Ch #16 Exercises Exercises

Due on August 25th, 2019
Computer Organization & Programming
CS550WS—Summer I
Ed Banduk

Daniel Kadyrov

Problem 1. A manufacturer wishes to design a hard disk with a capacity of 30 GB or more (using the standard definition of 1 GB = 2^{30} bytes). If the technology used to manufacture the disks allow 1024-byte sectors, 2048 sectors/track, and 4096 tracks/platter, how many platters are required? (Assume a fixed number of sectors per track)

Solution

$$30 \text{ GB} = 30 \times 2^{30} = 32,212,254,720 \text{ bytes}$$
$$32,212,254,720 \div 1024 = 31,457,280 \text{ sectors}$$
$$31,457,280 \div 2048 = 15,360 \text{ tracks}$$
$$15,360 \div 4096 = 3.75 \approx \textbf{4 platters}$$