Pázmány Péter Catholic University
Faculty of Information Technology and Bionics

SQL Introduction

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Database Systems I. Lab

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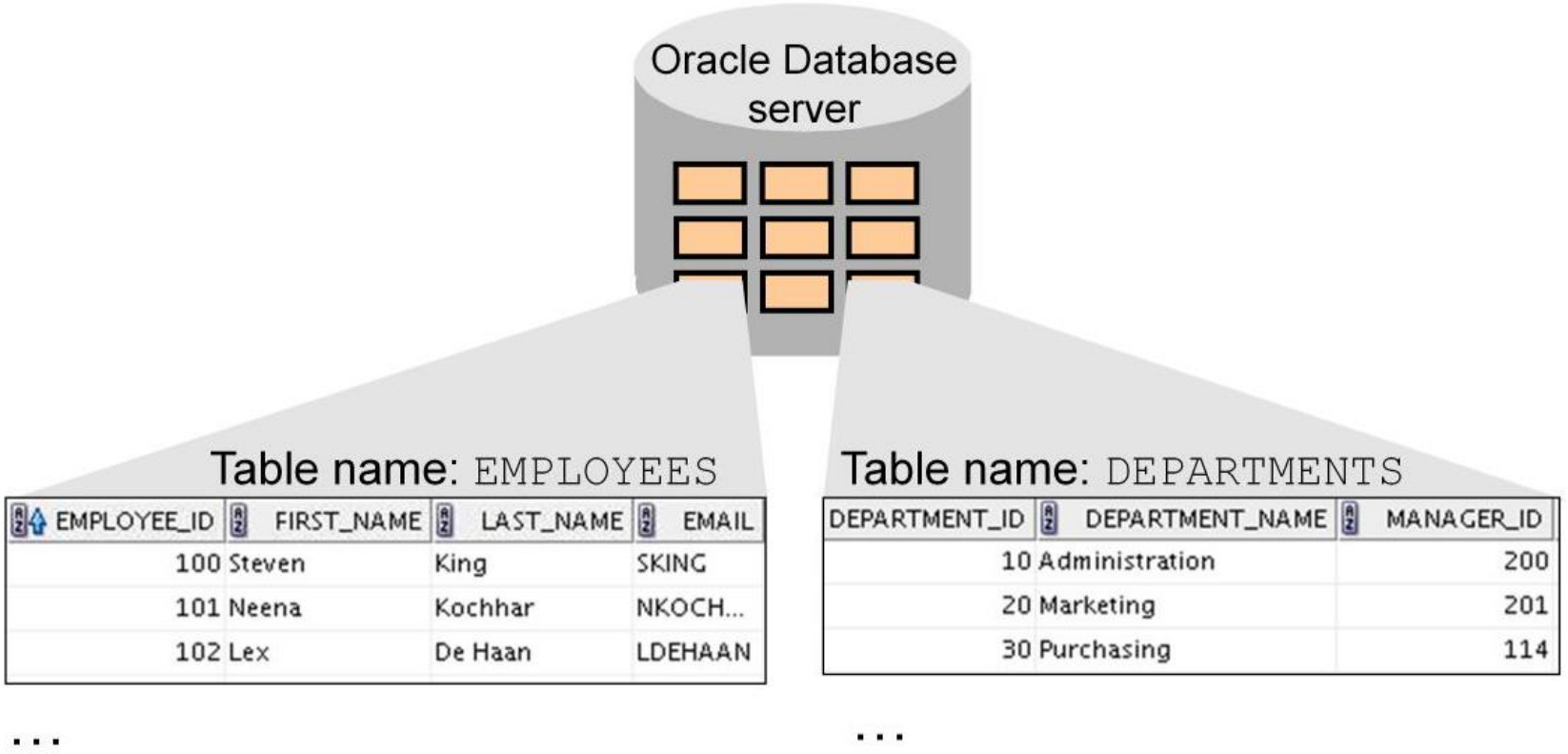
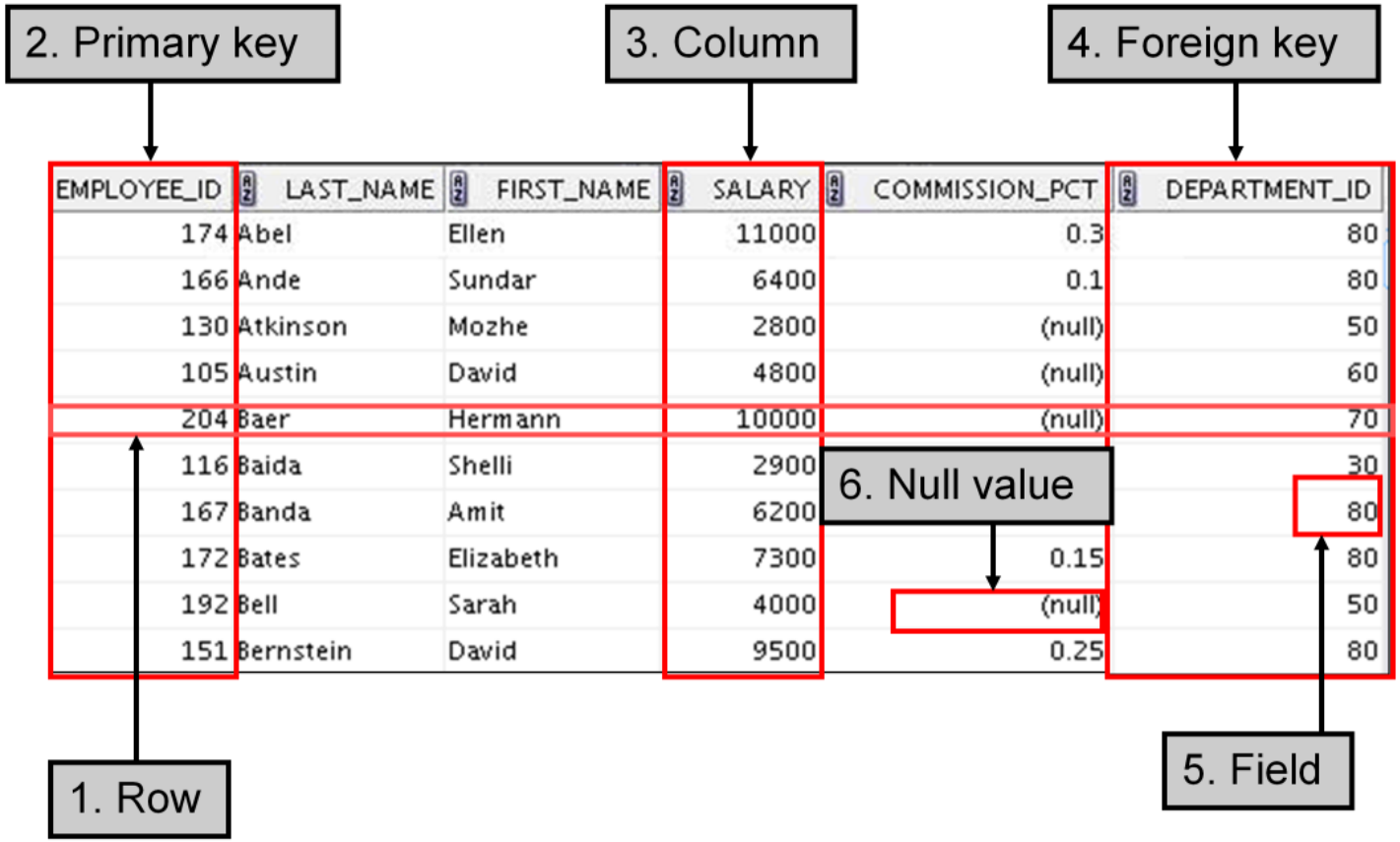
Relational Database

