Educational Resource Management System (MPT1173)

Data Management

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Management Challenges

- Organizational obstacles to Database Environment
- Cost/benefit Consideration
- Organization placement of data management function.

Organizing Data in a Traditional File Environment

- Effective information system provides users with timely, accurate and relevant information.
- Well manage, carefully arranged files make it easy to obtain data.
- Poorly managed files lead to chaos in information processing, high costs, poor performance.
- Poor file management = inefficient information system

Problems with Traditional File Environment

- Data redundancy and Confusion
  - The presence of duplicate data in multiple data file.
  - How it can happen in managing data in school? Give example.
- Program data dependence
  - Tight relationship between data stored in files and the specific programs required to update and maintain those file.

Problems with Traditional File Environment

- Lack of Flexibility
  - Can deliver routine schedule reports after extensive programming effort, but can't deliver ad hoc report.
- Poor Security
  - Little control or management of the data.
- Lack data sharing and availability
  - Lack of control in accesing data
  - Not easy to retrieve the information

Database

- A collection of related data that is stored on a computer and organised in a manner that enables information to be retrieved as needed

DBMS

Database management system
(database software)

is the type of program used to create, maintain, and organise data in a database, as well as to retrieve information from it

DBMS

- Typical examples of DBMSs include Microsoft AccessOracle, DB2, Microsoft SQL Server, Firebird, MySQL, SQLite and FileMaker

- Special software to create and maintain a database and enable individual business applications to extract the data they need without having to create separate files or data definitions in their computer programs.

Advantages of DBMS

- Complexity of the organization's information system environment can be reduced by central management of data, access, utilization and security.
- Data redundancy and inconsistency can be reduced by eliminating all isolated files in which the same data elements are repeated.
- Data confusion can be eliminated by providing central control of data creation and definitions.

Advantages of DBMS

- Program development and maintenance can be radically reduced.
- Flexibility of information system can be greatly enhanced by permitting rapid and inexpensive ad hoc queries of very large pools of information.
- Access and availability of information can be increased.

Advantages of DBMS

- More info from the same data
- Reduction of data duplication
- Improved data integrity
- Programs are independent of the data format
- Sharing of data resources

Disadvantages of DBMS

- Added expense
- More hardware may be needed
- If it crashes….
- Sophisticated design and programming required
- Additional training
- Security is critical

Data hierarchy

- Bits
- Characters
- Fields (columns)
- Records (rows)
- Files (table)
- Database

Example : Library system

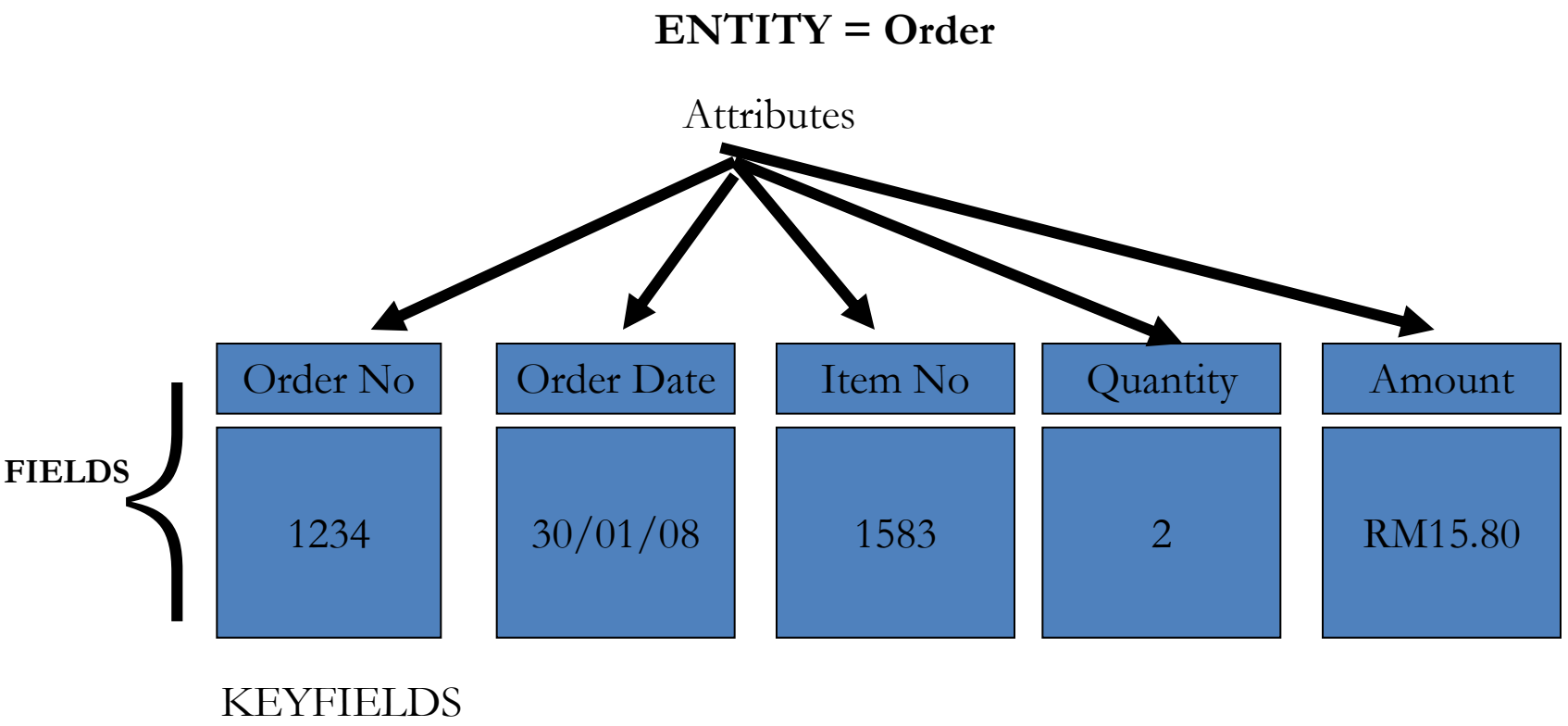
Terms and Concept

- Field – A grouping characters into a word, a group of words or a complete number such as person or age.
- Record – A group of related fields.
- File – A group of records of the same type.
- Entity – A person, place, thing, or event about which information must be kept.
- Attribute – A piece of information describing a particular entity
- Keyfield – A field in a record that uniquely identifies instances of that record so that it can be retrieved, updated or sorted.

Terms and Concept

- Character : The character typed into the fields
- Field (column) : is a single type of data i.e Name or phone number, etc
- Record (Row) : a collection of related fields i.e name and address, and phone number…
- Table : a collection of related rows(record) ie. Student address data, stuidents grade data, student SES data….etc

Example


ENTITY = Order
Attributes
Order No
Order Date
Item No
Quantity
Amount
FIELDS
1234
30/01/08
1583
2
RM15.80
KEYFIELDS

Accessing Record from Computer Files

- Sequential File Organization
  - A method of storing data records in which the records must be retrieved in same physical sequence in which they are stored.
- Direct or Random file Organization
  - Allow users to access records in any sequence they desire, without regard to actual physical order on the storage media.
- Indexed sequential access method (ISAM)
  - A file access method to directly access records organized sequentially using an index of key fields.
- Index – a table or list that relates to physical locations on direct access files.

That's all