
DATABASE 1

CHAPTER 1 PART 1

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INFORMATION SYSTEM

Data : are raw facts that describe a particular phenomenon such as the current temperature, customers ages, etc

Information : is data that have a particular meaning within a specific context:

System : Input ,Process and Output

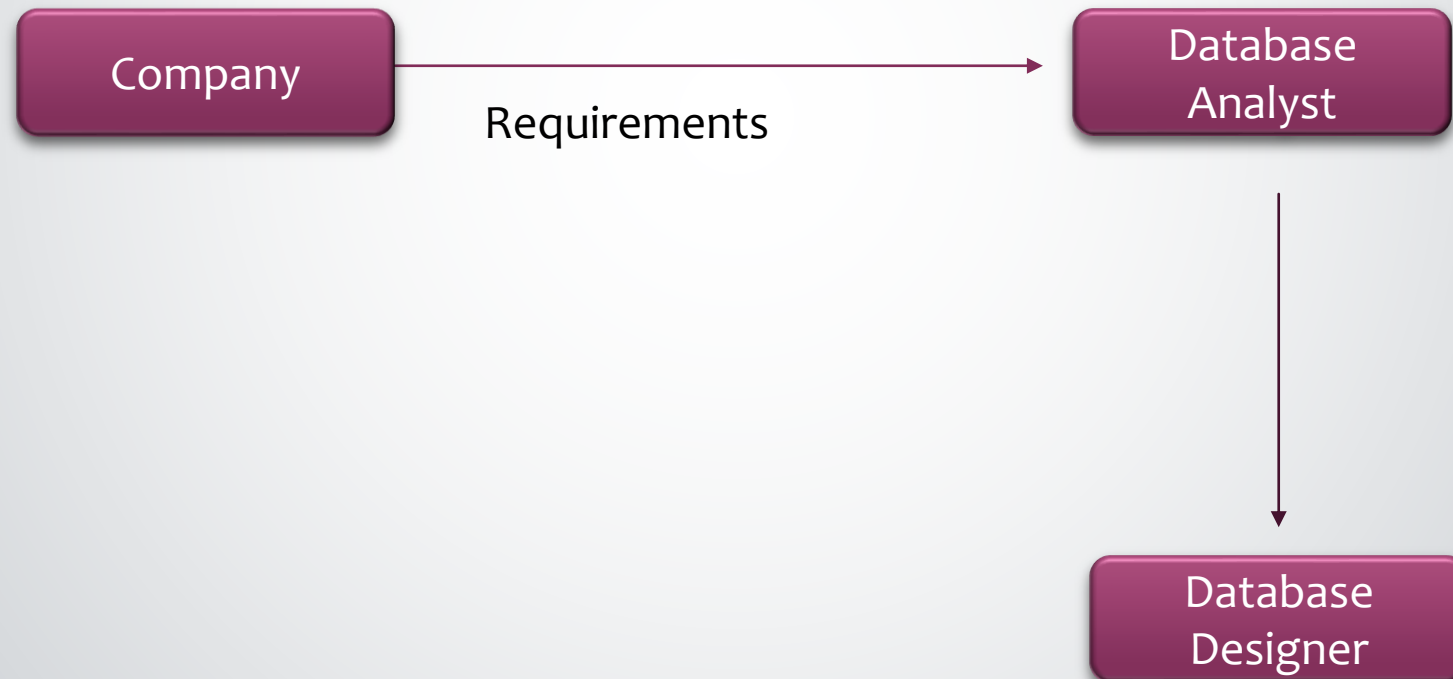
Information System : Integrated or interrelated components used to **collect Data ,process, store, and distribute** information to mainly support decision makings in an organization.

DATABASE

- A **database** is an organized collection of data, generally stored and accessed electronically from a computer system.



DATABASE



DATABASE

- **Key fields**

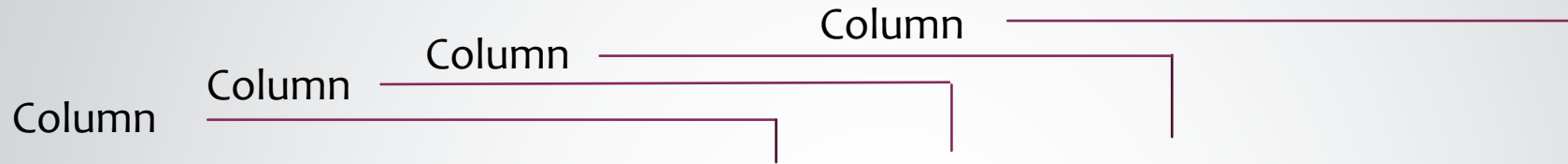
Establish relationships among records in different tables



- **Main types of key fields**

- 🔑 Primary
- 🔑 Candidate
- 🔑 Surrogate
- 🔑 Foreign
- 🔑 Composite

TABLE



✓ Fields

- S_ID
- S_Name
- ADDRESS
- EMAIL

S_ID	S_Name	ADDRESS	EMAIL
112	AHMAD	AMMAN	Ahmad@Hotmail.com
113	AHMAD	IRBID	Ahm_20@Hotmail.com
114	LINA	AMMAN	Lin778@yahoo.com
115	FARIS	AMMAN	
116	MUNA	IRBID	Mun_90@Hotmail.com
117	AYMAN	KARAK	Ayam_34@yahoo.com

TABLE

Records

	S_ID	S_Name	ADDRESS	EMAIL	
	112	AHMAD	AMMAN	Ahmad@Hotmail.com	
	113	AHMAD	IRBID	Ahm_20@Hotmail.com	
	114	LINA	AMMAN	Lin778@yahoo.com	
	115	FARIS	AMMAN		
	116	MUNA	IRBID	Mun_90@Hotmail.com	
	117	AYMAN	KARAK	Ayam_34@yahoo.com	

