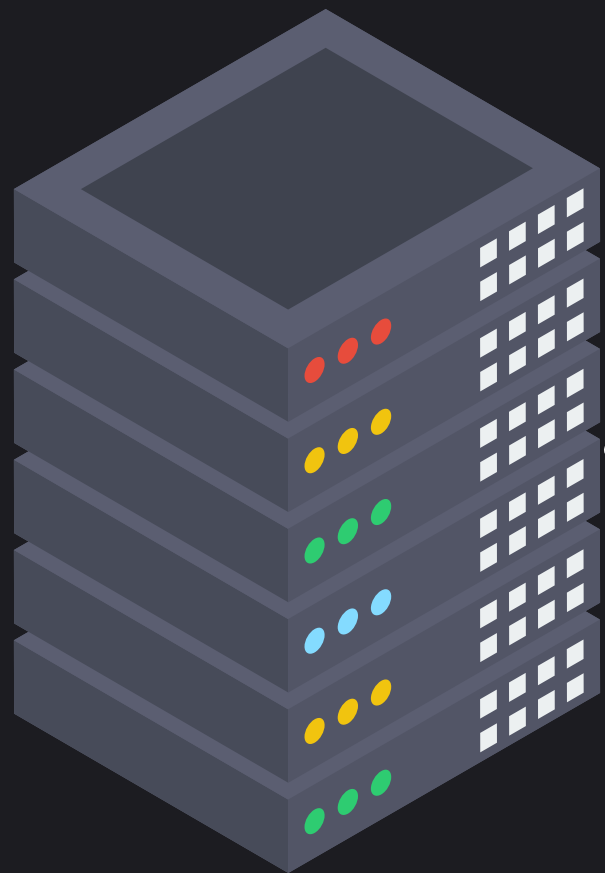


Non-volatile

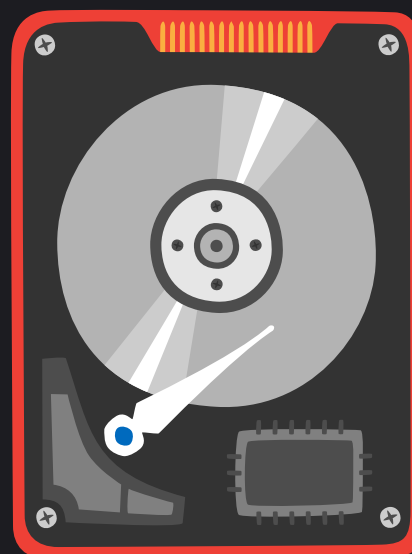


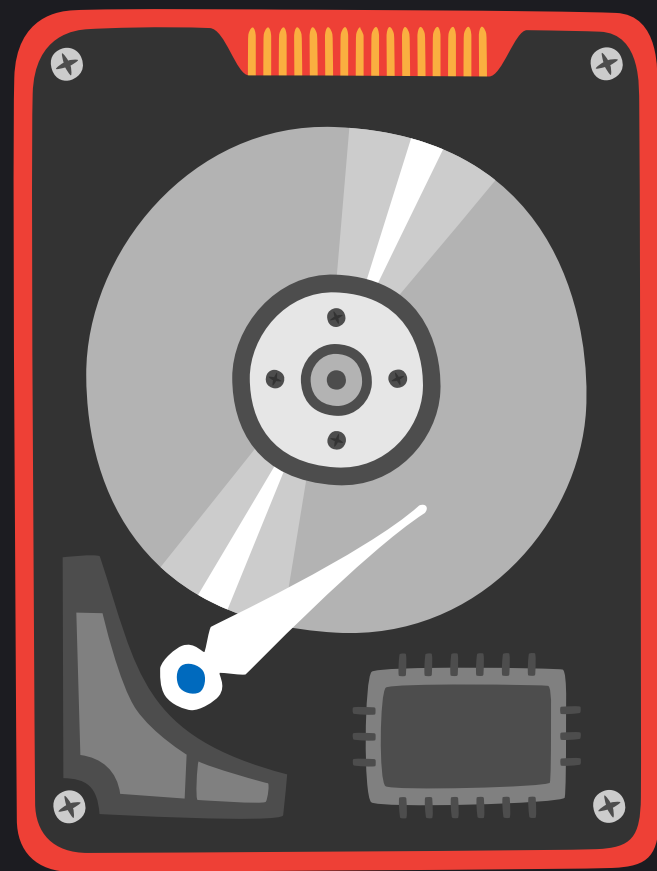
Non-volatile

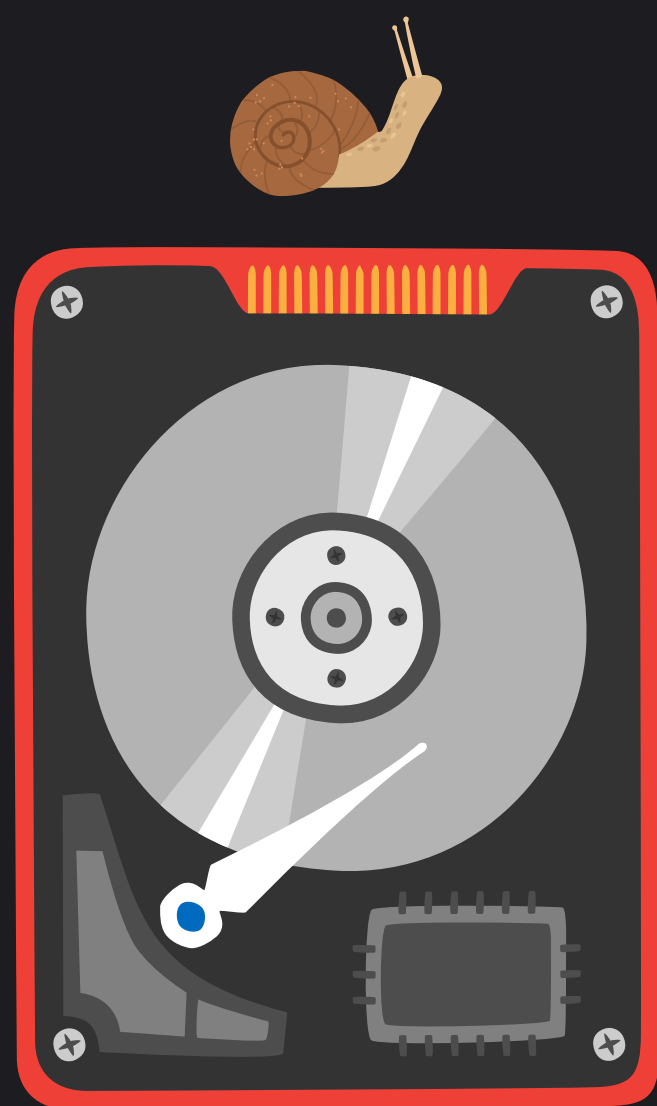




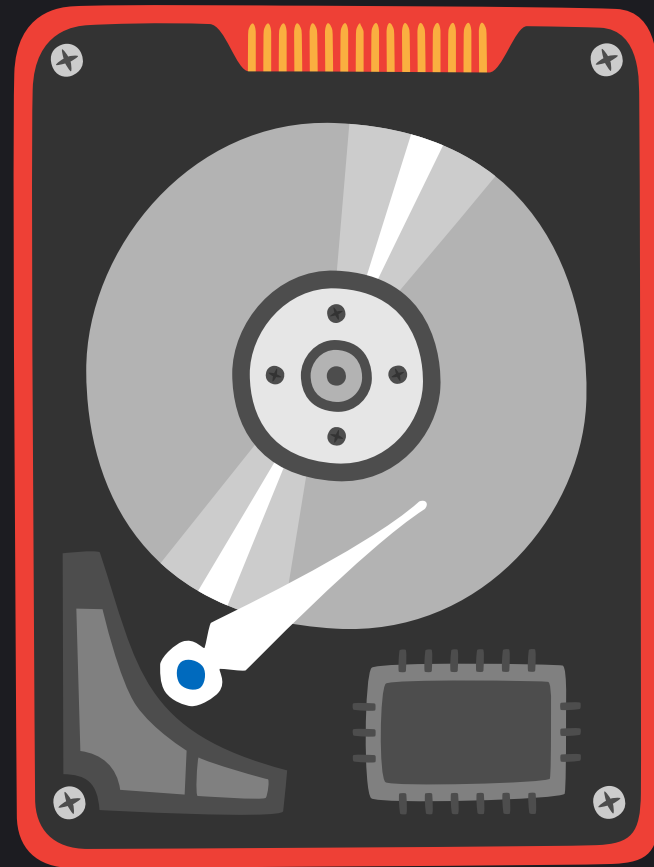
256 GB, 512 GB, 1 TB, 2 TB







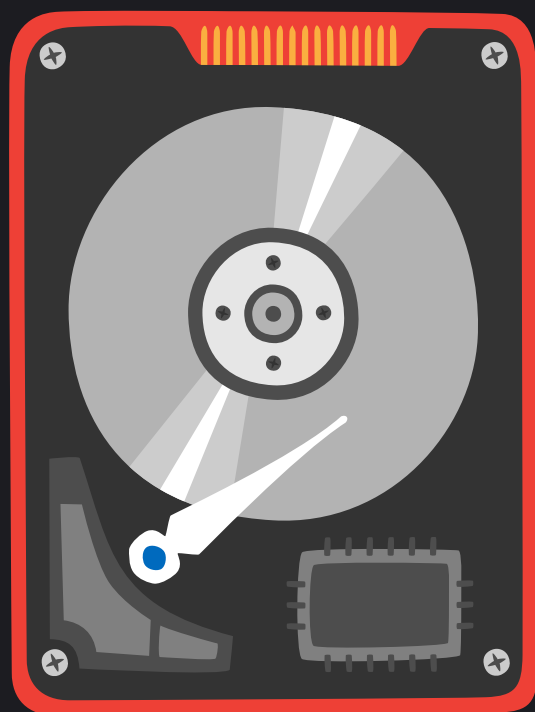
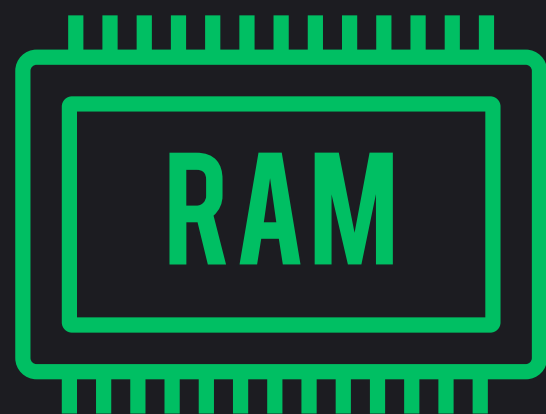
80 MB/s to 160 MB/s

