

WAVV 2001
Data Management Project



Data Base Options

Monday 8:00 AM

Ballroom A1

Data Base Options



- Discussion on Data Base Options

- Old and New

- | Relates to VSE in Particular

- Not Meant to be In-depth Technical Presentation

- | Not an Expert by Any Means

Data Base Options



- Definition:

- A Database management System (DBMS) is a General Purpose Software System That Facilitates the Process of Defining, Constructing, and Manipulating Databases for Various Applications.

Data Base Options



- Database

- A Database is a Collection of Related Data

Data Base Options



- Network Model

- Records in Files have Pointers to Records in Other Files
- Origins in Conference on Data Systems Languages (CODASYL)

Data Base Options



- Network Model

- Data Definition Language (DDL)

- | Defines the Data Characteristics and the Data Structure

Data Base Options



- Network Model
 - Data Management Language (DML)
 - To Manipulate the Data

Data Base Options



- Network Model

- A Relationship is Called a Set

- Each set is composed of at least two record types

- An Owner (Parent) Record

- A Member (Child) Record

Data Base Options



- Network Model

- TOTAL - CINCOM Systems

Data Base Options



- Network Model

- SYSTEM 2000 (S2K)

- | Developed as PHD Project at UT Austin

- | Went Commercial

Data Base Options

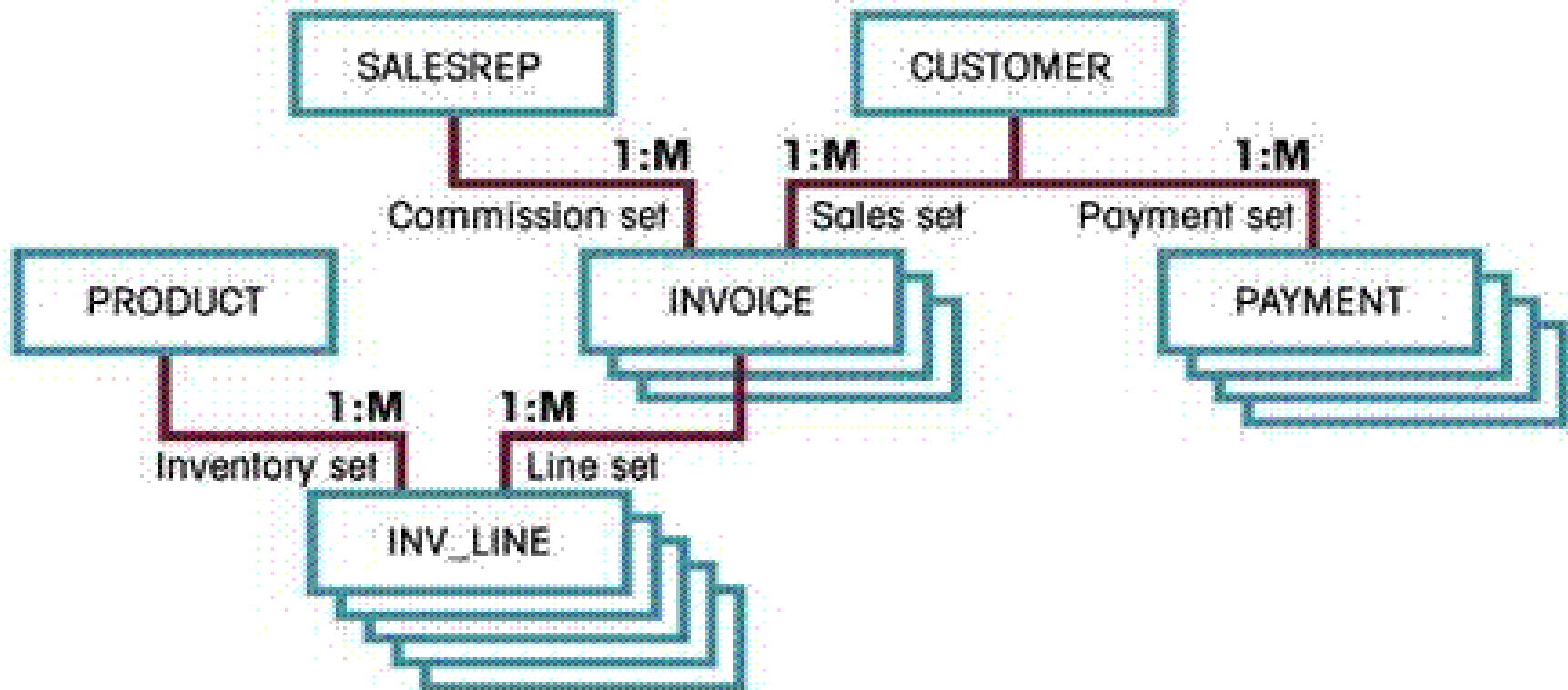


FIGURE 1.10 A NETWORK DATABASE MODEL

Data Base Options



■ Network Model

■ Advantages

- | Easier Implementation of Many to One Relationship
- | Enforced data integrity

Data Base Options



- Network Model

- Advantages

- Efficient Implementation

Data Base Options



- Network Model

- Disadvantages

- Difficult to Design and Use

Data Base Options



- Network Model

- Disadvantages

- | Requires Thorough Knowledge of Structure of Data Base in Order to Navigate

Data Base Options



- Network Model

- Disadvantages

- Difficult to Make Changes

Data Base Options



■ Hierarchical Model

■ Parent/Child

- | Highest Level Parent is Called Root
- | Each segment linked to only one root

Data Base Options



- Hierarchical Model

- Upside Down Tree Structure

Data Base Options



- Hierarchical Model

- DL/I

- IMS (Jointly developed by IBM and Rockwell)

Data Base Options



- Hierarchical Model
 - Hierarchical Characteristics Make it More Efficient in Data Access and Storage but Apply Strict Rules for Access.

Data Base Options

Root segment



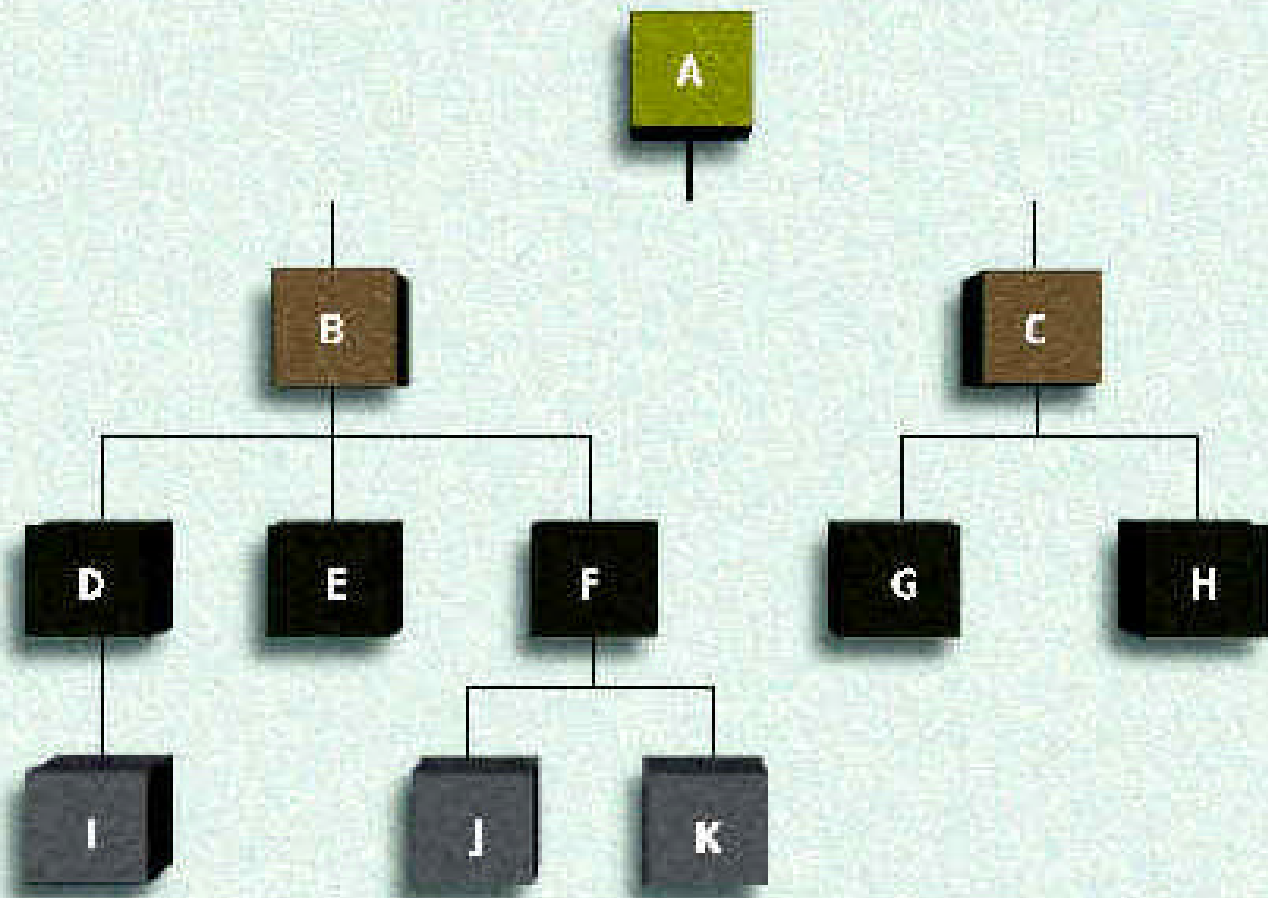
Level 1 segments
(root children)



