

Bahan Tambahan: *The Database and Database Management System*

Analisis dan Perancangan Sistem Informasi

Sumber: 1) Post, Gerald V., *Database Management Systems: Designing & Building Business Application*, 2nd Edition, McGraw Hill, New York, 2003
2) Laudon, Kennet C., Jane P. Laudon, *Management Information Systems: Managing Digital Firm*, 7th edition, Prentice Hall, 2002.

Fundamental Building Blocks for Database Structures

1. Data Value
2. Data Field
3. Data Record
4. Data File

Spreadsheet as a Simple Database

- Rows and columns of a spreadsheet can be regarded as a simple database
- Flat files
 - Does not have repeating columns
 - Spreadsheet table is a file and column is a field
- Key fields
 - Contains a value to uniquely identify each record in a table

Data Structure vs. Spreadsheet Terminology

Spreadsheet Term	Data Structure Term
Table	File
Column	Field
Row	Record

Database Structures

- Database
 - All data stored on computer-based resources of the organization
- Database Management System (DBMS)
 - Software application that stores the structure of the database, the data itself, relationships among the data in the database, as well as forms and reports pertaining to the database

Database Structures

- Hierarchical structure
- Network structure
- Relational structure

Hierarchy

Database

File

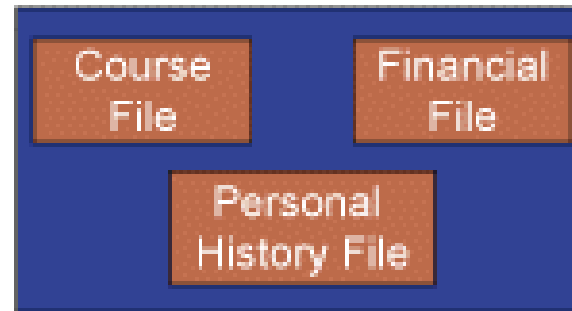
Record

Field

Byte

Bit

Example Student Database



Course File

NAME	COURSE	DATE	GRADE
John Stewart	IS 101	F01	B+
Karen Taylor	IS 101	F01	A
Emily Vincent	IS 101	F01	C

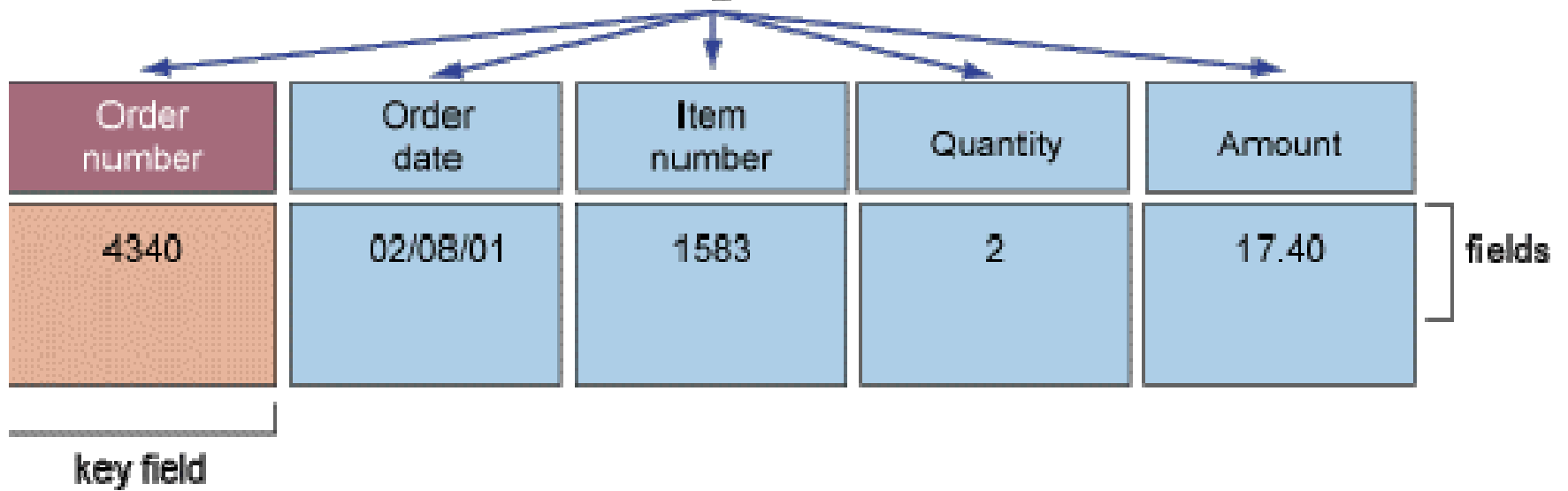
NAME	COURSE	DATE	GRADE
John Stewart	IS 101	F01	B+

John Stewart (NAME field)

01001010 (Letter J in ASCII)

