

The background of the slide features a light gray gradient. It is decorated with several realistic water droplets of various sizes, some clustered in the top left and others in the bottom right. A faint, large circular pattern, resembling a ripple or a stylized sunburst, is centered in the upper half of the image.

RELATIONAL DATABASES

OBJECTIVES

- DISTINGUISH BETWEEN CONCEPTUAL MODEL AND PHYSICAL MODEL
- APPLY TERMINOLOGY MAPPING BETWEEN THE TWO MODELS
- TRANSFORM AN ENTITY INTO A TABLE DIAGRAM

PURPOSE

- WHEN YOU DESIGN A HOUSE YOU EVENTUALLY SEE THE HOUSE BUILT
- INITIAL DATABASE DESIGN CAN BE USED FOR FURTHER DISCUSSION BETWEEN DESIGNERS, DATABASE ADMINISTRATORS AND APPLICATION DEVELOPERS

RELATIONAL TABLES

Review of Relational Tables

- A table is a simple structure in which data is organized and stored.
- In the example below, the EMPLOYEES table is used to store employees' information.

Purpose

Table: EMPLOYEES

EMPLOYEE_ID	LAST_NAME	FIRST_NAME	DEPARTMENT_ID	PAYROLL_ID	NICKNAME
100	SMITH	DANA	10	21215	Dana
310	ADAMS	TYLER	15	59877	Ty
210	CHEN	LAWRENCE	10	1101	Larry
405	GOMEZ	CARLOS	10	52	Chaz
378	LOUNGANI	NEIL	22	90386	Neil

Primary Key Column (PK)

Foreign Key Column (FK)

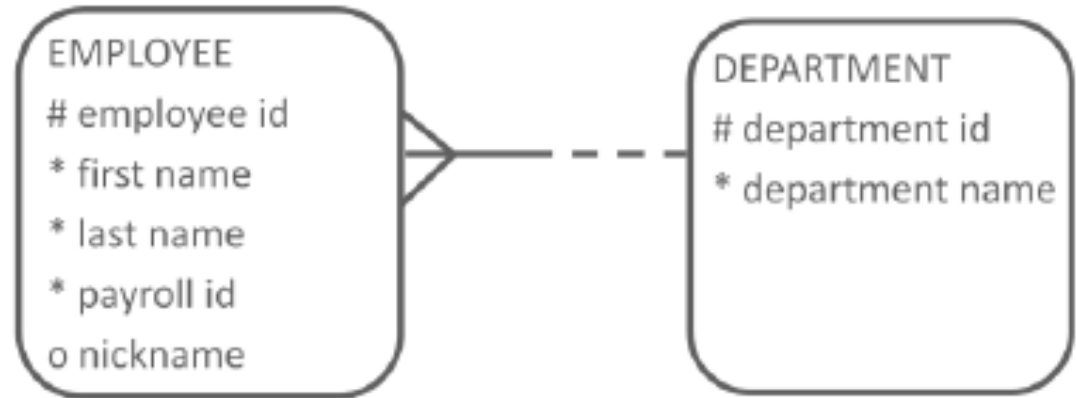
Unique Key Column (UK)

- TABLES HAVE COLUMNS AND ROWS.
- EACH ROW DESCRIBES AN INSTANCE OF EMPLOYEE
- EACH COLUMN....
- UID...

TRANSFORMATION

Conceptual Model (ERD)

Transformation
process



Physical Implementation: Relational Database

EMPLOYEES (EPE)		
Key type	Optionality	Column name
pk	*	employee_id
uk	*	payroll_id
	*	last_name
	*	first_name
	o	nickname
fk	*	department_id

DEPARTMENTS (DPT)		
Key type	Optionality	Column name
pk	*	department_id
	*	department_name