Level 2 segments
(level 1 children)



Level 3 segments
(level 2 children)



Data Base Options



■ Hierarchical Model

■ Advantages

- | Efficiency Dealing with Large Database
 - Performance
- | Data Sharing and Security

Data Base Options



■ Hierarchical Model

■ Advantages

- | Data Base Independence

- | Data Base Integrity

- When Adding Segment Parent Has to Exist

Data Base Options



■ Hierarchical Model

■ Disadvantages

- | Requires Thorough Knowledge of Structure of Data Base in Order to Navigate

Data Base Options



■ Hierarchical Model

■ Disadvantages

- | Complex and Inflexible to manage
- | Lack of Ad hoc Query
- | Low Level Query Language

Data Base Options



- Relational Model

- E. F. Codd of IBM Developed The Relational Model in 1970

- Considered Impractical in 1970's

Data Base Options



- Relational Model

- Data Stored in Tables

- Tables Consist of Rows and Columns

Data Base Options



- Relational Model
 - Tables (Or Relations) are Related to Each Other by Sharing a Common Entity Characteristic (Column)

Data Base Options



- Relational Model

- DB2

- ORACLE

Data Base Options

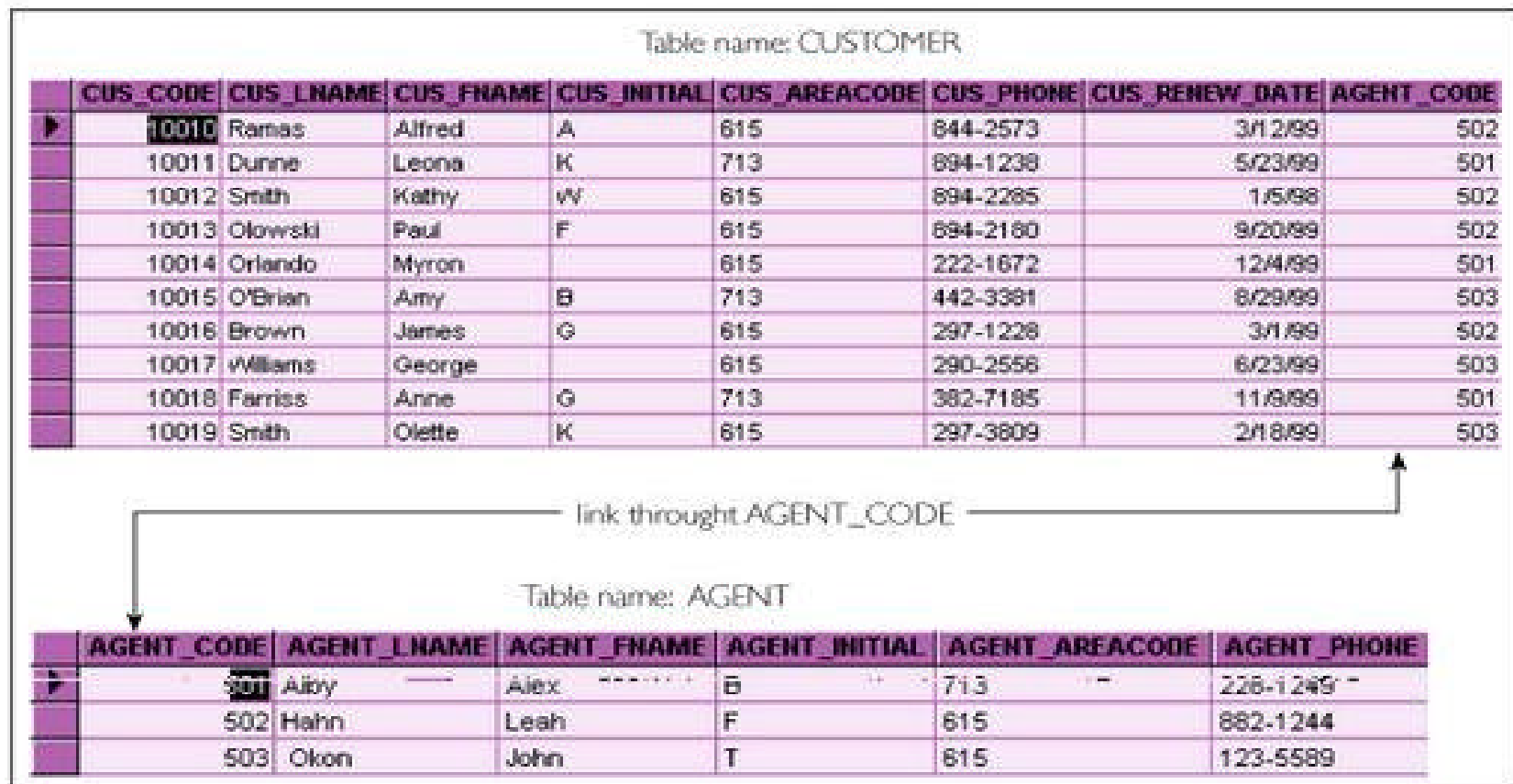


FIGURE 1.11 ■ LINKING RELATIONAL TABLES

Data Base Options