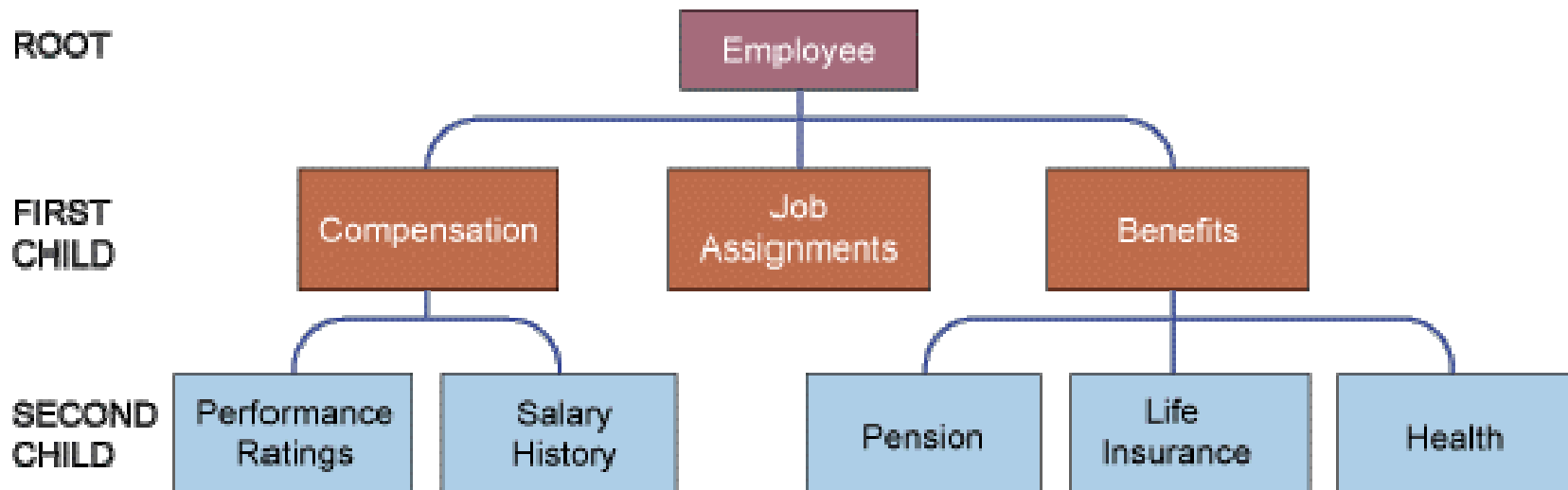
0

Entity = ORDER
Attributes



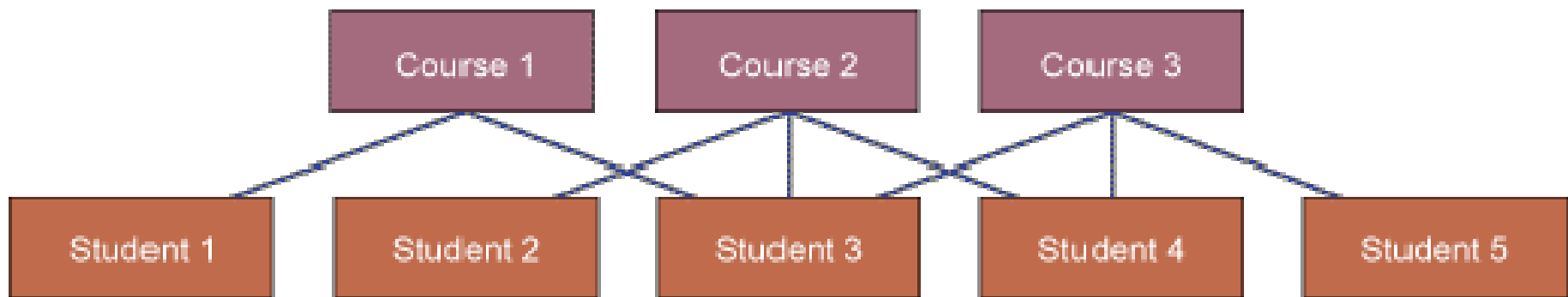
Database Structures (cont.)

- Hierarchical structure
 - Uses the 'parent / children' concept
 - Limitation: Cannot handle ad hoc requests
 - First DBMS was IDS by GE in 1964
 - CODASYL



Database Structures (cont.)

- Network structure
 - Allow given record to point back to any other record in the database
 - Specification released by CODASYL in 1971
 - Solves problem of having to backtrack through data




Database Structures (cont.)

- Relational structure
 - Rows and columns
 - Frees designers from need to specify relationships prior to building the database
 - Date and Codd described structure
 - Does not rely on physical relationships
 - Easy to understand

**Table
(Relation)**

Columns (Fields)



Order_ Number	Order_ Date	Delivery_ Date	Part_ Number	Part_ Amount	Order_ Total
1634	02/02/01	02/22/01	152	2	144.50
1635	02/12/01	02/20/01	137	3	79.70
1636	02/13/01	03/01/01	145	1	24.30

ORDER

**Rows
(Records,
Tuples)**

PART

Part_ Number	Part_ Description	Unit_ Price	Supplier_ Number
137	Door latch	22.50	4058
145	Door handle	26.25	2038
150	Door seal	6.00	4058
152	Compressor	70.00	1125

SUPPLIER

Supplier_ Number	Supplier_ Name	Supplier_ Address
4058	CBM Inc.	44 Winslow, Gary IN 41950
2038	Ace Inc.	Rte. 101, Essex NJ 07763
1125	Bryant Corp.	51 Elm, Rochester NY 11349