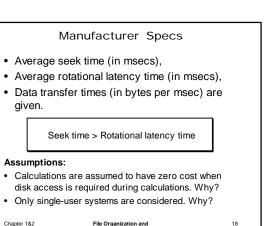


Performance Implications of Disk Structure

- · Data must be in memory for the application programs to operate on it.
- The unit for data transfer bw disk and main memory is a block. Even a single item on a block is needed, the entire block is transferred. Reading or writing a disk block is called an I/O (input/output) operation.
- The time to read or write a block varies, depending on the location of the data: access time= seek time + rotational delav + transfer time

These observations imply that the time taken for the application programs is affected significantly by how data is stored on disks. Chapter 1&2 17

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File Organization and

2 - SEEK TIME

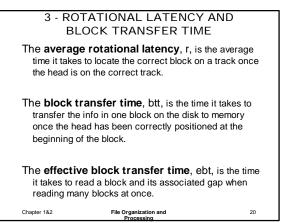
- The average seek time is the same as the time it takes to traverse **1/3** of the cylinders.
 - The average seek time, s, is calculated under the assumption that all cylinders are equally likely to be sources or destinations. Think how 1/3 is computed?

Questions:

- Does a disk drive with more cylinders have a higher average seek time than a disk drive with a smaller number of cylinders?
- How can we control or minimize seek time? - Think about comparing data from two different

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Parameters for the IBM 3380			
в	Block size	2400 bytes	
btt	Block transfer time	0.8 ms = B/t	
С	Blocks Per cylinder	600	
ebt	Effective btt	0,84 ms = B/ť	
m	Mimimum seek time	3 ms	
Ν	Number of cylinders	885 (Per spindle)	
r	Average rotational latency	8,3 ms	
s	Average seek time	16 ms	
t	Speed	3000 bytes/ms	
ť	Formatted speed	2857 bytes/ms	
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