A relational database is a collection of two-dimensional tables.



Courtesy of the Oracle company

Relational Database Terminology



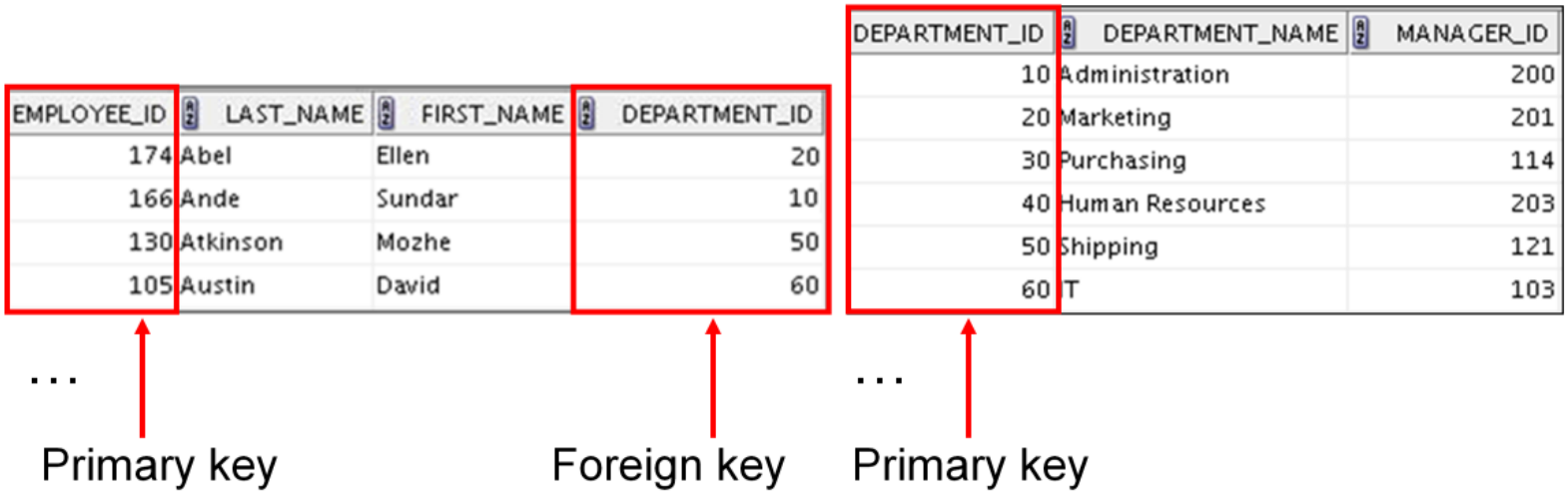
EMPLOYEE_ID	LAST_NAME	FIRST_NAME	SALARY	COMMISSION_PCT	DEPARTMENT_ID
174	Abel	Ellen	11000	0.3	80
166	Ande	Sundar	6400	0.1	80
130	Atkinson	Mozhe	2800	(null)	50
105	Austin	David	4800	(null)	60
204	Baer	Hermann	10000	(null)	70
116	Baida	Shelli	2900		30
167	Banda	Amit	6200		80
172	Bates	Elizabeth	7300	0.15	80
192	Bell	Sarah	4000	(null)	50
151	Bernstein	David	9500	0.25	80

Courtesy of the Oracle company

Relating Multiple Tables

To relate tables, you define:

- **Primary key (PK):** Uniquely identifies each row of data in a table
- **Foreign key (FK):** Relates data in one data with data in another table



Structured Query Language (SQL)

- Originally Structured English Query Language (SeQueL)
- Declarative, not procedural – roots in COBOL, ADA
- ANSI, ISO standards – many proprietary parts in each DBMS
- SQL enables you to work with data at the logical level.
- It can be used either command line (SQL*Plus, SQLCl) or in SQL Developer
- NOT case sensitive

https://www.w3schools.com/sql/default.asp

Structured Query Language (SQL)

- SQL is a set of statements that are used to access data in the Oracle database.
- SQL provides statements for a variety of tasks, including:
  - Querying data
  - Inserting, updating, and deleting rows in a table
  - Creating, replacing, altering, and dropping objects
  - Controlling access to the database and its objects
  - Guaranteeing database consistency and integrity

Courtesy of the Oracle company

SQL Statements

SELECT	Data retrieval
INSERT UPDATE DELETE MERGE	Data manipulation language (DML)
CREATE ALTER DROP RENAME TRUNCATE	Data definition language (DDL)
COMMIT ROLLBACK SAVEPOINT	Transaction control
GRANT REVOKE	Data control language (DCL)

Courtesy of the Oracle company

ORACLE

Retrieve data using SQL

SQL statement is entered.

```
SELECT department_name
FROM   departments;
```

The statement is sent to the Oracle Database server.

Oracle Database

	DEPARTMENT_NAME
1	Administration
2	Marketing
3	Purchasing
4	Human Resources
5	Shipping
6	IT
7	Public Relations
8	Sales

Data is retrieved and returned to the user.

Courtesy of the Oracle company

Create table

- CREATE TABLE *table_name* (
  <column1 datatype>[constraints][,
  column2 datatype[constraints],
  column3 datatype[constraints],
  ....]
  );
- CREATE TABLE worker(
  name VARCHAR2(40),
  age NUMBER,
  tasks VARCHAR2(60));

https://www.w3schools.com/sql/default.asp

Create table

- CREATE TABLE *table_name* (
  <column1 datatype>[constraints][,
  column2 datatype[constraints],
  column3 datatype[constraints],
  ....]
  );

patient

patient_id	p_name	sex	alzheimer_diagnosis
P1500	Irvin Brody	male	mild
P9700	Clifton Norman	male	severe
P9500	Arden Rodger	female	moderate