

# Data Dictionary

# Data Dictionary

- ▶ Data dictionary is a main method for analyzing the data flows and data stores of data-oriented systems
- ▶ The data dictionary is a reference work of data about data (metadata)
- ▶ It collects, coordinates, and confirms what a specific data term means to different people in the organization

# Reasons for Using a Data Dictionary

- ▶ The data dictionary may be used for the following reasons:
  - Provide documentation
  - Eliminate redundancy
  - Validate the data flow diagram
  - Provide a starting point for developing screens and reports
  - To develop the logic for DFD processes

# The Repository

- ▶ A data repository is a large collection of project information
- ▶ It includes
  - Information about system data
  - Procedural logic
  - Screen and report design
  - Relationships between entries
  - Project requirements and deliverables
  - Project management information

# Data Dictionary Contents

- ▶ Data dictionaries contain
  - Data flow
  - Data structures
  - Elements
  - Data stores

# Defining Data Flow

- ▶ Each data flow should be defined with descriptive information and its composite structure or elements
- ▶ Include the following information:
  - ID – identification number
  - Label, the text that should appear on the diagram
  - A general description of the data flow

# Defining Data Flow

## ▶ (Continued)

- The source of the data flow
  - This could be an external entity, a process, or a data flow coming from a data store
- The destination of the data flow
- Type of data flow, either
  - A record entering or leaving a file
  - Containing a report, form, or screen
  - Internal – used between processes

# Defining Data Flow

## ▶ (Continued)

- The name of the data structure or elements
- The volume per unit time
  - This could be records per day or any other unit of time
- An area for further comments and notations about the data flow



# Data Flow Example

Name	Customer Order
Description	Contains customer order information and is used to update the customer master and item files and to produce an order record.
Source	Customer External Entity
Destination	Process 1, Add Customer Order
Type	Screen
Data Structure	Order Information
Volume/Time	10/hour
Comments	An order record contains information for one customer order. The order may be received by mail, fax, or by telephone.

# Defining Data Structures

- ▶ Data structures are a group of smaller structures and elements
- ▶ An algebraic notation is used to represent the data structure

# Algebraic Notation

- ▶ The symbols used are
  - Equal sign, meaning “consists of”
  - Plus sign, meaning “and”
  - Braces {} meaning repetitive elements, a repeating element or group of elements
  - Brackets [] for an either/or situation
    - The elements listed inside are mutually exclusive
  - Parentheses () for an optional element

# Physical and Logical Data Structures

- ▶ Data structures may be either logical or physical
- ▶ Logical data structures indicate the composition of the data familiar to the user

# Physical Data Structures

- ▶ Include elements and information necessary to implement the system
- ▶ Additional physical elements include
  - Key fields used to locate records
  - Codes to indicate record status
  - Codes to identify records when multiple record types exist on a single file
  - A count of repeating group entries

# Data Structure Example

Customer Order = Customer Number +  
Customer Name +  
Address +  
Telephone +  
Catalog Number +  
Order Date +  
{Order Items} +  
Merchandise Total +  
(Tax) +  
Shipping and Handling +  
Order Total +  
Method of Payment +  
(Credit Card Type) +  
(Credit Card Number) +  
(Expiration Date)



# Structural Records

- ▶ A structure may consist of elements or smaller structural records
- ▶ These are a group of fields, such as
  - Customer Name
  - Address
  - Telephone
- ▶ Each of these must be further defined until only elements remain

# General Structural Records

- ▶ Structural records and elements that are used within many different systems should be given a non-system-specific name, such as street, city, and zip
- ▶ The names do not reflect a functional area
- ▶ This allows the analyst to define them once and use in many different applications



# Structural Record Example

Customer Name = First Name +  
(Middle Initial) +  
Last Name

Address = Street +  
(Apartment) +  
City +  
State +  
Zip +  
(Zip Expansion) +  
(Country)

Telephone = Area code +  
Local number

# Defining Elements

- ▶ Data elements should be defined with descriptive information, length and type of data information, validation criteria, and default values
  - ▶ Each element should be defined once in the data dictionary
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