Microsoft Access 2007

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Outline [1]

- Review
- Introduction to Microsoft Access
- Designing Table
- Creating, Editing and Entering Data into Table
- Query

Outline [2]

- Working with Multiple Table — Relation
- Form
- Report

Data vs Information

- Recap

Data Processing [1]

- Data constitute the building blocks of information.
- Information is produced by processing data.
- Information is used to reveal the meaning of data.

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Data Processing [2]

- Accurate, complete, relevant, and timely information is the key to good decision making.
- Good decision making is the key to organizational survival in a global environment.

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Data Management

- Timely and useful information requires accurate data.
- The Data must be
  - Properly generated and stored
  - Easy to Access
  - Easy to Process
- Data management is a discipline that focuses on the proper generation, storage, and retrieval of data

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Database

- Efficient data management typically requires the use of a computer database.
- A database is a shared, integrated computer structure that stores a collection of Data

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DBMS

- A database management system (DBMS) is a collection of programs that manages the database structure and controls access to the data stored in the database.
- **MS Access** is a DBMS application

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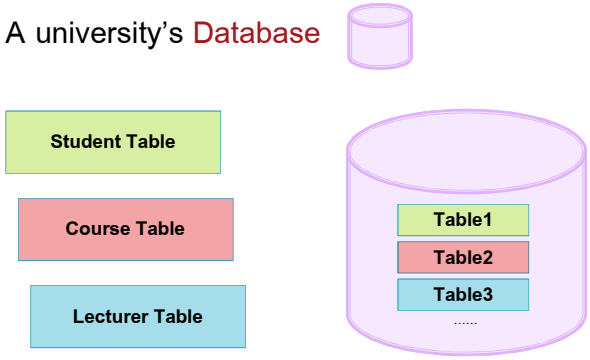
Example

- A university's Database



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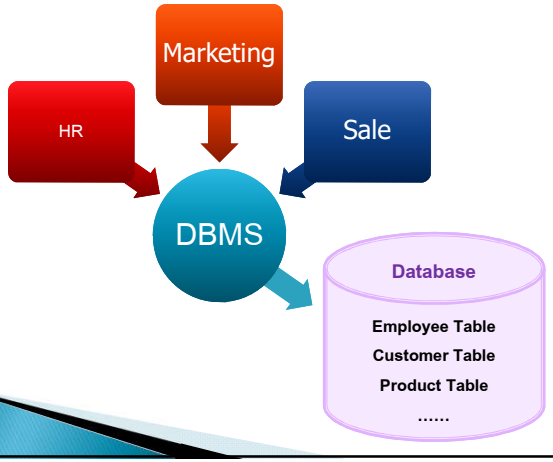
Database in Organizations



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Data Organization

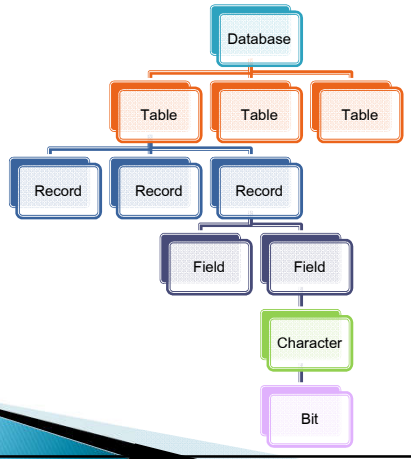

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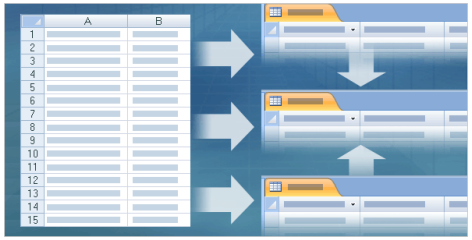
Table

Fields

Employee ID	First Name	Last Name	Home Address	Telephone Number
E001	James	Smith	552 Main Street, New York	
E201	Niranaam	Raisakul	5555 Raiteeyuu Rd., Chiang Mai	66-53-211451
E304	Jane	Doe		517-355-5554
E511	Harry	Pascal		

Records

Table (2)



Databases organize your information into separate tables, and each table contains unique data.

- The database then uses relationships to join the data in the tables in a meaningful way.
- That set of tables and relationships is called a relational structure, which the picture shows.

Relationship

- One to many (1:N)
- Many to many (M:N)
- One to one (1:1)

One-to-Many (1:N)

- Painter – Painting
  - A painter creates many paintings
  - Each painting is painted only by one painter

Many-to-Many (M:N)

- Employee – Job Skill
  - An employee may learn many job skills
  - Each job skill may be learned by many employees

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One-to-One (1:1)

- Store – Manager
  - Each store is managed by a store manager
  - Each store manager manages only one store

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Relationship

- All relationships are bidirectional
  - One CUSTOMER can generate many INVOICEs
  - Each of the INVOICEs is generated by only one CUSTOMER
- All are defined by business rules
  - We now start with one table

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Designing a Table [Step 1]

- Define Scope and Boundaries
  - What are the data of interest?
    - What's relevant?
    - What's irrelevant?

