Introduction to Oracle SQL – Basics

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Objectives

After completing this session, you should be able to do the following:

- Basic features of databases
- Database Files
- Parameter File
- Startup and Shutdown of Oracle

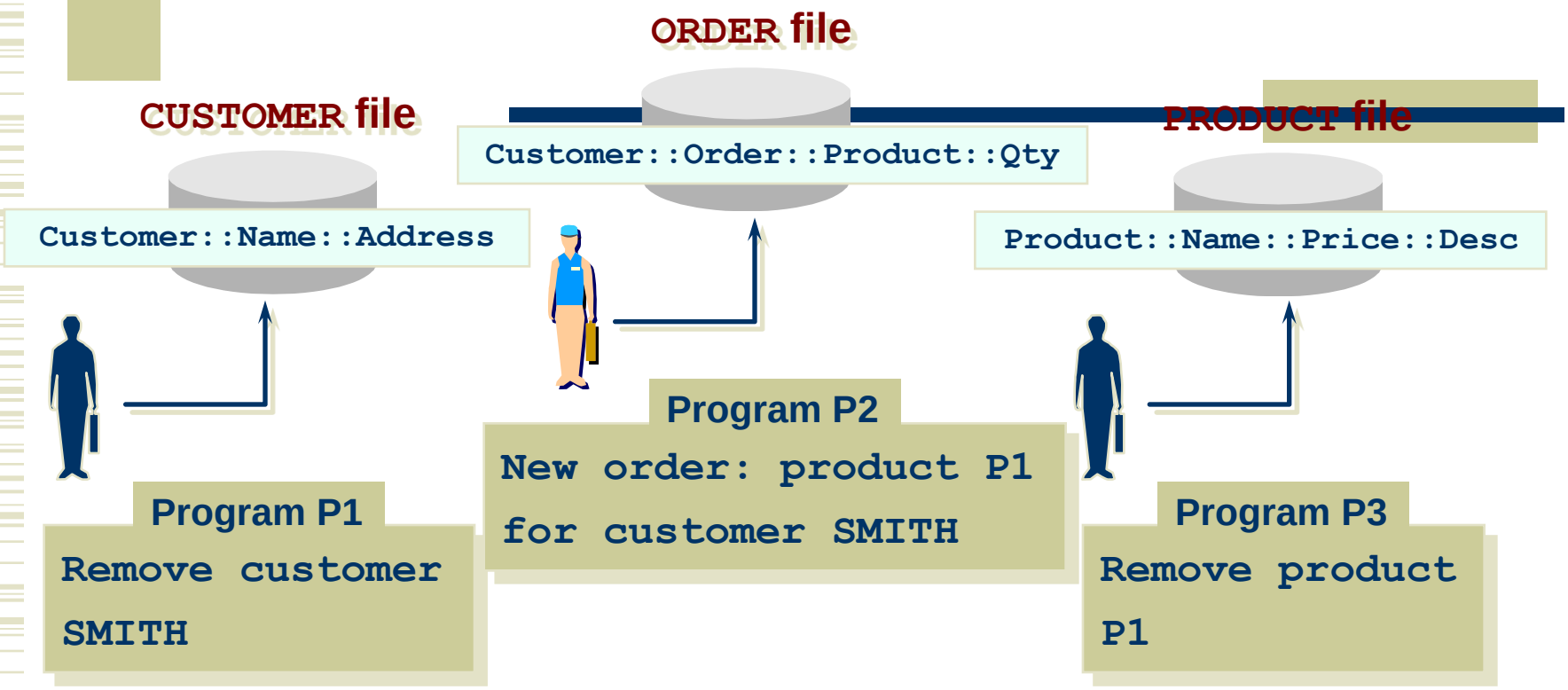
Data Storage System

- A storage structure used to store data:
  - Adds, Deletes, Updates, Retrieves data
- Languages and tools used to manipulate the stored information:
  - 3GL or 4GL
  - Programs
  - Development tool, reporting tool