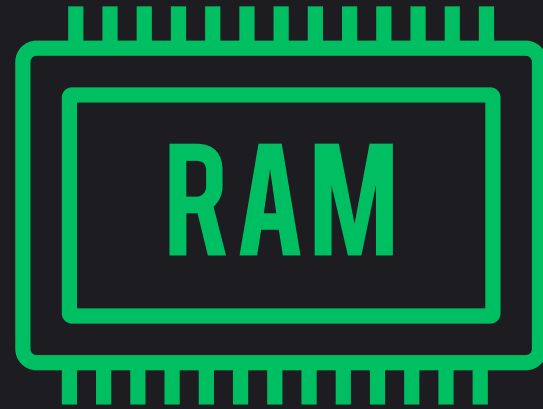


500 MB/s to 3,500 MB/s

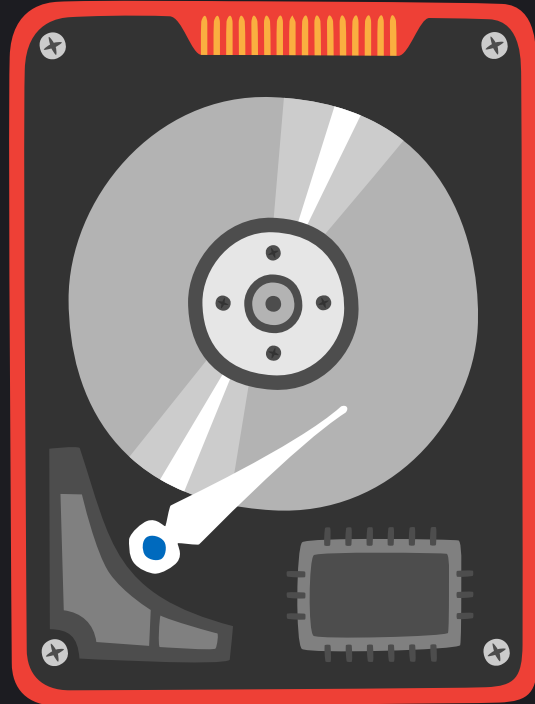


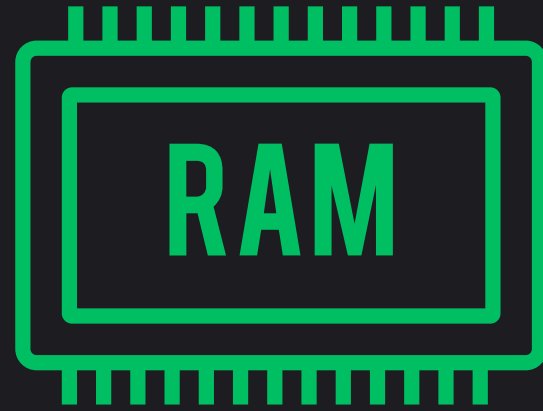
RAM



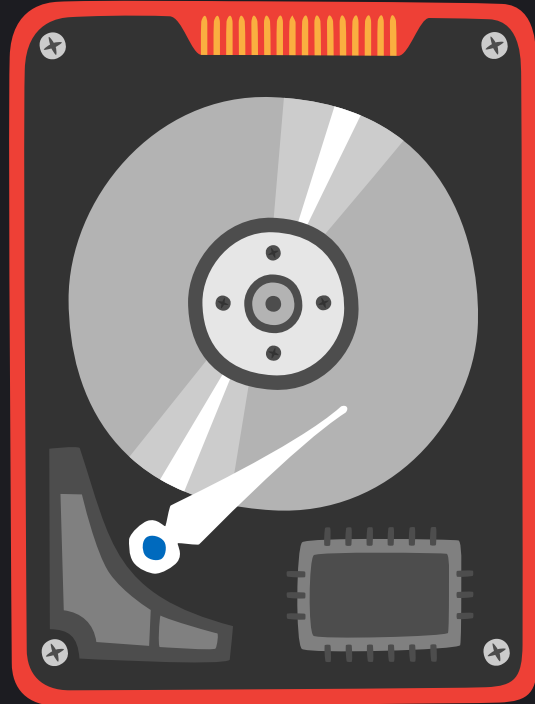


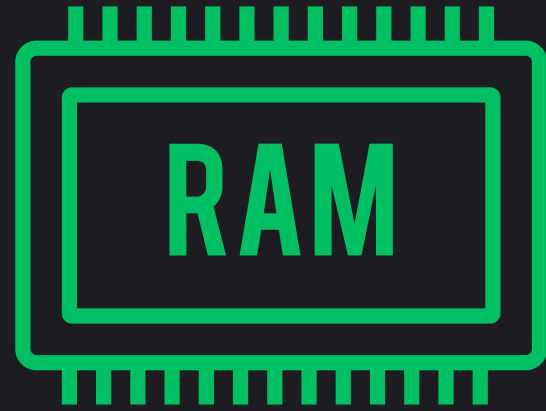
data structures, variables,
and application data



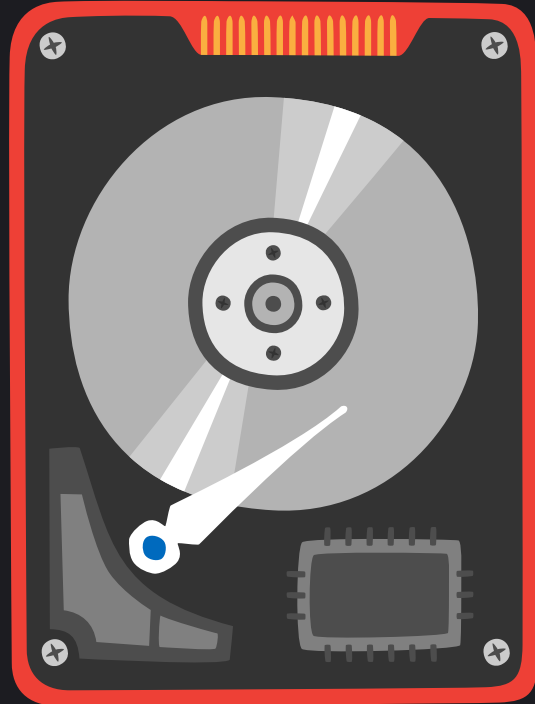


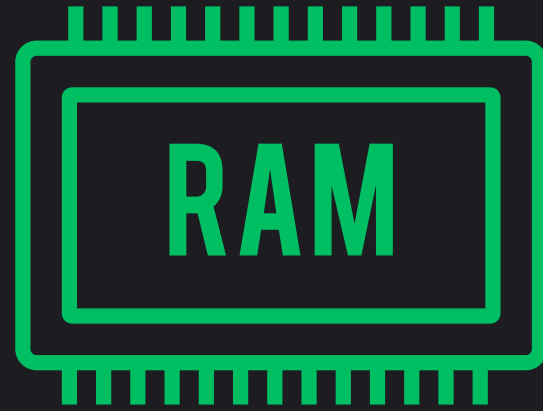
DDR4 | LPDDR5



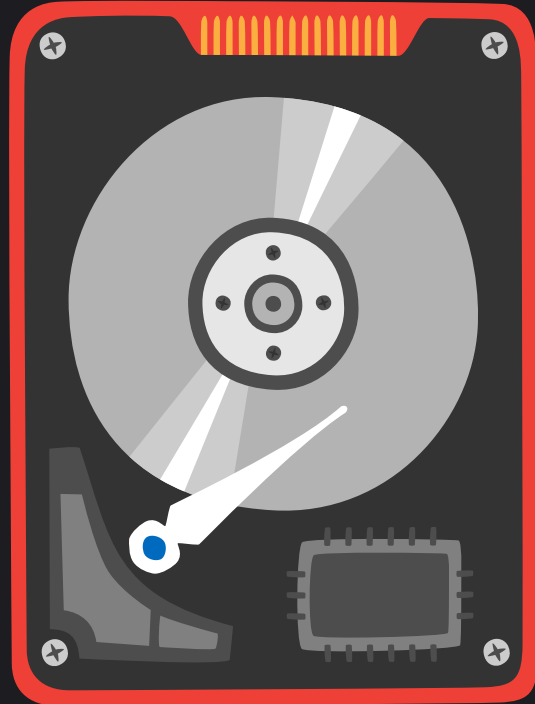


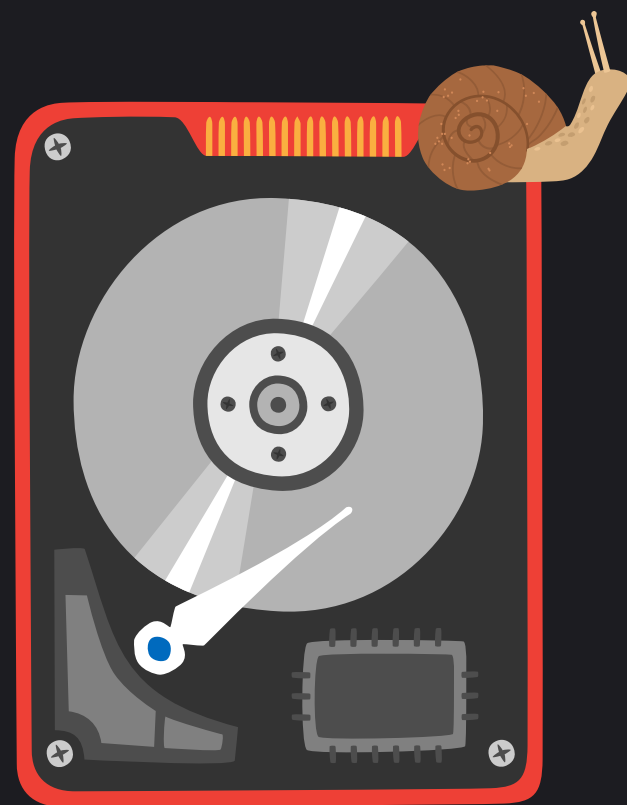
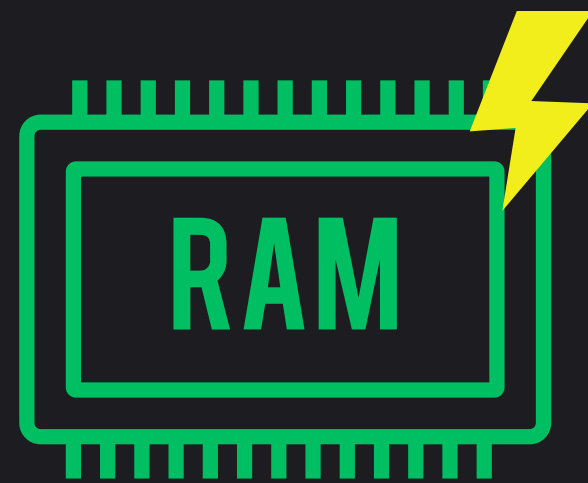
volatile memory