- Relational Model

- Advantages

- | Data Independence and Structural Independence

- | Easy to Design and Maintain

Data Base Options



- Relational Model

- Advantages

- | Less Programming Effort

- | Shorter Development Cycle

Data Base Options



■ Relational Model

■ Advantages

■ Powerful and Flexible Query Capability

- SQL - Structured Query Language
- QBE - Query By Example

Data Base Options



■ Relational Model

■ Disadvantages

■ More Overhead

- Performance

■ SLOWER

Data Base Options



- DB2
 - IBM's Relational DBMS
 - Multi-Platform

Data Base Options



- DB2

- DB2/VSE - Not Full UDB

- DB2/VSE 7.2 - Can be Installed as Part of Base on VSE/ESA 2.6 or Installed as Separate Product

Data Base Options



■ Other DBs

■ MODEL204

- | Bit Mapped Indexes

- | Optimized Relational Model

- "Embedded Tables"

Data Base Options



- Other DBs

- MODEL204

- | High Performance

- | VLD - Very Large Databases

Data Base Options



- Other DBs

- ADABAS

- "Relational and Beyond"

Data Base Options



- Other DBs

- ADABAS

- | Post Relational Model

- | Nested Tables

- | Intricate OLTP

Data Base Options



- Other DBs

- ADABAS D

- | Relational Model

- | SQL Functionally

Data Base Options



Comments Please