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Scope and Boundaries

- For example: a student table
  - In a life of a student, there are many aspects
    - Title, First Name, Last Name, Student ID, Address, Allowance, GPA, Blood Type, Citizen ID, Major, Faculty,
  - What are the data of interest?

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Student Table [1]

- Let's say we want to store
  - Student ID
  - Title
  - First Name
  - Last Name
  - Birth Date
  - GPA

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Student Table [2]

- And if we are also interested in
  - Blood Type (We love hosting a blood drive event!)
  - Or we want to conduct a research to see
    - How the income of each student affect the choice of pet he/she keeps
- And an e-mail address, in case we need to contact the student.

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Student Table [3]

- So we need to add
  - Blood Type
  - Pet
  - Allowance
  - E-mail address

Student
Student ID
Title
First Name
Last Name
Birth Date
GPA
Blood Type
Pet
Allowance
E-mail Address

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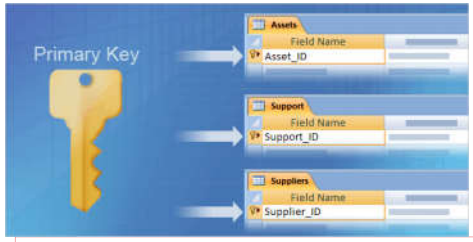
Designing a Table [Step 2]



Picking a Primary Key

- A primary key (PK) is a field, or a combination of fields, with a value that makes each row in a table unique.
- Primary keys are another way to avoid duplicating your data, because you can never duplicate a value in a primary key field

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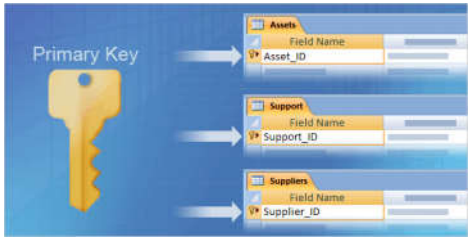
Primary Key [1]



- You can use existing values such as part numbers, but only if each value will always be unique. Once you define a field as a primary key, Access never lets you enter duplicate values in that field.
- Also, your key values should never change, because if they do your tables may become out of synch.

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Primary Key [2]

- If your existing data won't work as a primary key, you can use an AutoNumber field. Access simply increments the value in that field by one whenever you add a new record.

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Assigning Primary Key

- In our case, the Student ID is unique and every student has one.
  - As opposed to the 13-digit Thai Citizen ID
    - Not applicable to international students.

Student
Student ID
Title
First Name
Last Name
Birth Date
GPA
Blood Type
Pet
Allowance
E-mail Address

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Other Microsoft Access Objects

- Query
  - User-defined filter of data.
- Form
  - User-created interface for easy & quick data entry.
- Report
  - User-created display of data.

Table & Query

Table

Student ID	Title	First Name	Last Name	Birth Date	GPA	Blood Type	Pet	Allowance	E-mail Address
555555555	Mr.	Niranaam	Raisakul	1995-04-01	4.00	A+		500	niranaam.r@cmu.ac.th
570883775	Mr.	Ralph	Chen	1996-02-05	2.28	B-	Dog	1200	ralph.c@cmu.ac.th
571634633	Mr.	Michael	Robertson	1995-01-03	2.54	AB+	Cat	2500	robertson_m@gmail.com
571645508	Ms.	Jane	Doe	1993-12-25	3.25	O+	Raindeer	1525	jane.d@cmu.ac.th
571888555	Ms.	Laura	Smith	1996-12-18	3.45	AB-		0	laura.s@cmu.ac.th

Field:	[Student ID]	[First Name]	[Last Name]	[GPA]
Table:	Students	Students	Students	Students
Sort:				
Show:	☑	☑	☑	☑
Criteria:				>3
or:				

Query

Student ID	First Name	Last Name	GPA
555555555	Niranaam	Raisakul	4.00
571645508	Jane	Doe	3.25
571888555	Laura	Smith	3.45

Result

Form

Enter Student Data

Student ID:	571123456
Title:	Ms.
E-mail Address:	rahul.narayanan@gmail.com
First Name:	Rahul
Last Name:	Narayanan
Allowance:	4500
Birth Date:	1995-06-15
Pet:	

Student ID	Title	First Name	Last Name	Birth Date	GPA	Blood Type	Pet	Allowance
555555555	Mr.	Niranaam	Raisakul	1995-04-01	4.00	A+		
570883775	Mr.	Ralph	Chen	1996-02-05	2.28	B-	Dog	
571123456	Mr.	Rahul	Narayanan			O-		
571634633	Mr.	Michael	Robertson	1995-01-03	2.54	AB+	Cat	
571645508	Ms.	Jane	Doe	1993-12-25	3.25	O+	Raindeer	
571888555	Ms.	Laura	Smith	1996-12-18	3.45	AB-		

Report

Student ID	First Name	Last Name	GPA
555555555	Niranaam	Raisakul	4.00
571645508	Jane	Doe	3.25
571888555	Laura	Smith	3.45

Student with Grade Higher Than 3.0

Tuesday, November 11, 2014
11:28:22 AM

Student ID	First Name	Last Name	GPA
555555555	Niranaam	Raisakul	4.00
571645508	Jane	Doe	3.25
571888555	Laura	Smith	3.45
		Average :	3.57