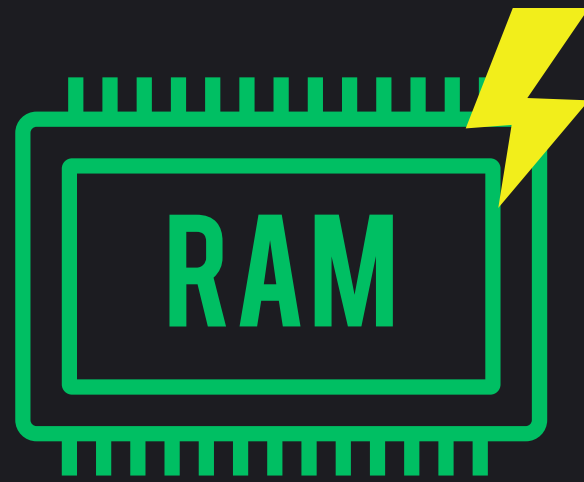




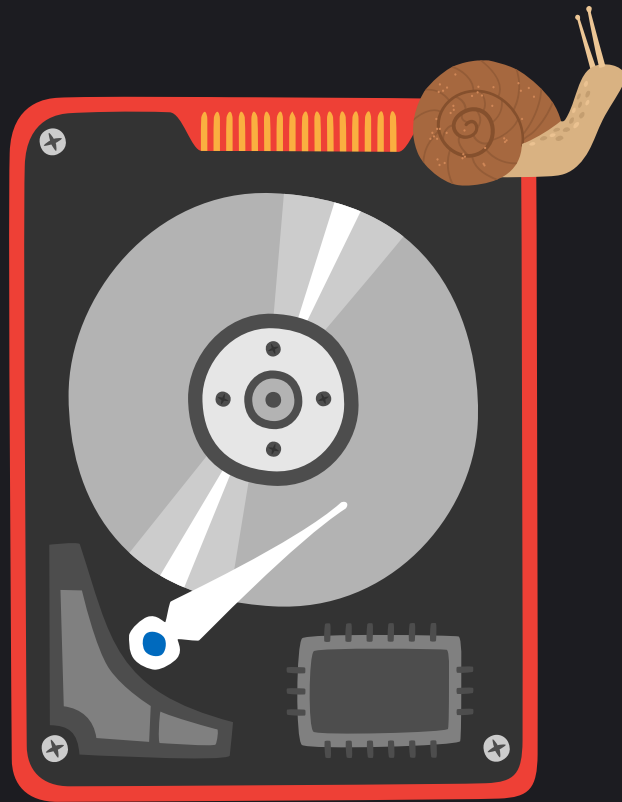
4 GB, 8 GB, 16 GB -> 32 GB, 64 GB



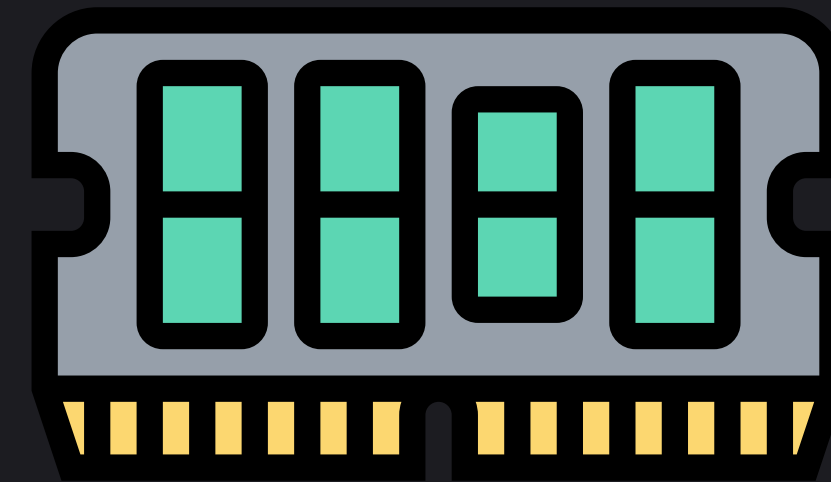
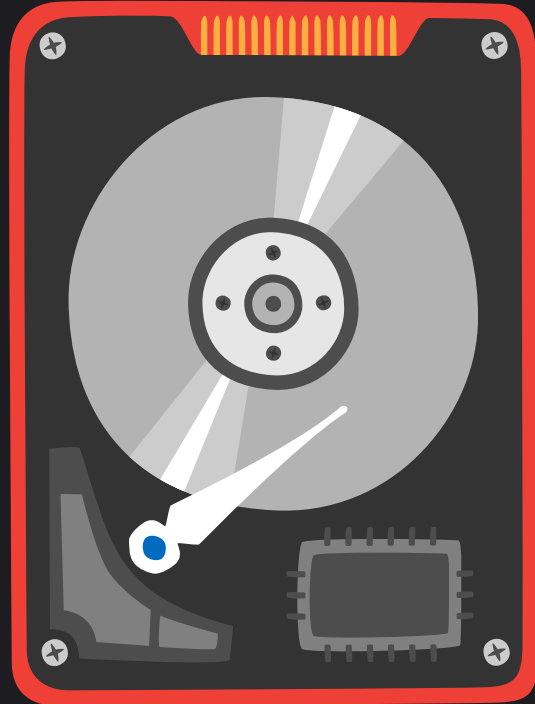
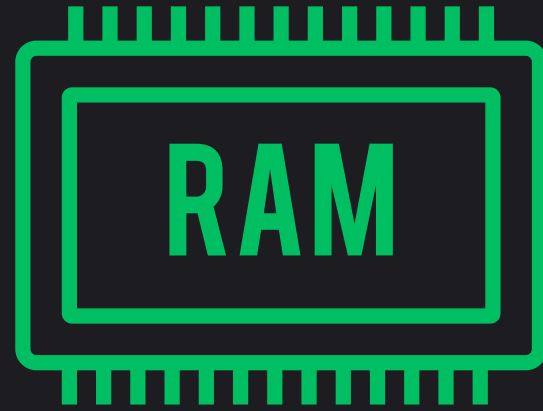


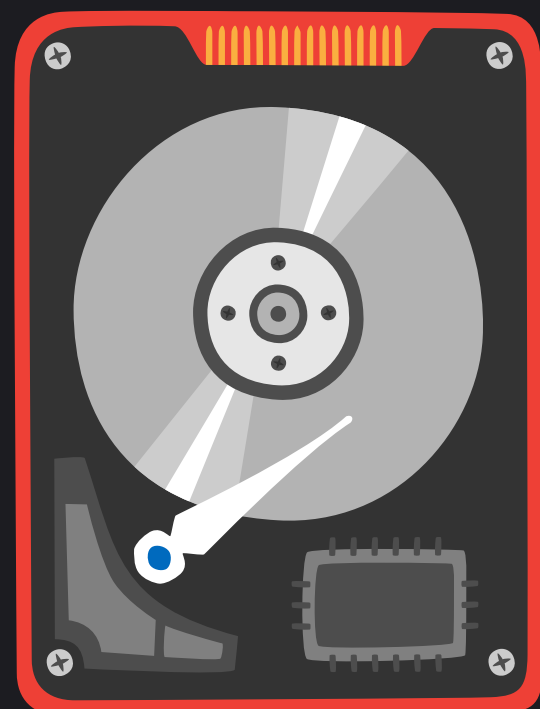
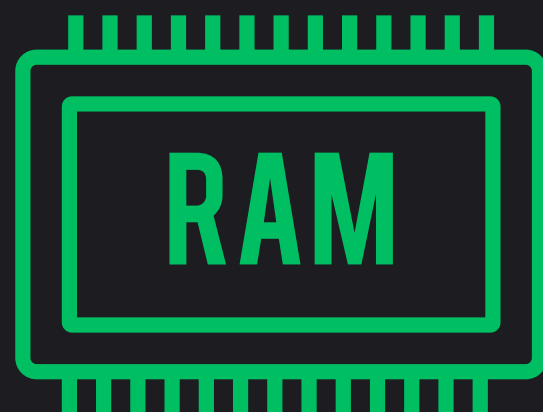


>5,000 MB/s

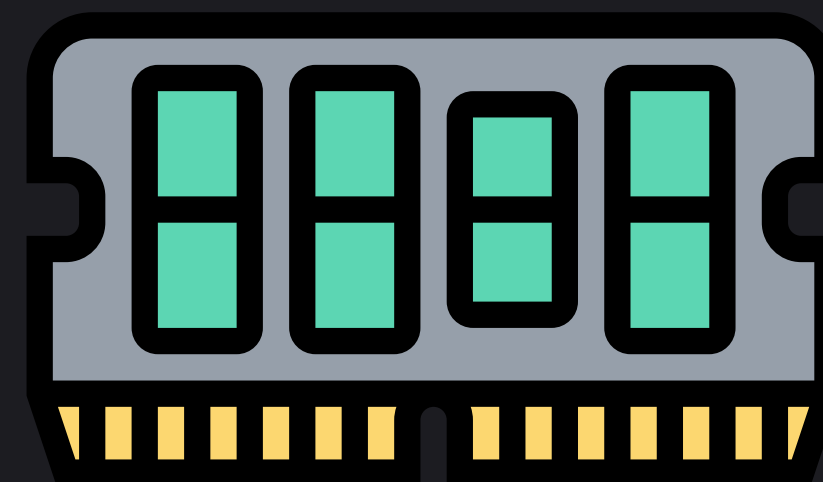


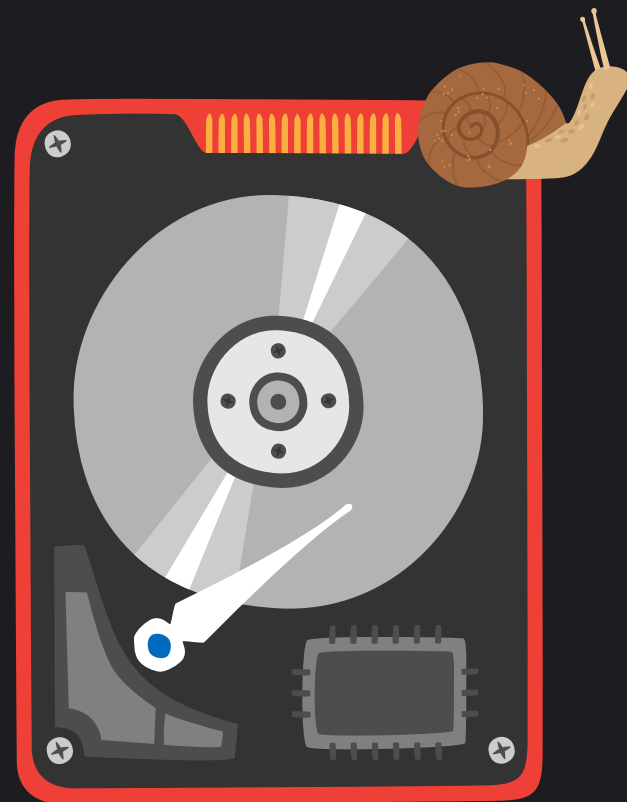
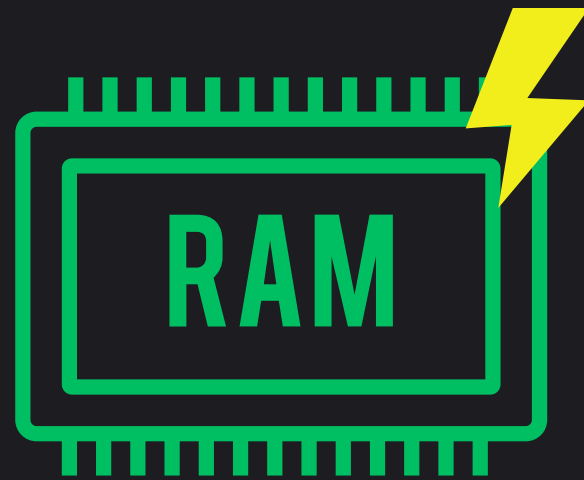
Cache



