## Chapter 2.3 Speed Up Access to Auxiliary Storage

***Introduction:***

* The average time that one disk needs to access the disk block is nearly 10 ms. This doesn’t mean that the application sends out the data requirement to disk controller and after 10ms it will get back data.
* If there is one disk, and the disk maybe busy because of the same process or the access of other process. In the worst situation, if the number that the disk access requirement exceeds 10ms each time, then these requirements will block forever.

However, we can do something to decrease the average access time of disk, so that we can improve the *handling capacity (吞吐量) (The disk access times that the system can adapt to.)*

We will consider some technologies that are used to speed up the classical database access:

1. Make the blocks that need to be access altogether into the same cylinder, so that we can usually avoid the Seek Time and Rotation Delay.
2. Divide the data that needs to be access into several smaller disks rather than one big disk. Let more Head Assembler go and access the disk block and that can increase the disk access amount in unit time.
3. “Mirror Image” disk - put two or more data copy into different disk. This strategy, other than save the data, can be used to access multi - disks in one time.
4. In Operation System, DBMS or Disk Controller, using the Disk Scheduling Algorithm to choose the sequence of block to be red or wrote.
5. Get the disks that need to be accessed to the main memory.

### Chapter 2.3.1 I/O Model of Calculation

Chapter 2.3.2 Organize Data According to Cylinder

Chapter 2.3.3 Using Multi - Disk

Chapter 2.3.4 Disk Mirror

Chapter 2.3.5 Disk Schedule and Elevator Algorithm

Chapter 2.3.6 Pre - Fetch and Buffering