## Chapter 2.1 The Storage Level

***Introduction:***

In this chapter, we do some research on the Storage Level about Computer System. The emphasis is put on the Introduction of Disk.

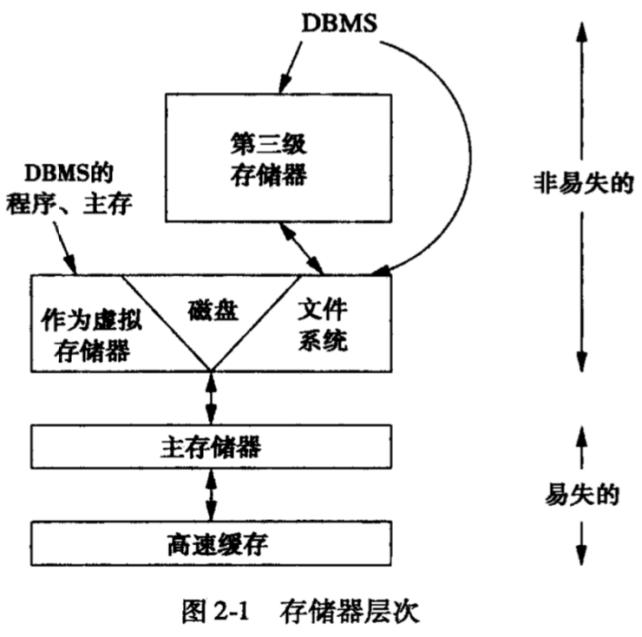
### Chapter 2.1.1 The Storage Level

***Introduction:***

One typical Computer System contains several different parts that can store the data. The price of these parts are different, but the changing range is small. As the changing of the Storage, the cheapest one and the most expensive one may have the 3 times difference. No need to weird that the most quickest access one will have the most expensive price.

***Level Structure:***

Describe level structure from the lowest to the fastest one:



1. ***Cache (高速缓存)***

On - board cache is located on the microprocessor while the attached Secondary cache is located on another chip.

When the processor needs data and command, they will be moved from main memory to the cache, it only takes several nano - seconds to access the data in Cache.

1. ***Main Memory (主存)***

Computer main memory is the activity center of computer. No matter the operating of command or data manipulating, they all need to operate on the main memory message. Move the data from main memory to processor or cache, the range of speed is between 10 - 100 ns.

1. ***Secondary Storage (辅助存储器)***

The typical storage is disk. Transmit one byte from disk to main memory needs nearly 10ms.

1. ***Tertiary Storage (第三级存储器)***

Sometimes the storage of database system may exceed one single machine or multi - machines. In order to adapt such requirement, then tertiary storage has been developed in order to save terabyte data.

*Characteristic:*

Compared with the storage, its read and write time takes longer, but its capacity is much more than disk, so each byte costs less than disk.

### Chapter 2.1.2 Transfer Data Through the Level of Storage

### Chapter 2.1.3 Volatile Memory and Non - Volatile Memory

### Chapter 2.1.4 Virtual Storage