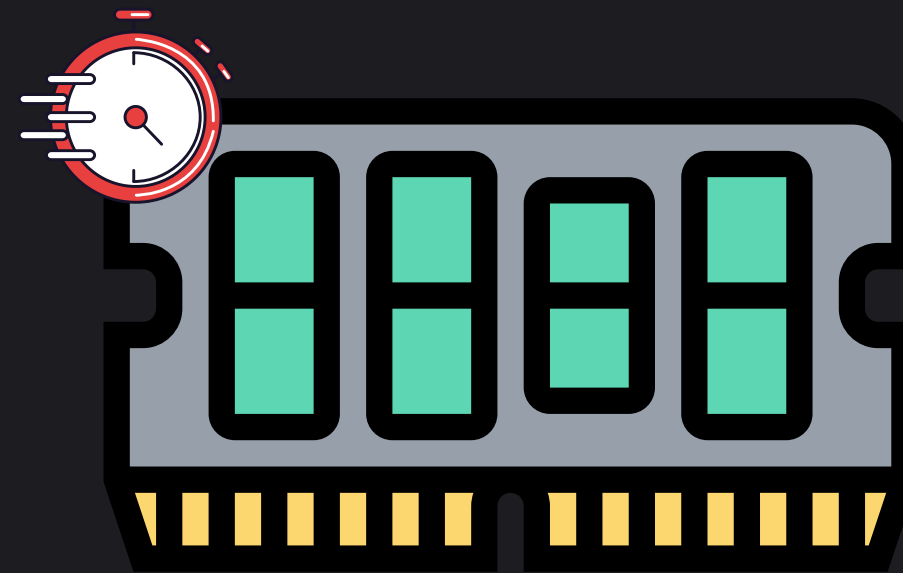


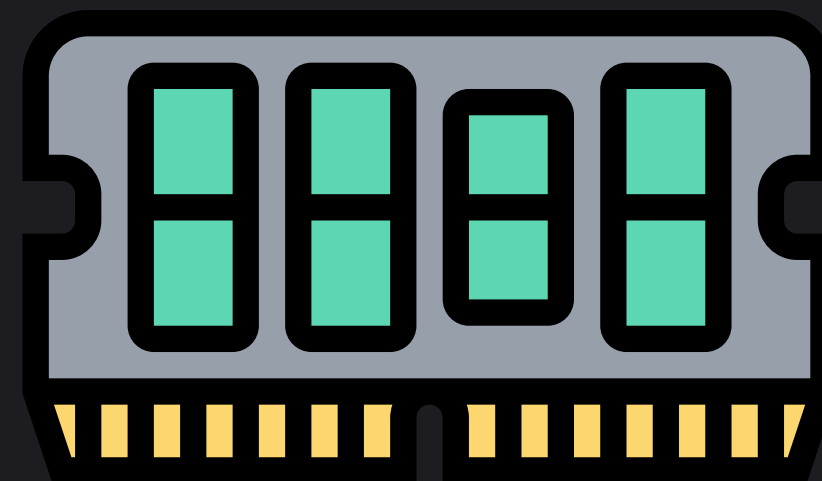
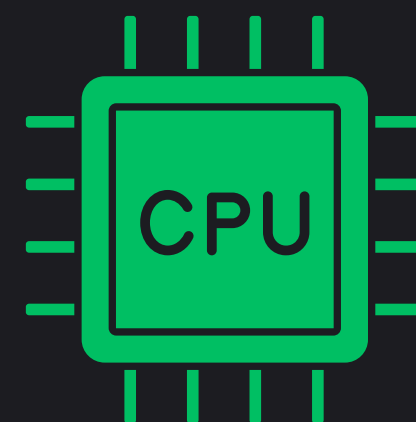
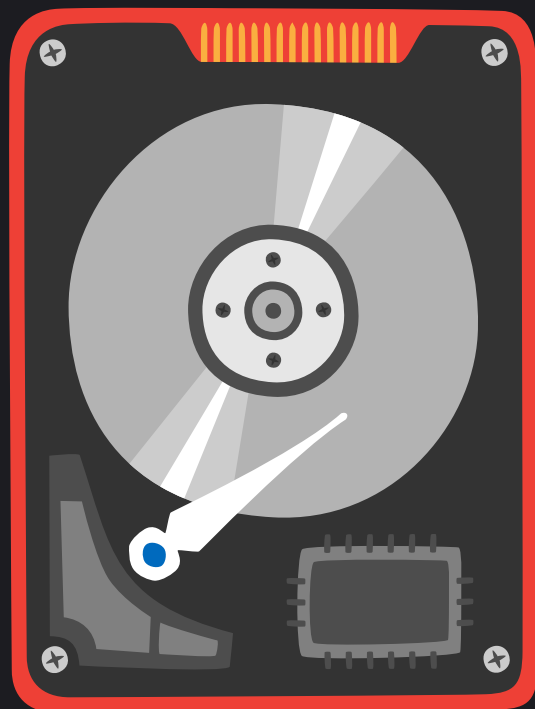
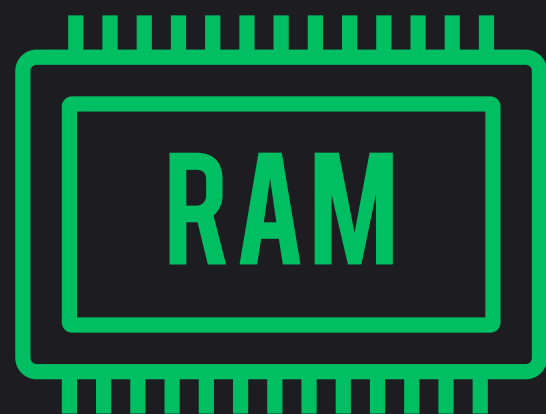
MBs

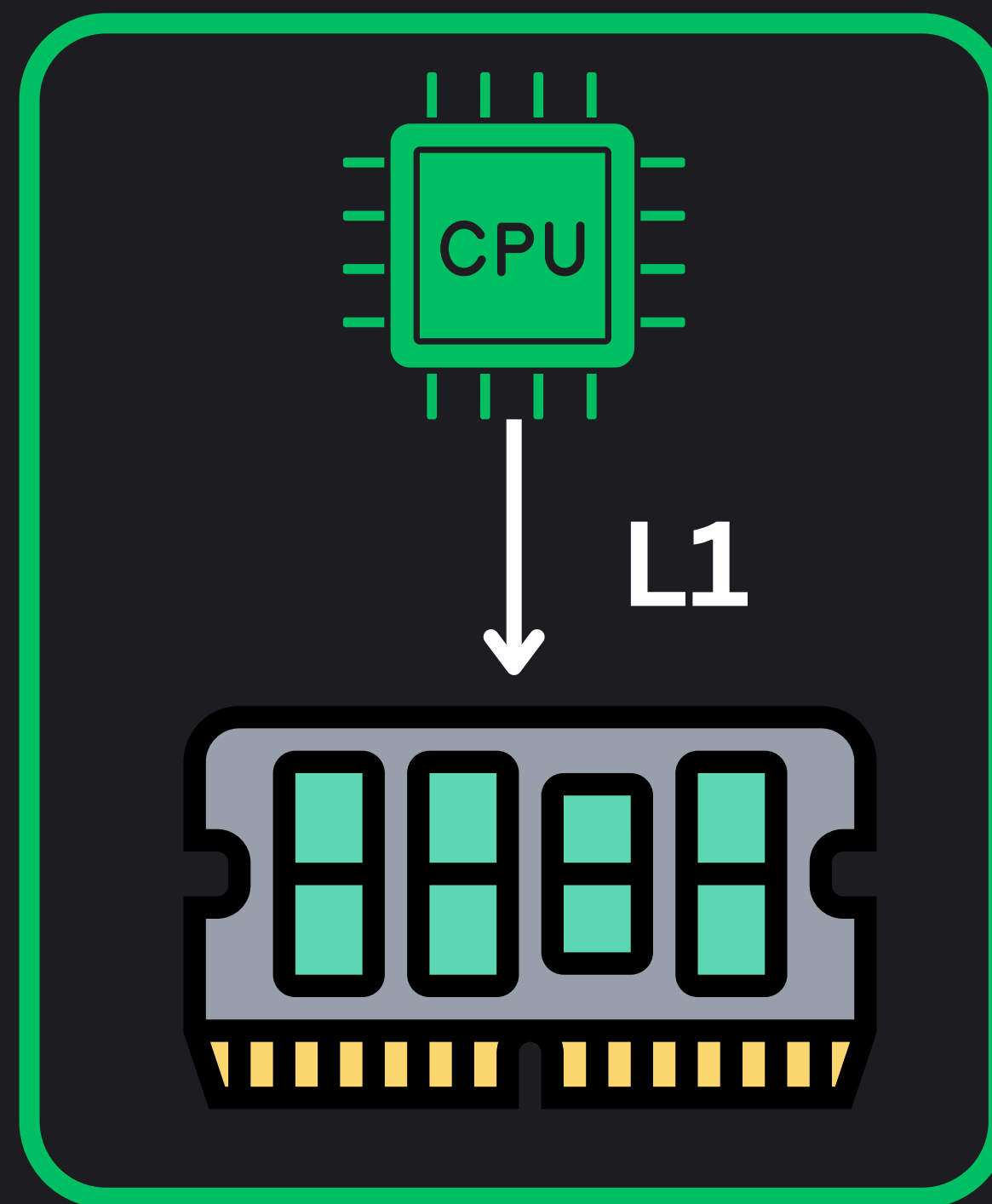
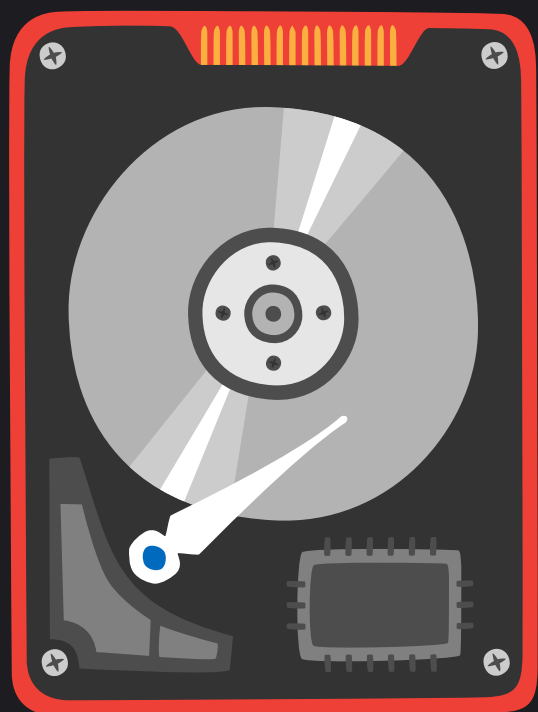
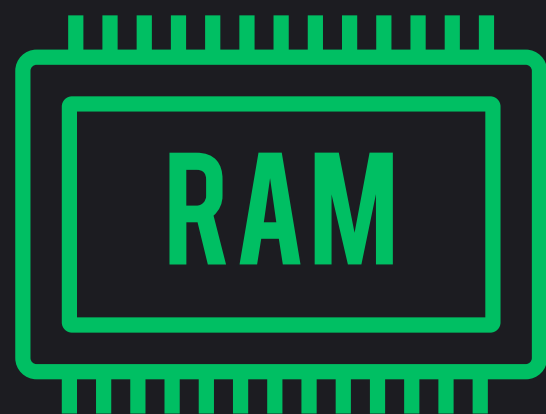