Types of Storage Structures

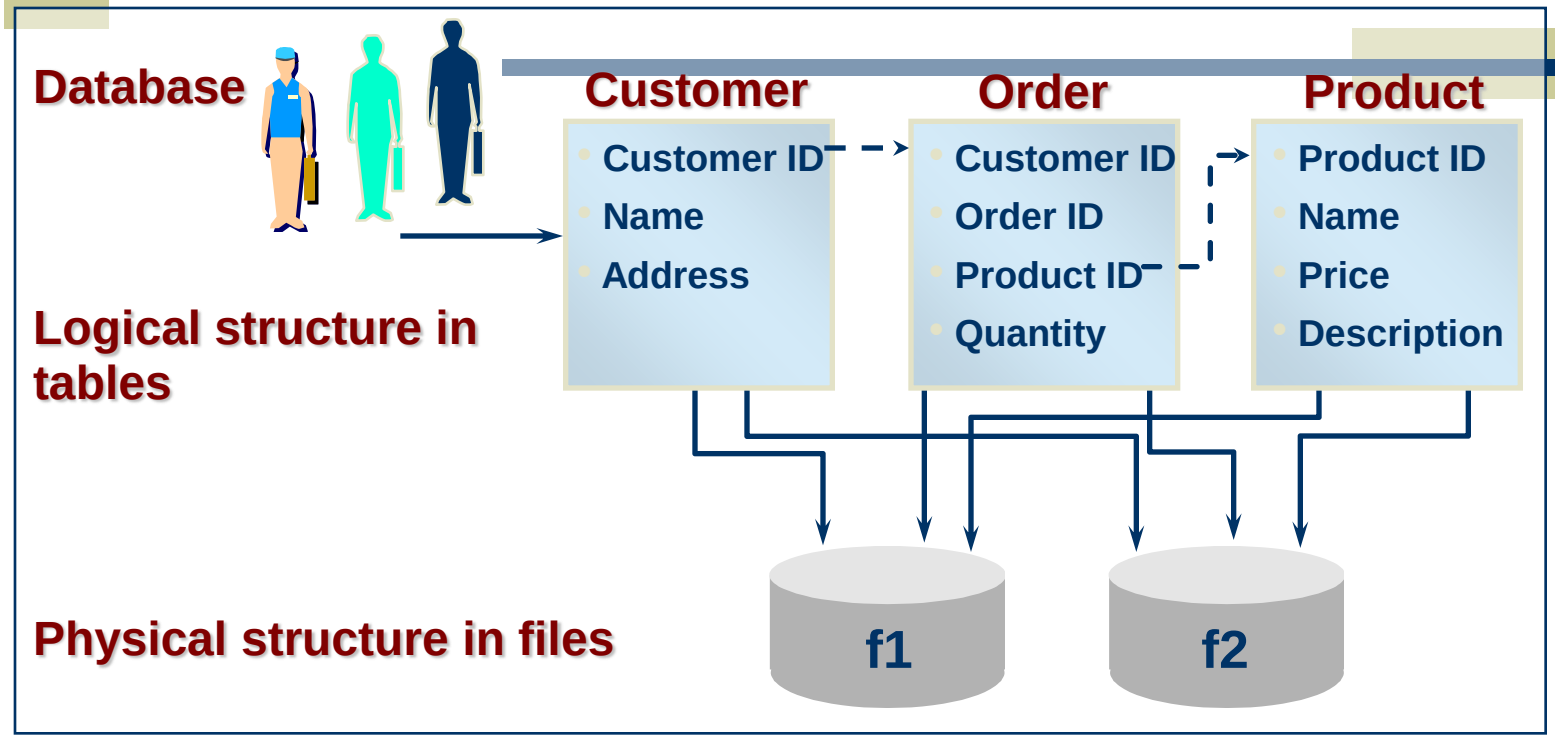
- Flat files
  - Record management systems
  - Spreadsheets
  - Text files
- Database systems
  - Hierarchical
  - Network
  - Relational, object relational
  - Object oriented

Flat Files



- No link between files
- High risk of data inconsistency
- Changes in the structure of a file resulting in program changes

Database System



- Logical links between logical structures, but no physical links between files
- Changes in the structure of a table, but no changes in the programs

Introductory DML's

This session gives you a basic information about:

- SELECT
- INSERT
- UPDATE
- DELETE statements

SELECT Statement

- Select statements select and list:
  - All rows and columns from a table
  - List selected columns from a table
  - List columns from multiple tables

SELECT Statement

SELECT [DISTINCT] {*, column [alias], ….}
FROM table;

- SELECT is a list of one or more columns
- DISTINCT suppresses duplicates.
- * selects all columns.
- column selects the named column.
- alias gives selected columns different headings
- FROM table specifies the table containing the columns.