TRANSFORMATION

- ENTITY → TABLE
- INSTANCE → ROW
- ATTRIBUTE → COLUMN
- UID → PRIMARY KEY
- RELATIONSHIP → FOREIGN KEY & CONSTRAINT

TERMINOLOGY

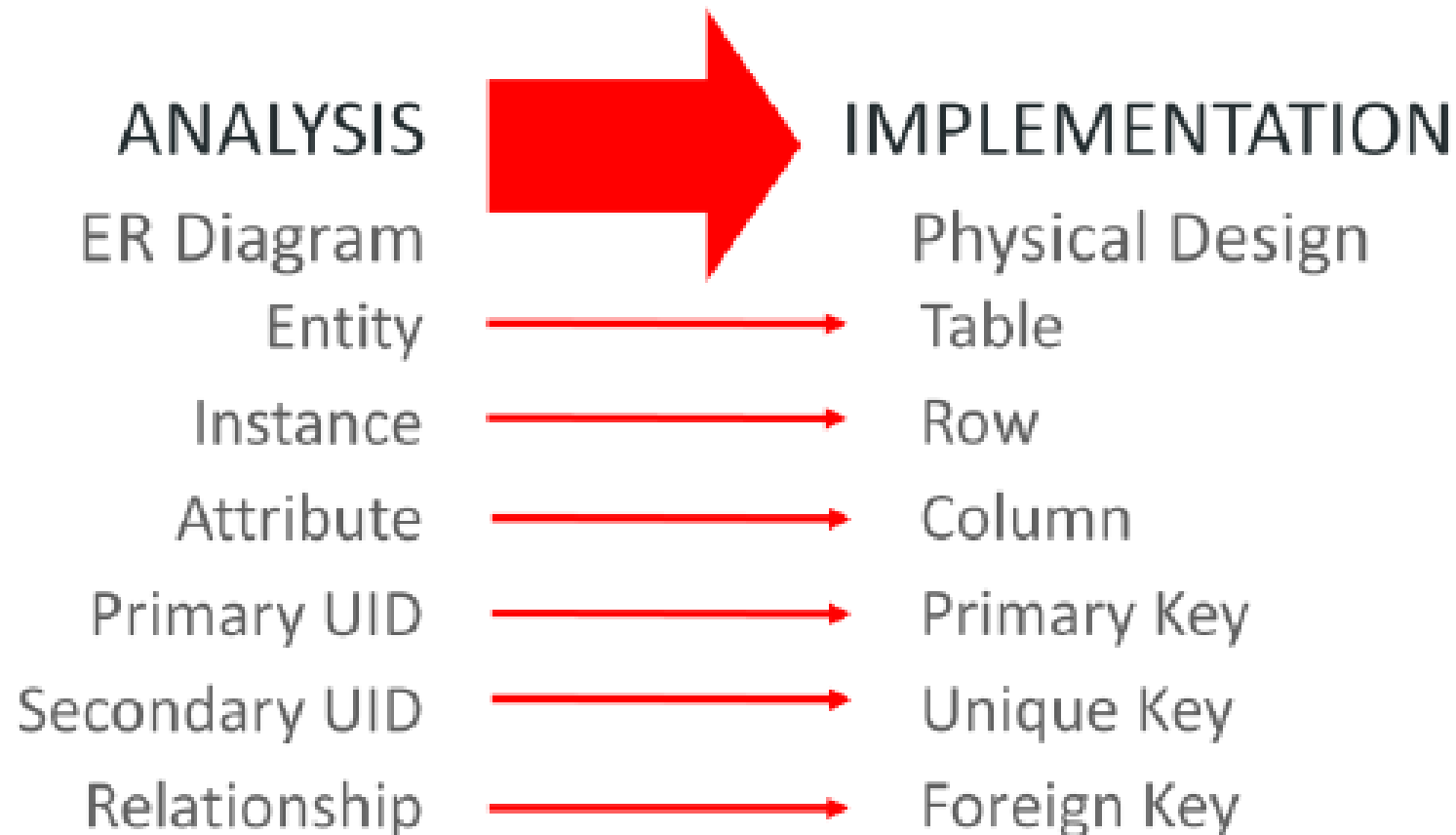


TABLE MAPPING DIAGRAM

[illegible]

Table Name

column name	key type	data type	size	description	optionality	constraints
emp_id	pk	number	9	employee id	*	
first_name		characters	20	employee first name	*	
....						
....						
email	uk	characters	40	employee personal email address	*	
dept_id	fk	number	9	link to departments table	*	

NAMING CONVENTIONS

- ENTITY NAMES ARE USED AS TABLE NAMES BUT IN PLURAL FORM
- ATTRIBUTE NAME ARE USED FOR COLUMN NAMES WITH UNDERSCORES AND IN SOME CASES SHORT VERSIONS
- FIRST_NAME OR FNAME
- STREET_ADDRESS OR STR_ADDR

NAMING RESTRICTIONS

- TABLE AND COLUMN NAMES :
 - MUST START WITH A LETTER
 - CAN CONTAIN UP TO 30 ALPHANUMERIC CHARACTERS
 - CANNOT CONTAIN SPACES OR SPECIAL CHARACTERS SUCH AS !, BUT \$#AND _ ARE ALLOWED
 - TABLE NAMES MUST BE UNIQUE TO USER ACCOUNT
 - COLUMN NAME MUST BE UNIQUE TO TABLE
 - CANNOT USE RESERVED WORDS IN ORACLE (TABLE, NUMBER, SEQUENCE, ORDER, VALUES LEVEL, TYPE)