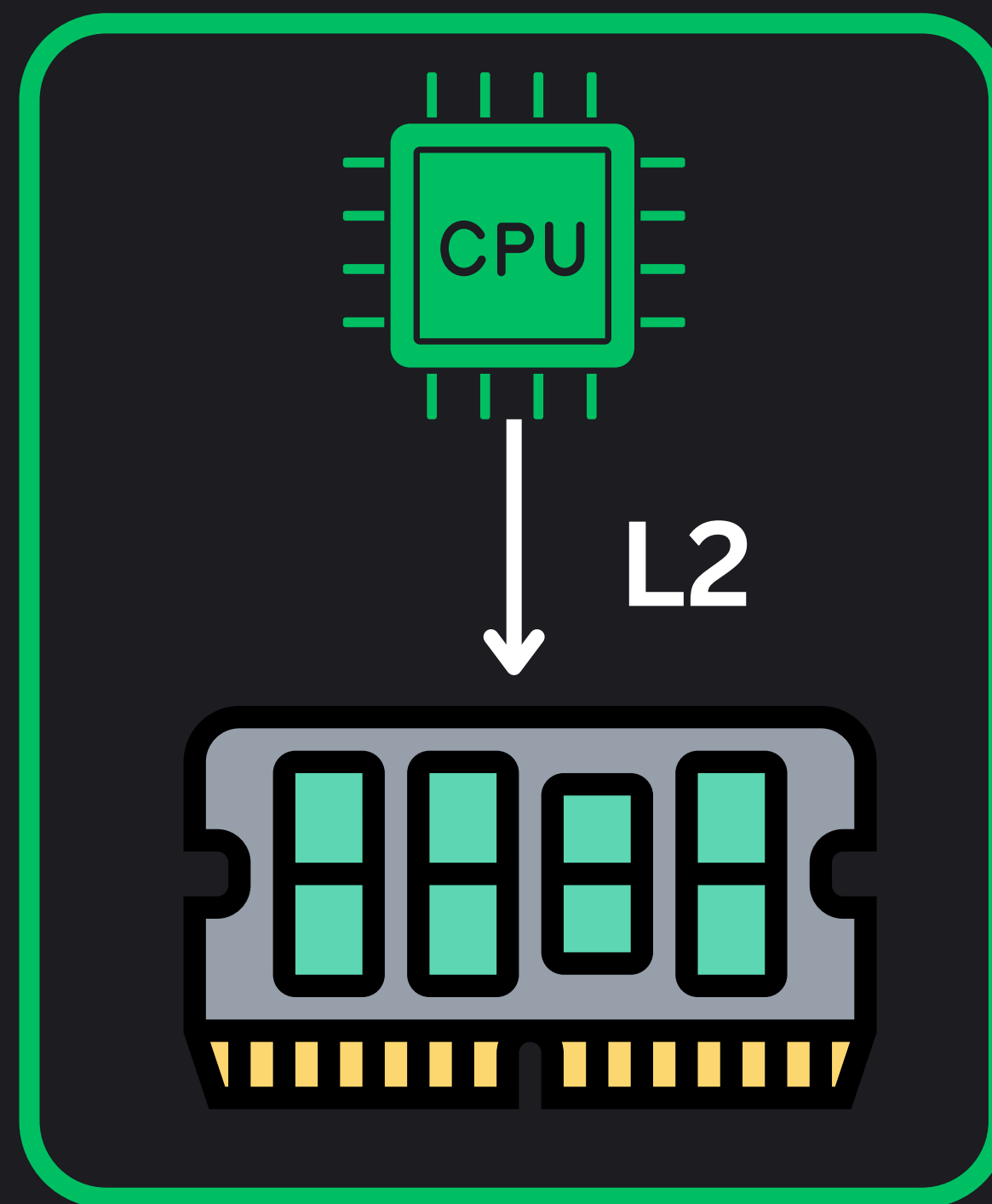
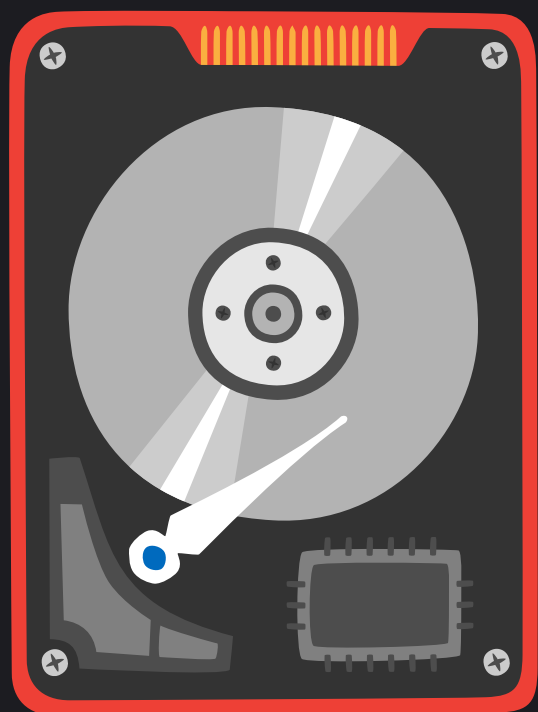
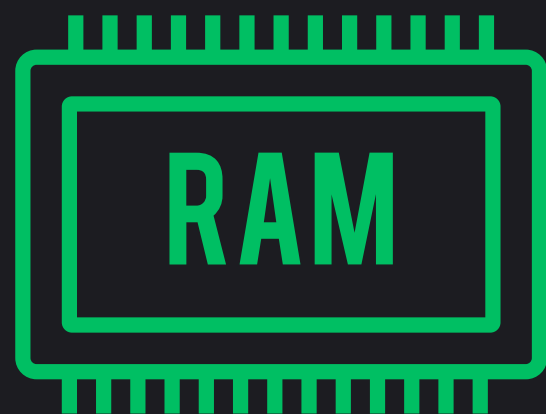


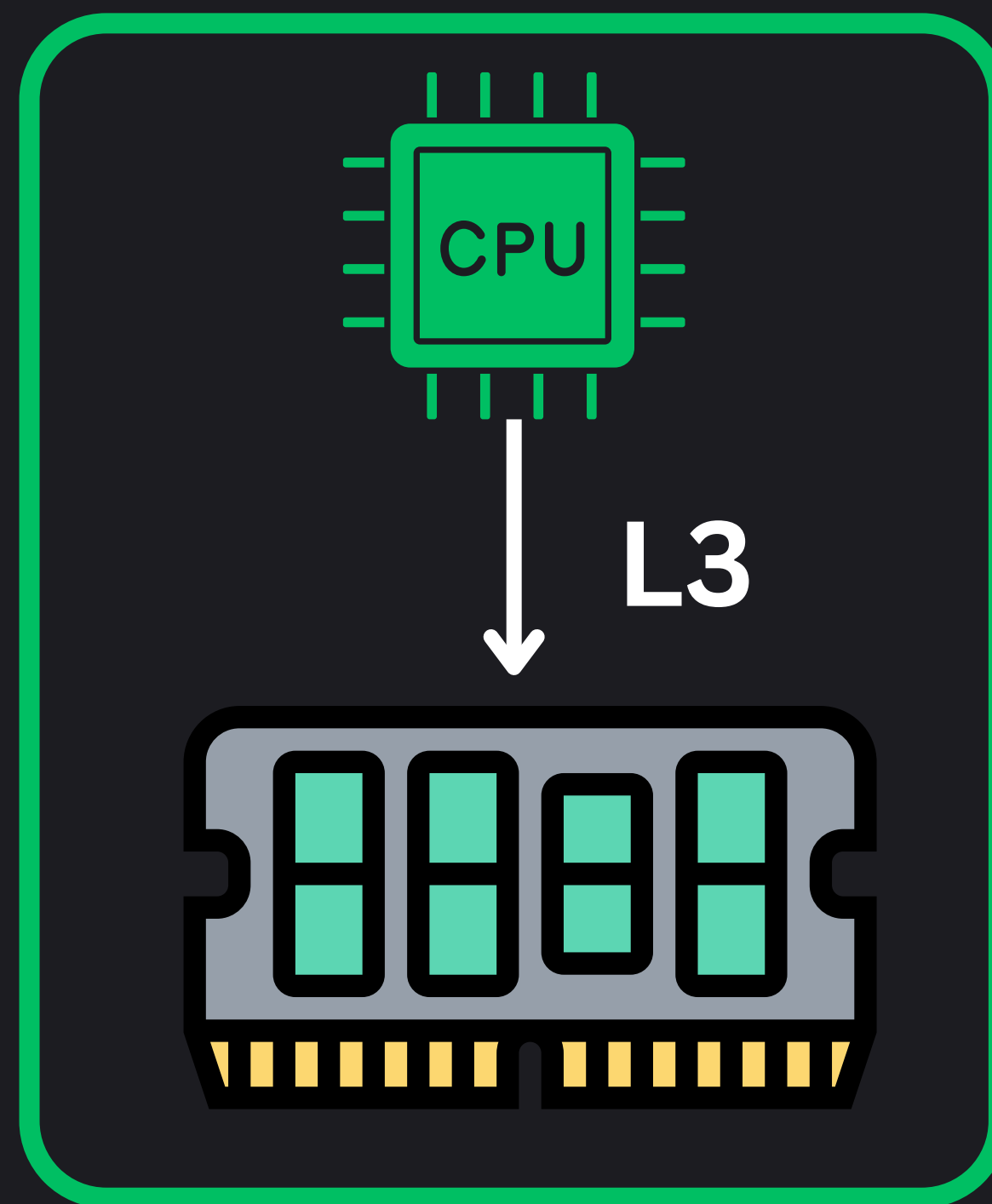
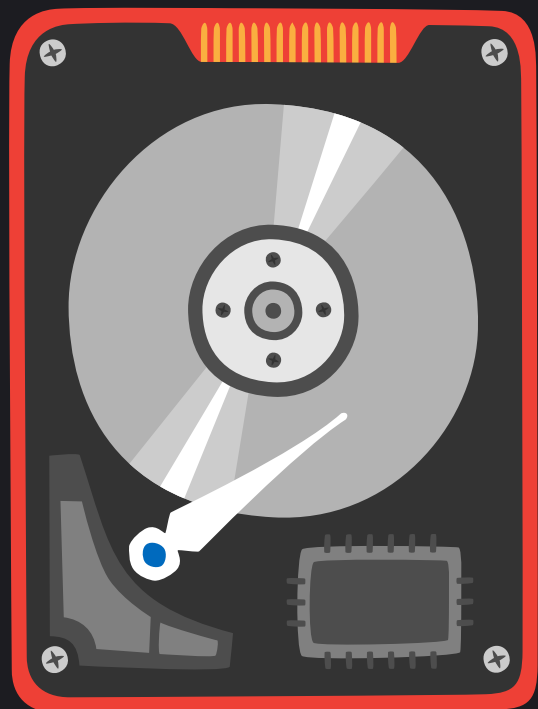
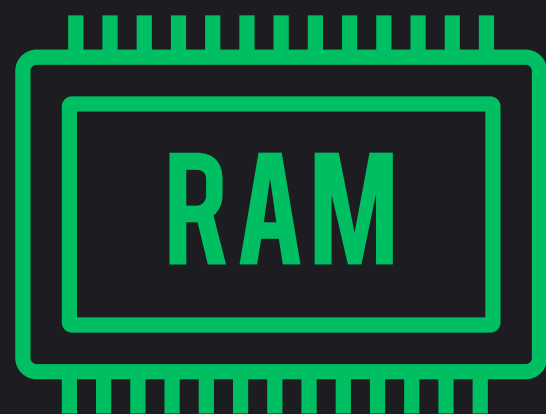
few nanoseconds