SELECT Statement

```
SQL> SELECT * FROM emp;

SQL> SELECT name, salary
          FROM emp;

SQL> SELECT DISTINCT name
       FROM emp;
```

INSERT Statement

- Used to add new rows to a table.
- Only one row inserted at a time.
- Syntax:

  INSERT INTO table [(column [, column…])]
  VALUES (value [, value….]);

  - table is the name of the table
  - column is the name of the column
  - value is the corresponding value for the column

INSERT Statement

```
SQL> insert into emp values
  ('JACK SMITH', '123-45-6788',
  '415-364-9101', 2000.00);
```

UPDATE Statement

- Used to modify existing rows in a table.
- Can update more than one row at a time.
- Syntax

  UPDATE table

  SET column = value [, column = value, …..]

  [WHERE condition];
  - table is the name of the table
  - column is the name of the column
  - value is the corresponding value for the column
  - condition identifies the rows to be updated in the table.

UPDATE Statement

```
SQL> UPDATE emp
SET salary = 3000.00
WHERE name = 'SUSIE JACK';
```

DELETE Statement

- Removes the existing rows from a table
- Syntax:

  DELETE [FROM] table
  [WHERE condition];
  - table is the name of the table
  - condition identifies the rows to be deleted from the table and is composed of column names.

DELETE Statement

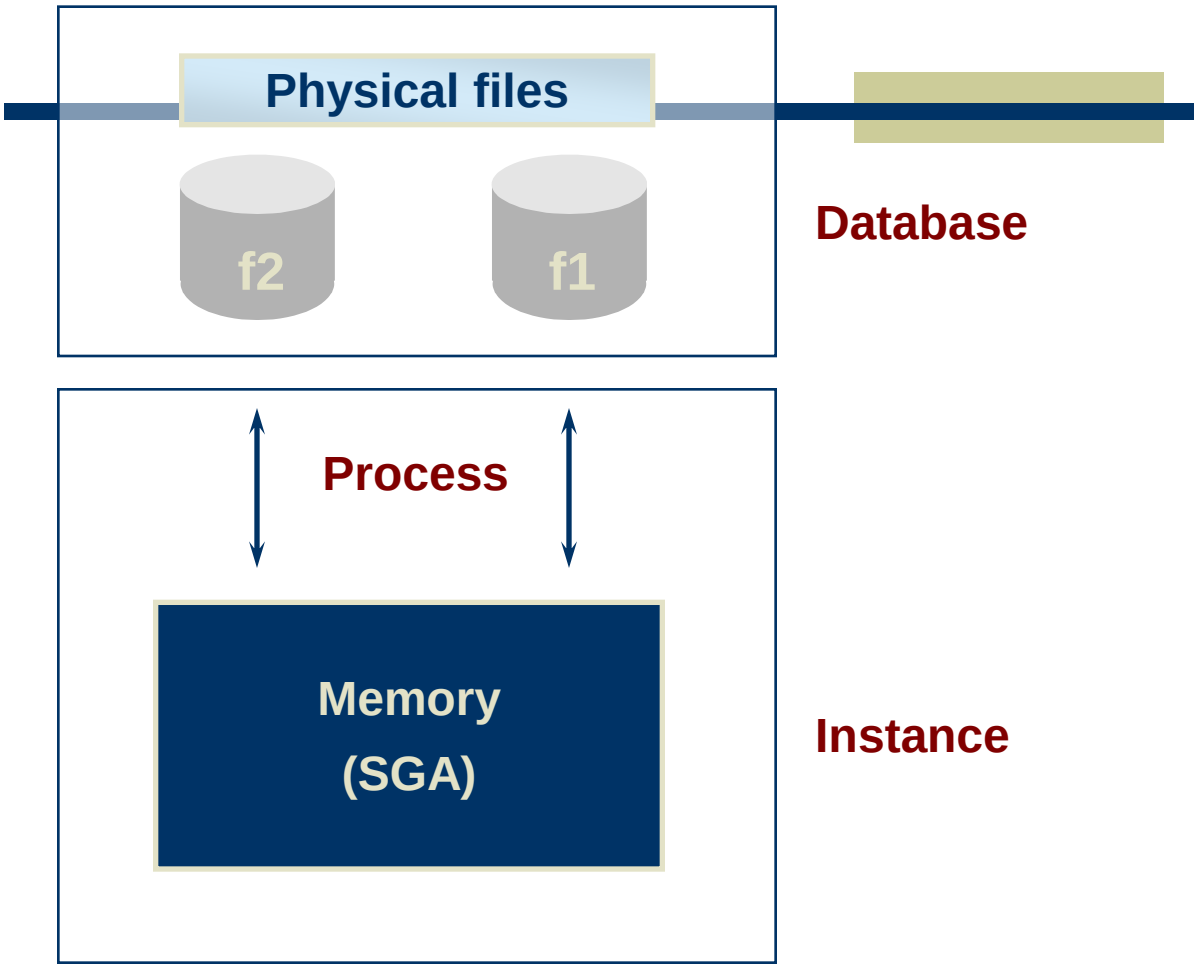
```
SQL>DELETE FROM emp
    WHERE salary = 1000.00;
```

