## Chapter 1.1 Development of Database System

What is Database? Database is the collection of information. Database means the data collection which is managed by the database management system.

1. Enable users to use DDL (Data Definition Language) to create new database and assign its module.
2. Enable user to use language to search data and modify data. Such language is called query language and data manipulation language.
3. Support large data storage and enable store data to search from database and modify the database.
4. Make data *durability*, which enables the data to recover from fault or abuse.
5. Enable *isolation* and *atomicity*. (Control multi – user to access the data simultaneously.)

### Chapter 1.1.1 Early Database System

***Principle:***

The first Business Database System evolves from the file system, provides partial support: File system can store data in a long time and enable the system to store a large amount of data. But file system can not ensure the loss of data, if no back – up. They do not support high – efficiency storage, if have no idea about their specific location in the file.

*(Early module do not support high level query language.)*

### Chapter 1.1.2 Relational Database System

In the year 1970, Ted Codd published a famous paper, and some changes has happened on database system. *Codd thought that:*

* Database System consists of “Relation” table and a complex data structure which enables all kinds of queries to give quick response.
* The programmers do not need to care about storage structure, and they only need to use high efficiency language to do searching which highly improves their efficiency.
* In 1990, relational system has become a standard. Later, some large databases do not use the relational method to organize.

### Chapter 1.1.3 Increasing Smaller System

***Principle:***

DBMS is a giant and expensive software system running on the large machine.

* GB data needs big computer system to support, so it’s necessary to have a big capacity. The database system based on the relational module which can run on the tiny machine, just as excel and character processor.

The second key tendency is the usage of file, using XML.

### Chapter 1.1.4 Increasing Bigger System

***Principle:***

GB is no longer the very big data capacity. Database system usually stores TB and even PB to users.

***Example:***

* Satellite sends PB messages.
* The storage of one picture is larger than 1000 characters.
* Film for one hour needs 1GB.
* P2P file sharing system can store and publish all kinds of data through normal system consisting of big network.

### Chapter 1.1.5 Information Integration

***Principle:***

It’s necessary to build structure for the existing database system. The *purpose* is to integrate all existing information into the current database.

***Solution:***

1. Build data warehouse: translate the current data and copy to the central database.
2. Realize a mediator or middleware: realize an integration module that supports different kinds of database data, and translate between the current module and the real module of each database.