End of Ch # 10 Exercises

3 (A) –“ A multiplattered hard disk is divided into 1100 sectors and 40,000 cylinders. There are six platter surfaces. Each block holds 512 bytes. The disk is rotating a rate of 4800 rpm. The disk has an average seek time of msec. What is the total capacity of this disk?”

Sol:

The total capacity of this disk = 1,100 \* 40,000 \* 6 \* 512 = 135,168,000,000 byte.

10.4 (A)- “The average latency on a disk with 2200 sectors is found experimentally to be 110 msec. What is the rotating speed of the disk?

Sol:

Rotating speed = 1/2 \* (1/rotational speed)

Rotational speed = 1/(2 \* 110 msec) = 0.00454

Chapter 10 Calculation Exercises:

[I] For a display of 1920 pixels by 1080 pixels at 16 bits per pixel how much memory, in megabytes, is needed to store the image?

Sol:

* 1. \* 1080 \* 2 byte = 4,147,200 byte

4,147,200 byte = 3.955Mb

[II] What is the average rotational latency of a hard drive rotating at 7,200 RPM or 120 revolutions per second? (Give your answer in milliseconds)

Sol:

Average rotational latency = 1/2 \* 1/120 (revolution/second) = 4.167millisec

[III] What is the transfer time for a hard drive rotating at 7,200 RPM or 120 revolutions per second? Assume there are 30 sectors per track. (Give your answer in milliseconds)

Sol:

Transfer Time = 1/30 (sectors / track) \* 1 / 120 (revolution / second) = 0.278 millisec