PRIMARY KEY

- Primary key :

Column in relational database table whose value must be unique for each row

Serves to identify individual occurrence of entity

- Rules

- ✓ Every row must have a primary key
- ✓ Cannot be NULL

PRIMARY KEY EXAMPLE

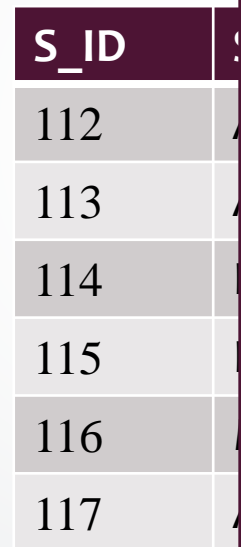
S_ID	S_Name	ADDRESS	EMAIL
112	AHMAD	AMMAN	Ahmad@Hotmail.com
113	AHMAD	IRBID	Ahm_20@Hotmail.com
114	LINA	AMMAN	Lin778@yahoo.com
115	FARIS	AMMAN	
116	MUNA	IRBID	Mun_90@Hotmail.com
117	AYMAN	KARAK	Ayam_34@yahoo.com

NULL

PRIMARY KEY EXAMPLE

✓ Unique + NOT NULL

Primary Key



S_ID	S_FIRST	ADDRESS	EMAIL
112	AHMAD	AMMAN	Ahmad@Hotmail.com
113	AHMAD	IRBID	Ahm_20@Hotmail.com
114	LINA	AMMAN	Lin778@yahoo.com
115	FARIS	AMMAN	
116	MUNA	IRBID	Mun_90@Hotmail.com
117	AYMAN	KARAK	Ayam_34@yahoo.com

CANDIDATE KEY

- **Candidate**

Any column that could be used as the **primary key**

Should be a column that is unique for each record and does not change

Unique

Not Null

S_ID	SSN	S_FIRST	ADDRESS	EMAIL
112	1525282	AHMAD	AMMAN	Ahmad@Hotmail.com
113	1436765	AHMAD	IRBID	Ahm_20@Hotmail.com
114	5436535	LINA	AMMAN	Lin778@yahoo.com
115	9826838	FARIS	AMMAN	
116	5245484	MUNA	IRBID	Mun_90@Hotmail.com
117	8796544	AYMAN	KARAK	Ayam_34@yahoo.com

SURROGATE KEYS

- Column **created** to be record's primary key identifier
- Has **no real relationship** to row to which it is assigned other than to identify it uniquely
- Surrogate key values **automatically** generated using a sequence

S_FIRST	S_LAST	ADDRESS	EMAIL
AHMAD	ALMUSA	AMMAN	Ahmad@Hotmail.com
AHMAD	ABDALLAT	IRBID	Ahm_20@Hotmail.com
LINA	AHMAD	AMMAN	Lin778@yahoo.com
FARIS	IHAB	AMMAN	
MUNA	ALMUSA	IRBID	Mun_90@Hotmail.com
AYMAN	ALESA	KARAK	Ayam_34@yahoo.com

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- Column **created** to be record's primary key identifier
- Has **no real relationship** to row to which it is assigned other than to identify it uniquely
- Surrogate key values **automatically** generated using a sequence

SURROGATE

	S_FIRST	S_LAST	ADDRESS	EMAIL
1	AHMAD	ALMUSA	AMMAN	Ahmad@Hotmail.com
2	AHMAD	ABDALLAT	IRBID	Ahm_20@Hotmail.com
3	LINA	AHMAD	AMMAN	Lin778@yahoo.com
4	FARIS	IHAB	AMMAN	
5	MUNA	ALMUSA	IRBID	Mun_90@Hotmail.com
6	AYMAN	ALESA	KARAK	Ayam_34@yahoo.com

FOREIGN KEY

Foreign key : Column in table that is a primary key in another table

- Creates relationship between two tables
- Value must exist in table where it is the primary key

Example

Primary Key

Dep_ID	Dep_Name	Dep-Head
1	MIS	Dr.Rand
2	Business	Dr.Tagreed
3	Accounting	Dr.Hala
4	Marketing	Dr.Zainh

EXAMPLE

Primary Key

Dep Table

Dep_ID	Dep_Name	Dep-Head
1	MIS	Dr.Rand
2	Business	Dr.Tagreed
3	Accounting	Dr.Hala
4	Marketing	Dr.Zainh

Forgein Key

Student Table

S_ID	S_FIRST	ADDRESS	EMAIL	Dep_ID
112	AHMAD	AMMAN	Ahmad@Hotmail.com	1
113	AHMAD	IRBID	Ahm_20@Hotmail.com	1
114	LINA	AMMAN	Lin778@yahoo.com	2
115	FARIS	AMMAN		3
116	MUNA	IRBID	Mun_90@Hotmail.com	2
117	AYMAN	KARAK	Ayam_34@yahoo.com	4

COMPOSITE KEY

- **Composite**

Unique key that is created by combining two or more columns

- Usually comprises fields that are primary keys in other tables

S_ID	S-SUBJECT	Marks	Dep
112	MIS	30	1
113	MIS	60	1
112	Database	30	1
113	Database	70	1
114	DSS	55	1
117	DSS	60	1
112	DSS	70	1

112 MIS

112 Database

112 DSS

KEY FIELDS

- Main types of key fields



Primary



Candidate



Surrogate



Foreign



Composite