Oracle Environment.

Database Tasks

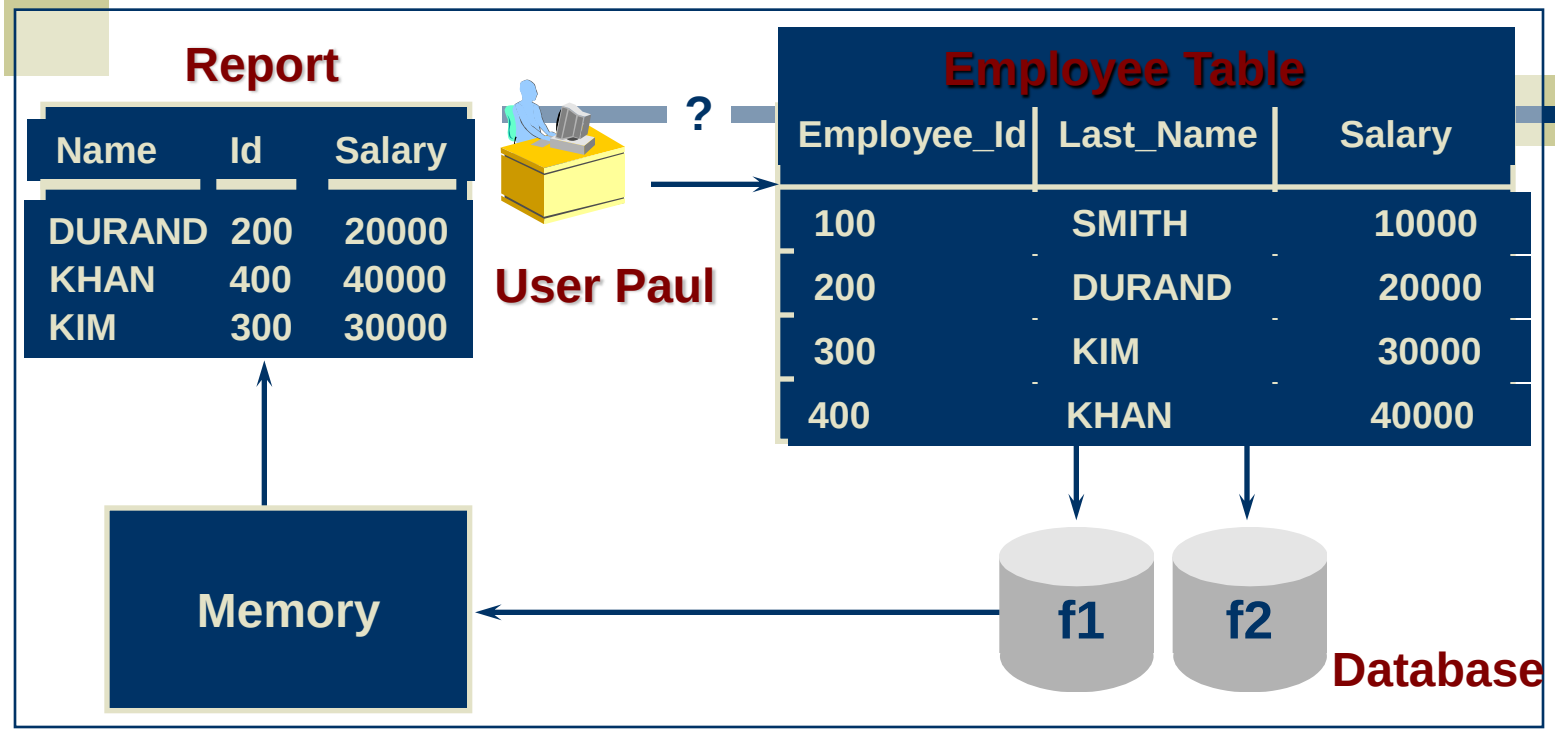
Store data in

for



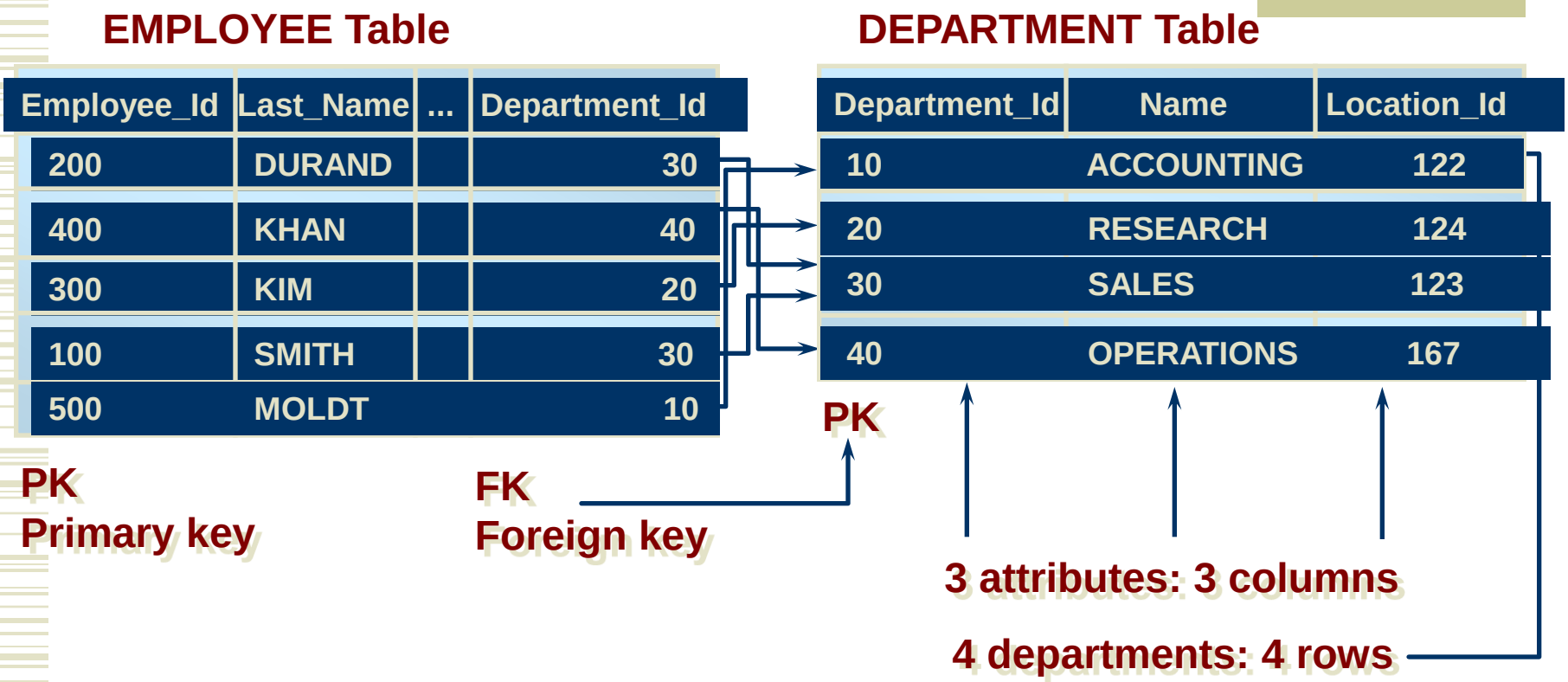
- Selecting
- Updating
- Deleting
- Inserting

Database Tables



- Users only know about objects such as tables (logical structures).
- Operators manage both physical structures (files) and logical ones (objects).