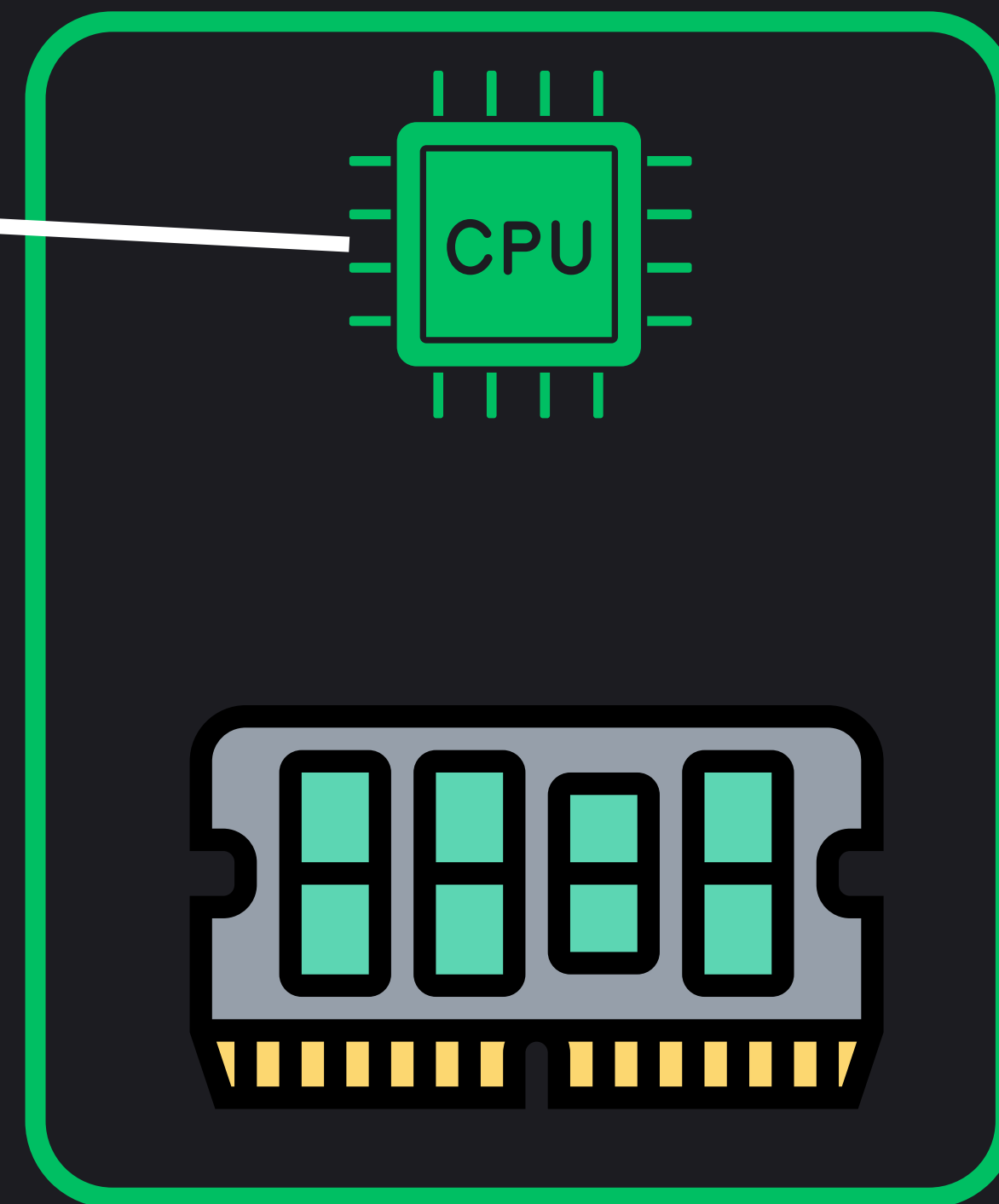
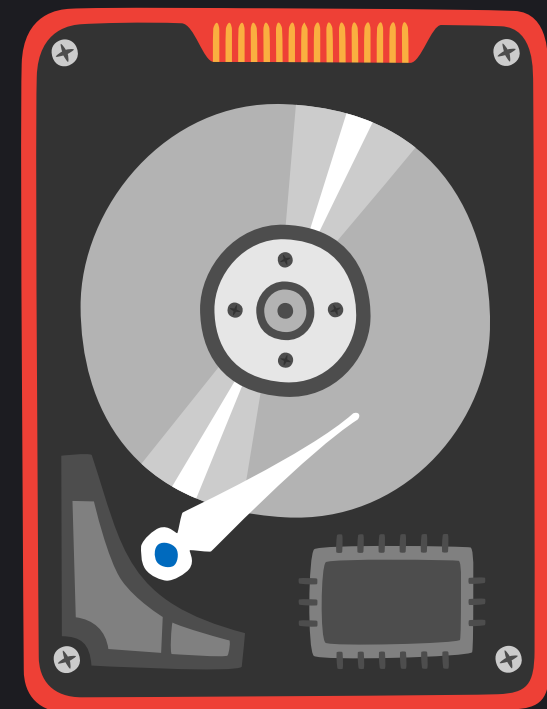
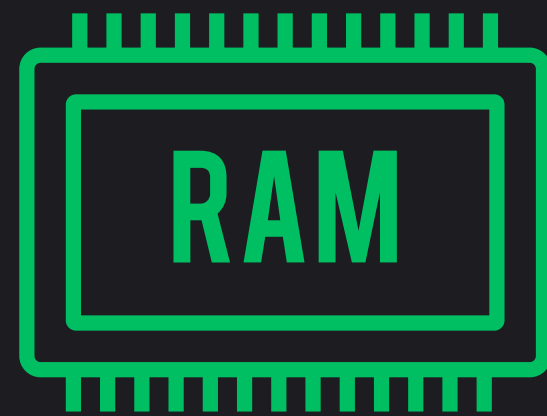


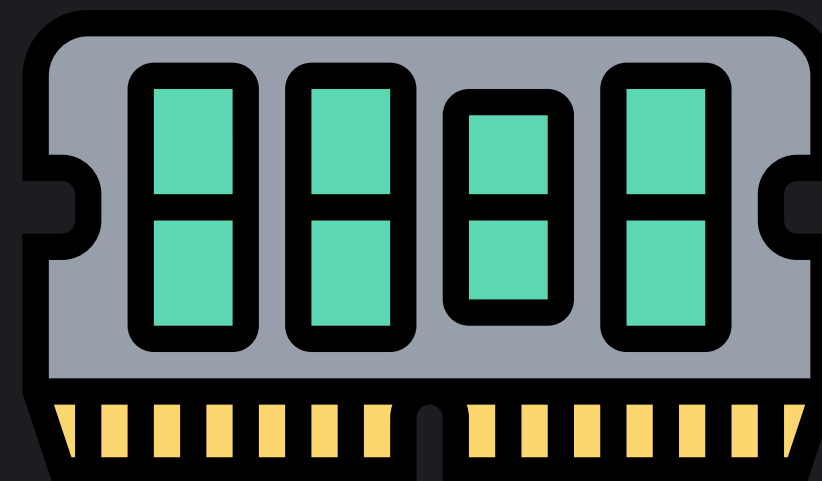
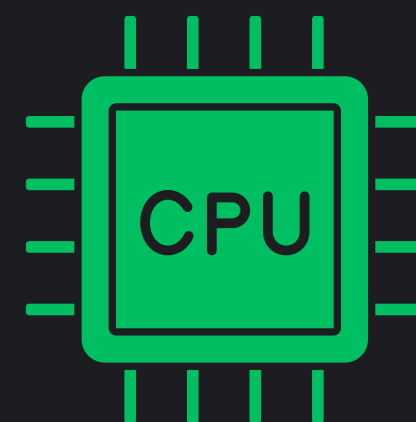
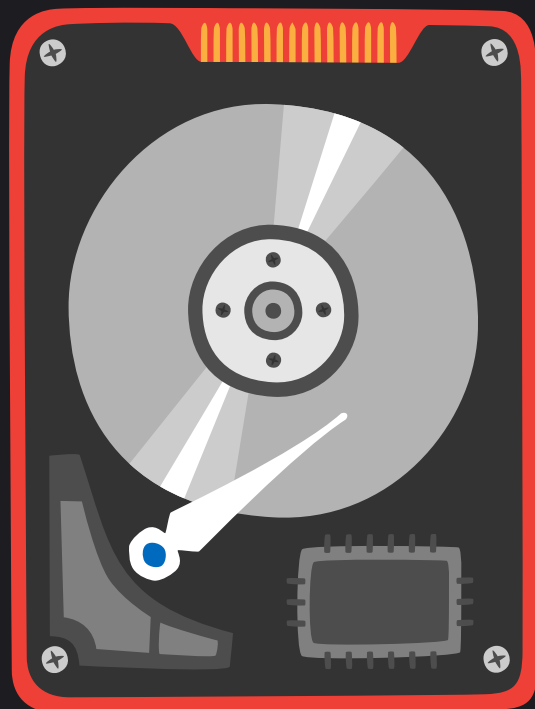
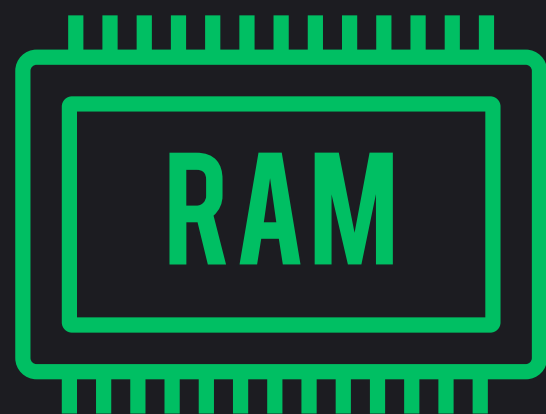




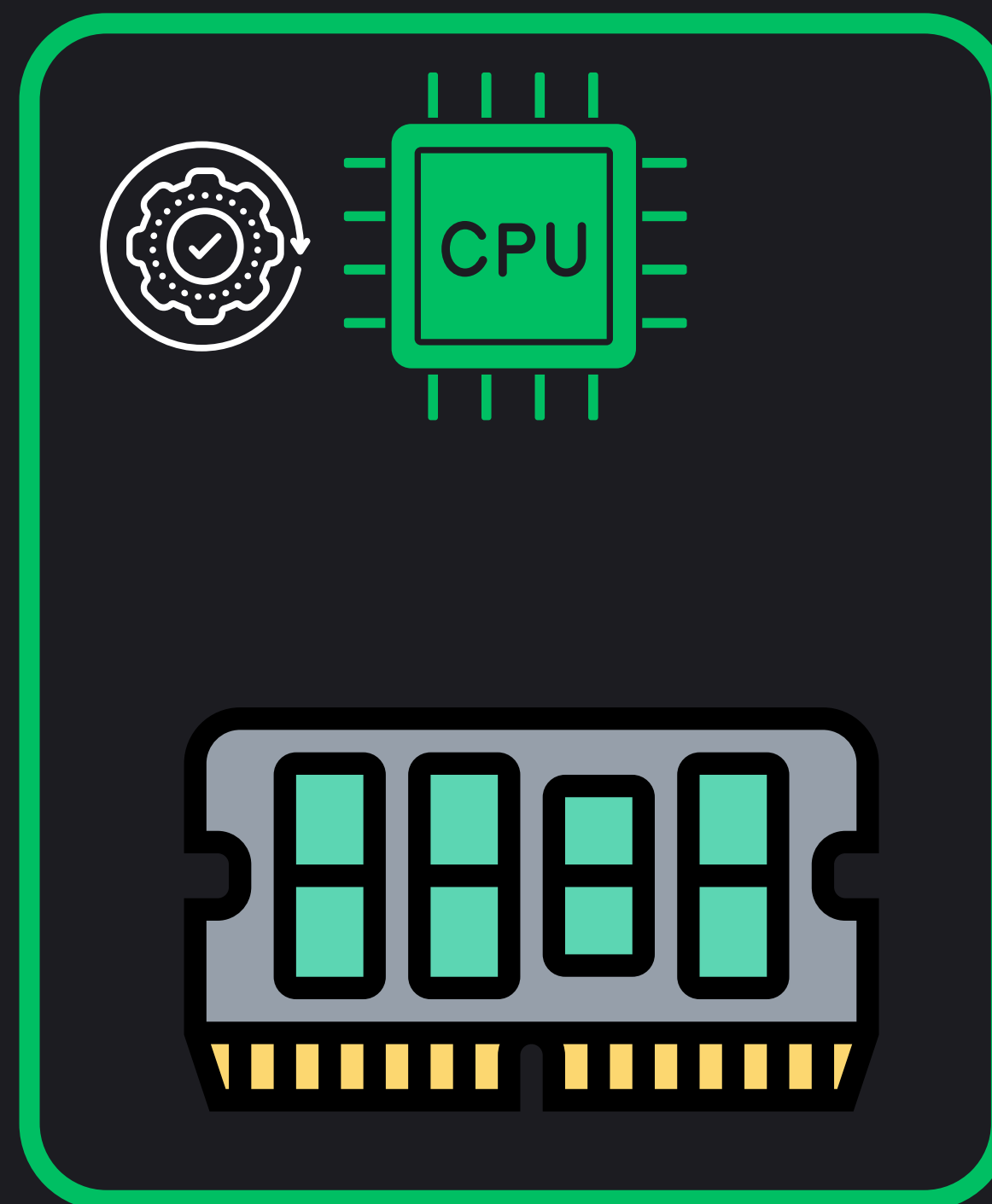
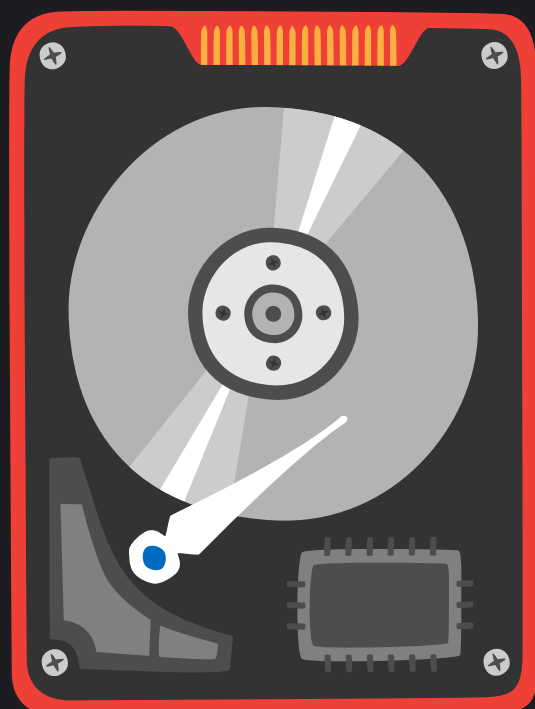
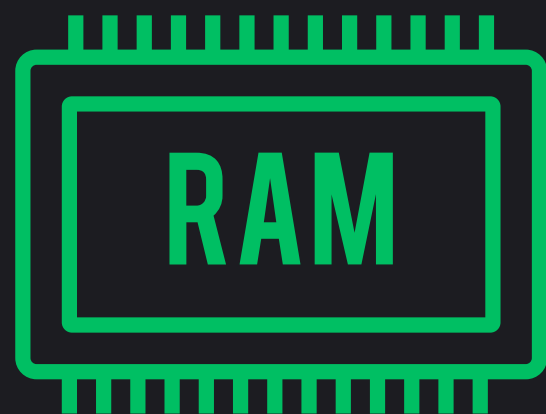