Columns, Rows, and Keys



Indexes

EMPLOYEE Table

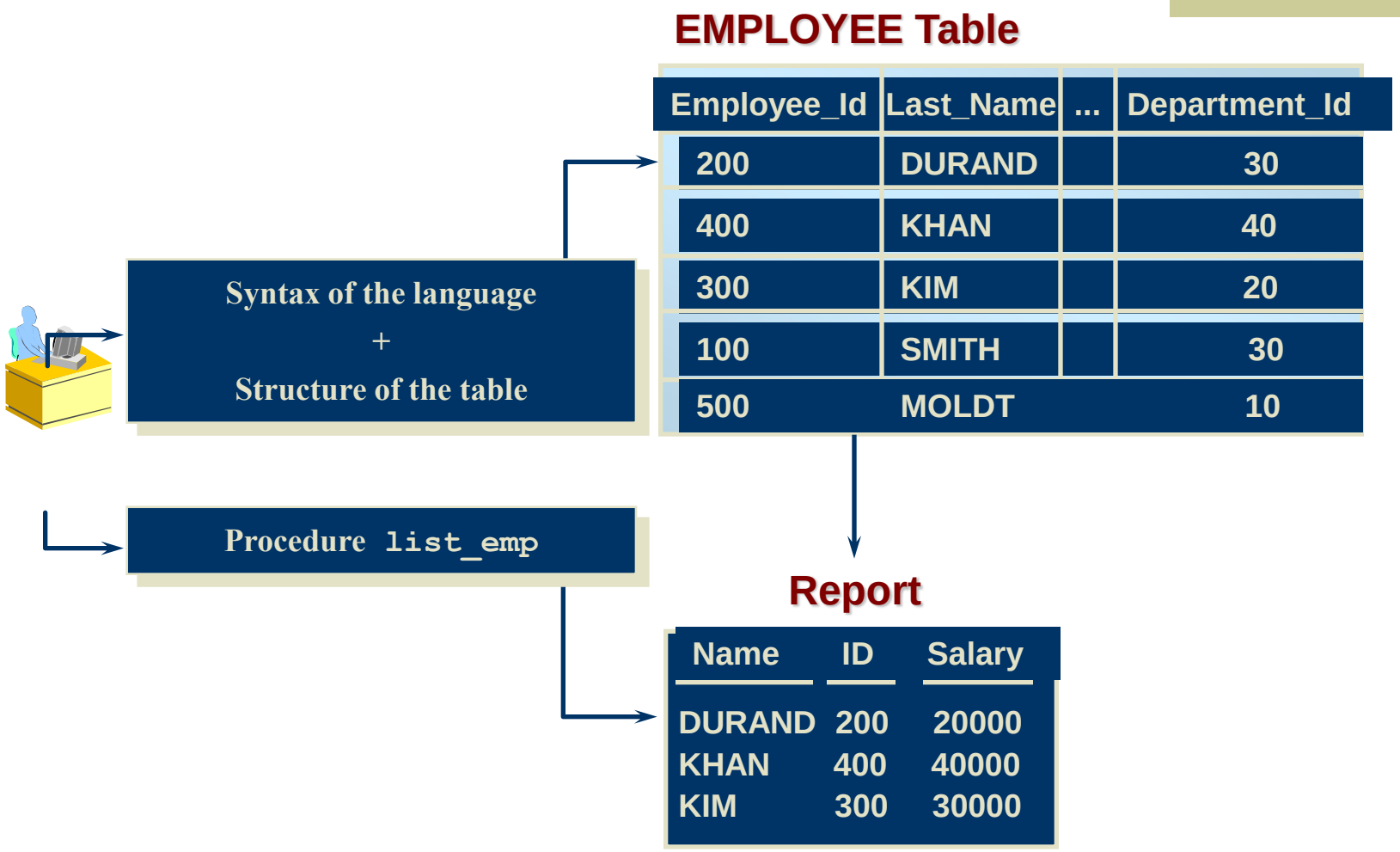
Employee_Id	Last_Name	...	Department_Id	Rowid
200	DURAND		30	A1
400	KHAN		40	A2
300	KIM		20	A3
100	SMITH		30	A4
500	MOLDT		10	A5

I_EMPLOYEE$EMPLOYEE_ID Index

Employee_Id	Rowid
100	A4
200	A1
300	A3
...	...

Key

Procedural Objects

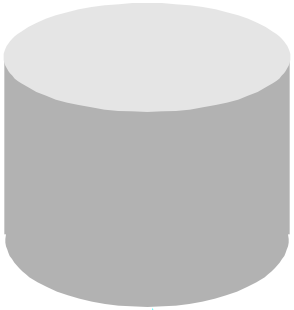


Communicating with a Database

A SQL statement is entered.

```
SELECT last_name,salary
FROM employee;
```

The SQL statement is sent to the database.



The Oracle server executes the statement.

Database

Data is displayed to the user.

```
LAST_NAME            SALARY
---------            ------
SMITH                   800
ALLEN                  1600
```