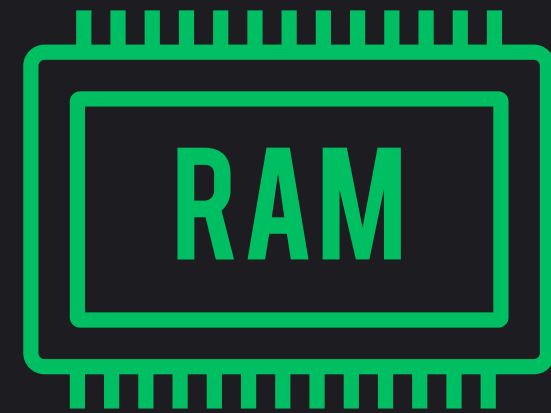




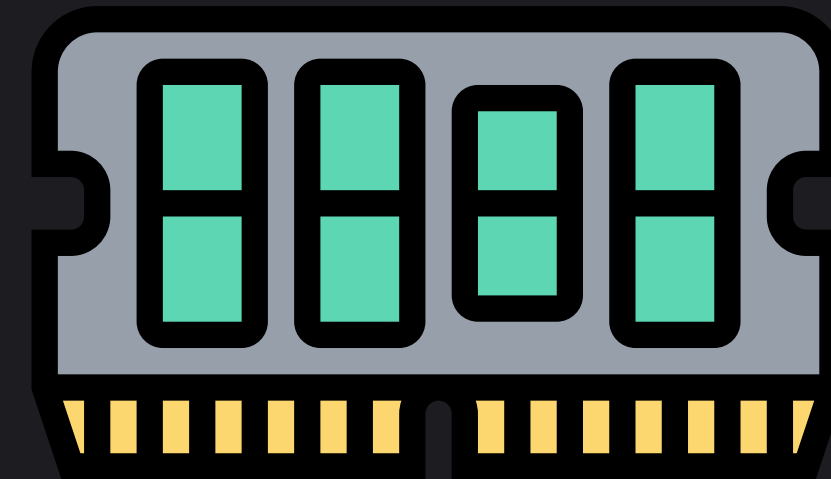
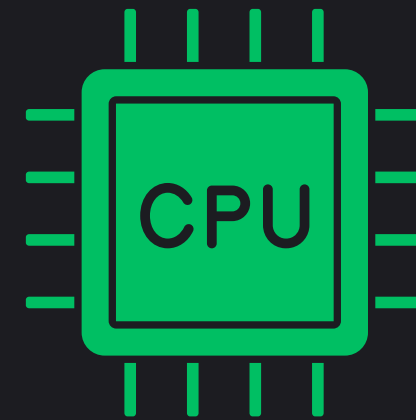
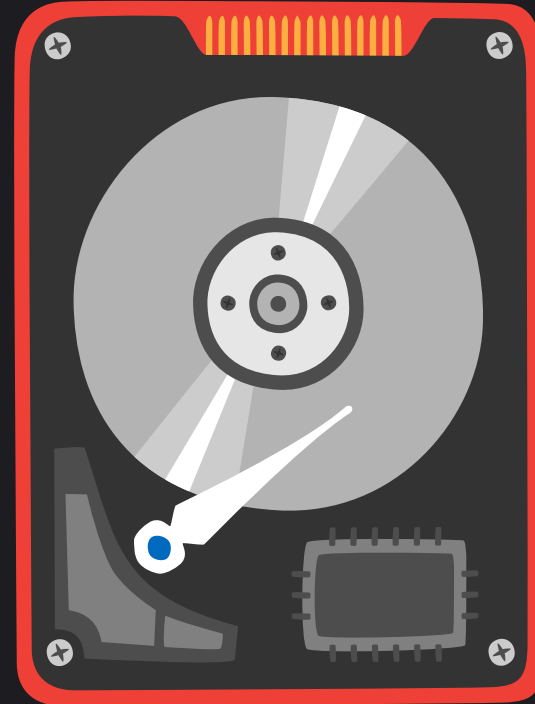


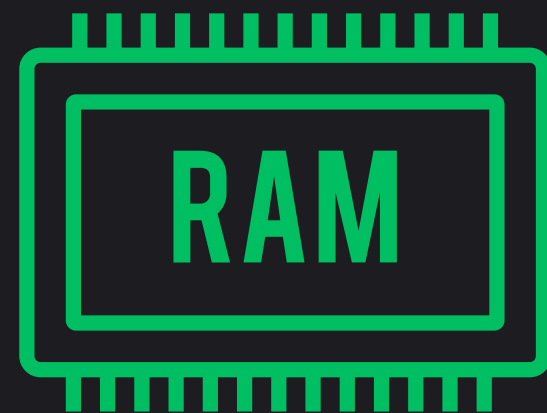
CPU



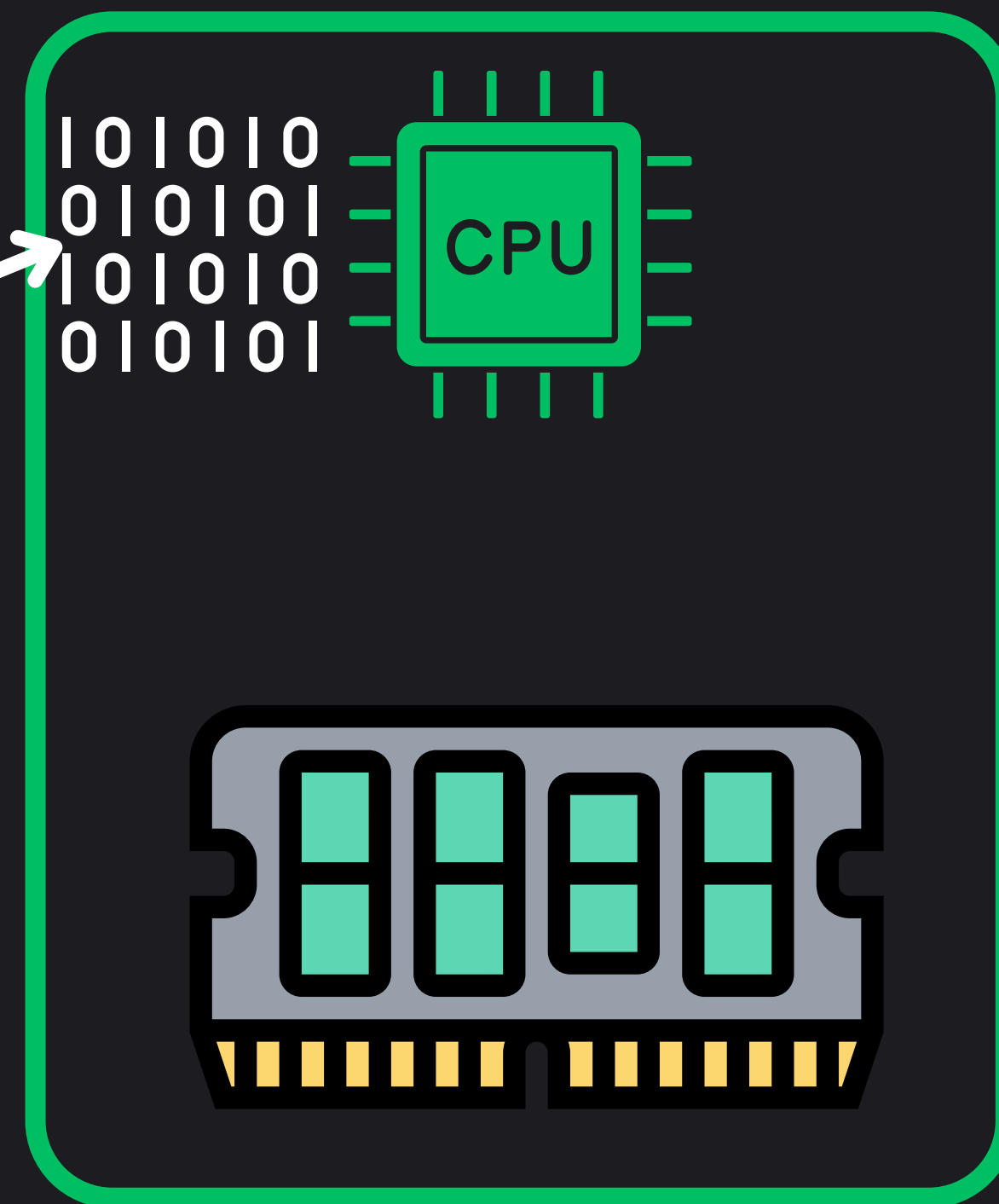
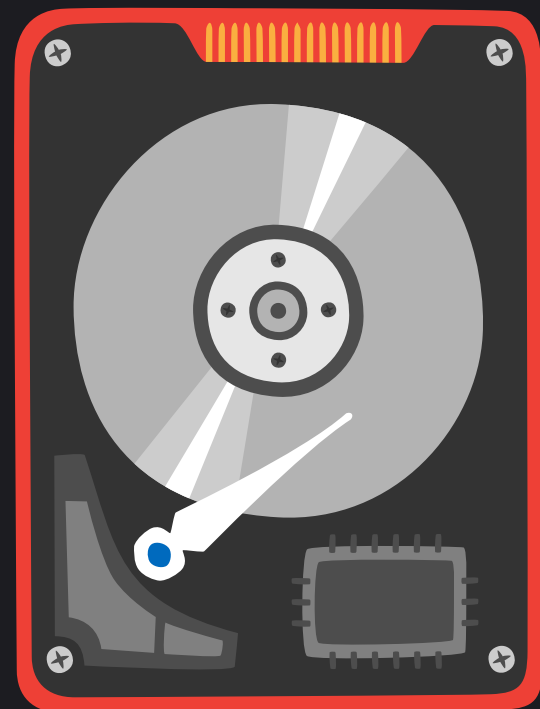


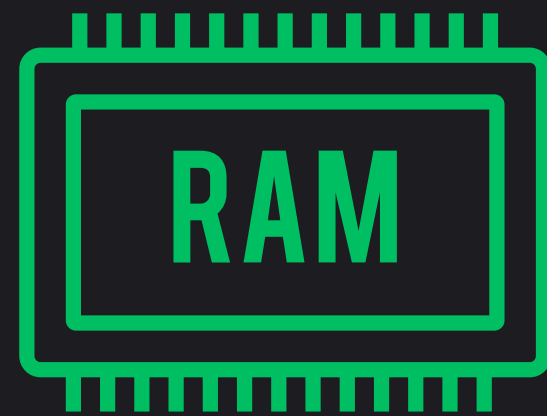
Java, C++, Python, ...





Java, C++, Python, ...



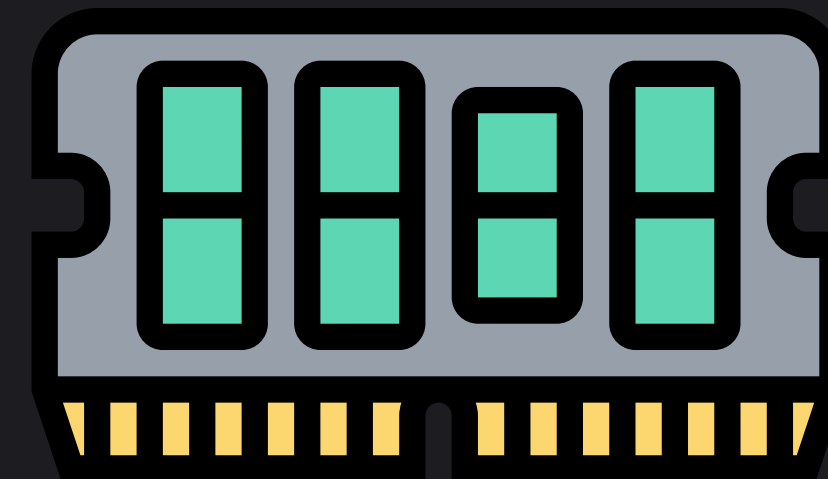
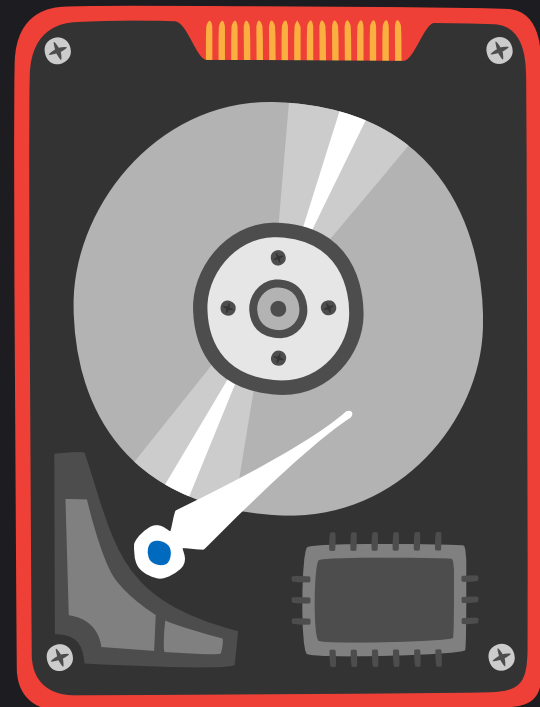
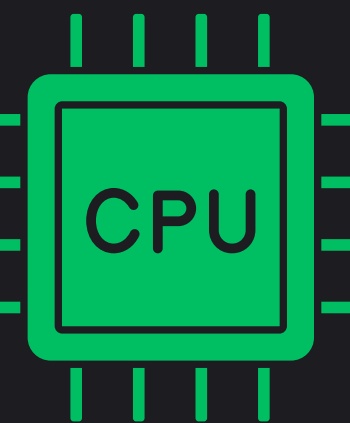


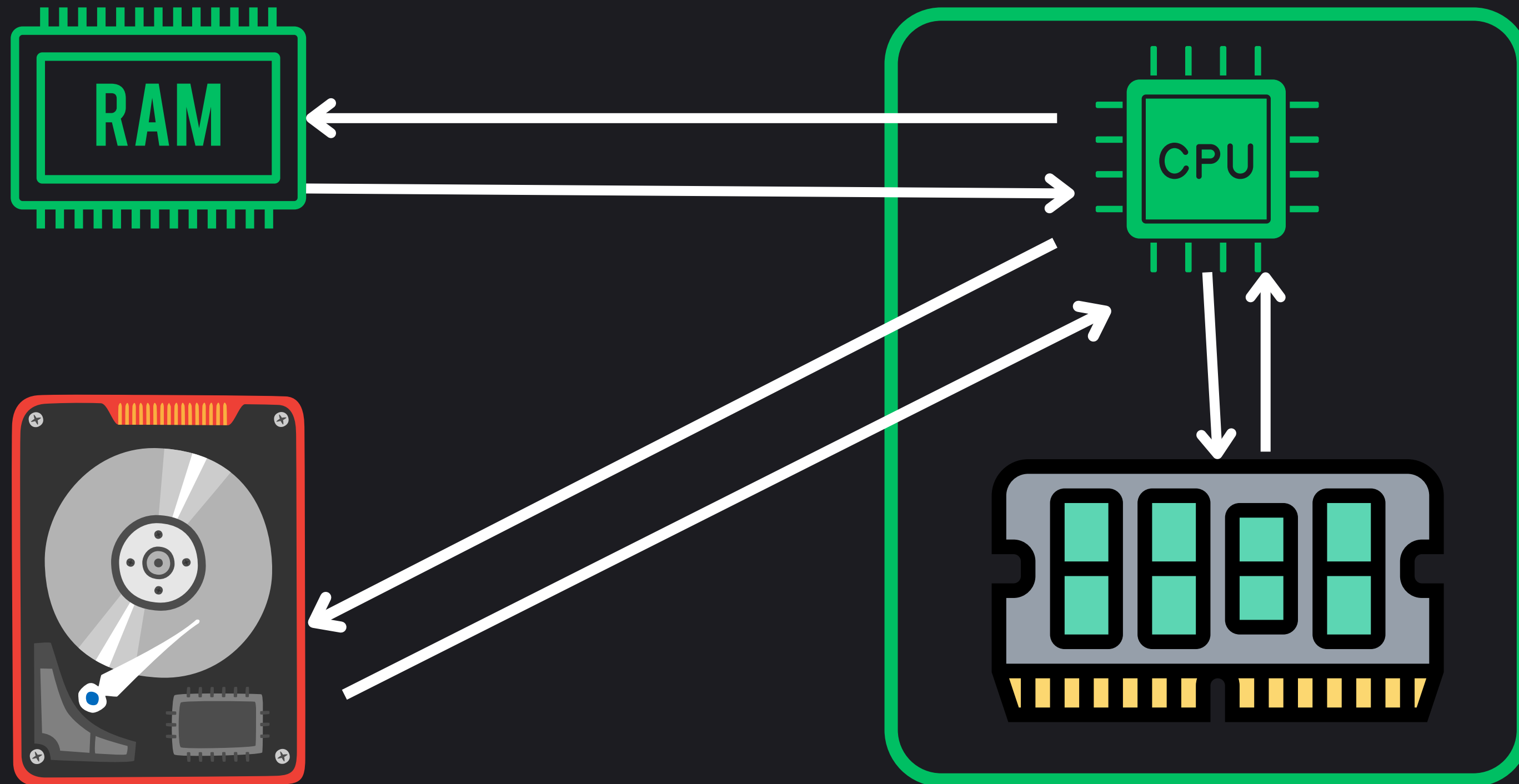
Java, C++, Python, ...

Compiler



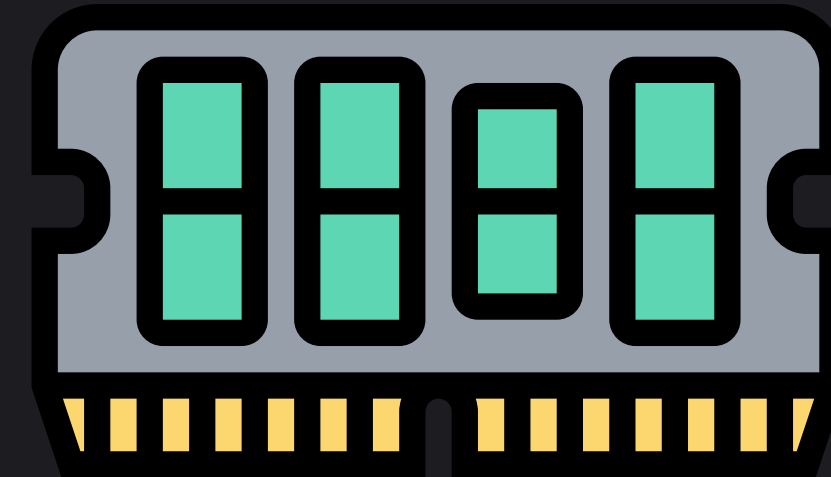
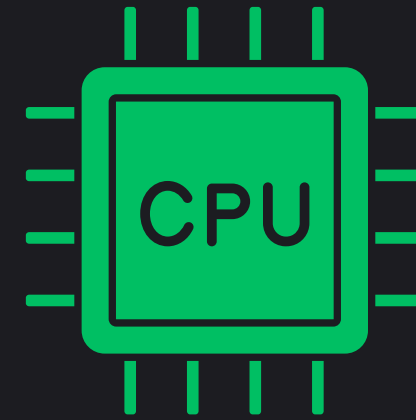
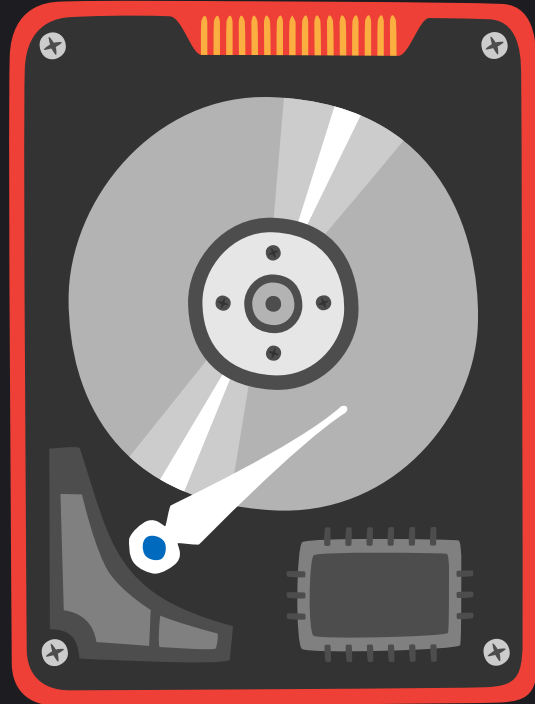
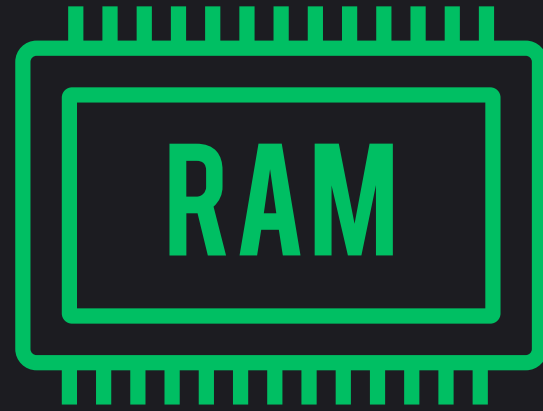
101010
010101
101010
010101





Motherboard

Motherboard



Motherboard

