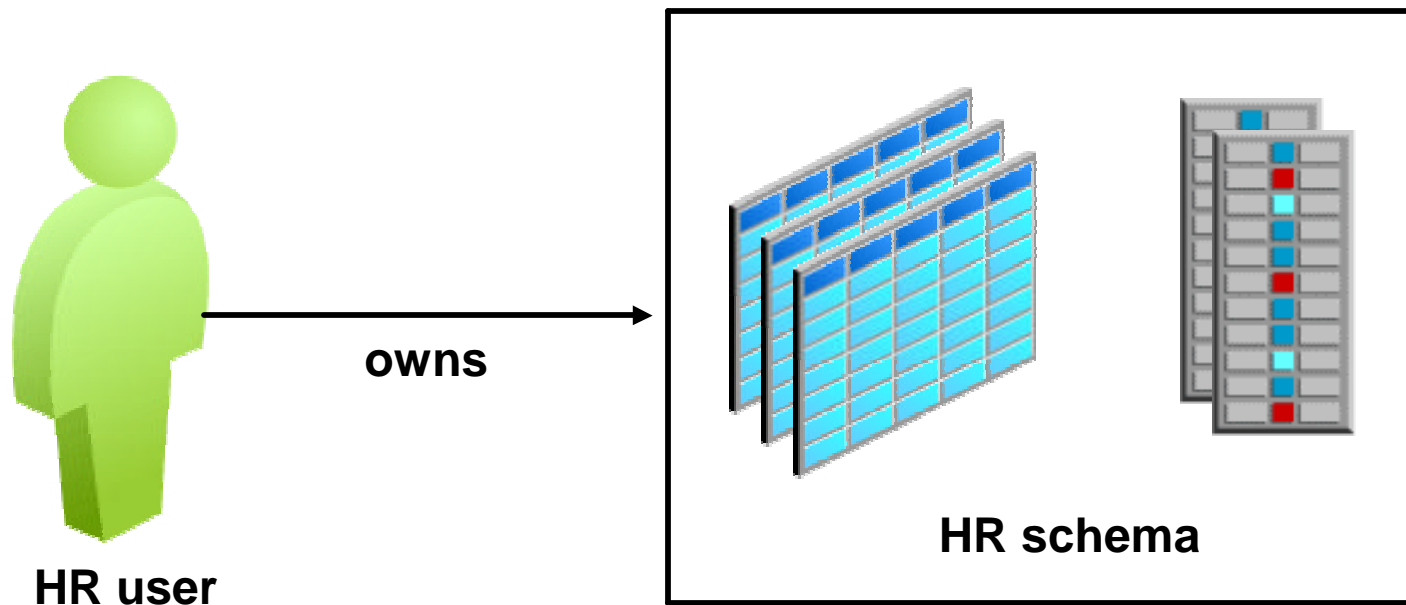# Managing Schema Objects

**ORACLE**

# Objectives

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

- **Create and modify tables**
- **Define constraints**
- **View the attributes of a table**
- **View the contents of a table**
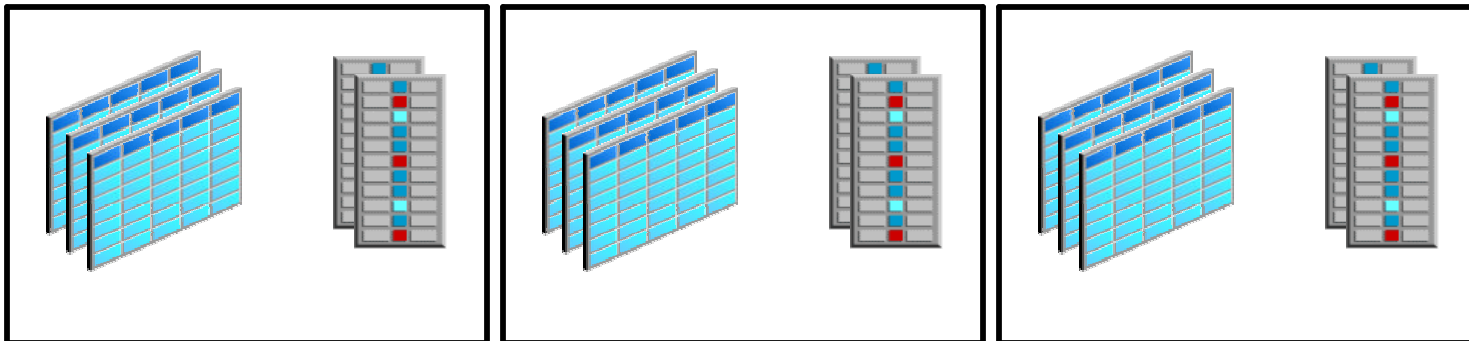- **Create indexes and views**

ORACLE

# What Is a Schema?



owns

HR user

HR schema

# Schemas

**Schemas created as part of the database creation process:**

- **SYS**
- **SYSTEM**
- **Sample schemas**

# Accessing Schema Objects

Database: orcl.us.oracle.com

Home | Performance | **Administration** | Maintenance

## Instance

Memory Parameters
Undo Management
All Initialization
Parameters

## Storage

Controlfiles
Tablespaces
Datafiles
Rollback Segments
Redo Log Groups
Archive Logs
Temporary Tablespace
Groups

**Click a link to access the schema objects.**

## Schema

Tables
Indexes
Views
Synonyms
Sequences
Database Links

Packages
Package Bodies
Procedures
Functions
Triggers
Java Sources
Java Classes

Array Types
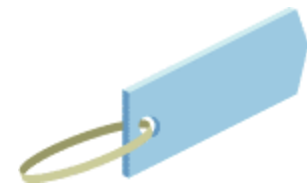Object Types
Table Types

ORACLE

# Naming Database Objects

- **Names must be from 1 to 30 bytes long with these exceptions:**
  - Names of databases are limited to 8 bytes
  - Names of database links can be as long as 128 bytes
- **Nonquoted names cannot be Oracle reserved words.**
- **Nonquoted names must begin with an alphabetic character from your database character set.**
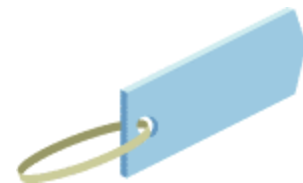
# Naming Database Objects

- **Nonquoted names can contain only**
  - **Alphanumeric characters from your database character set**
  - **The underscore (_)**
  - **Dollar sign ($)**
  - **Pound sign (#)**
- **No two objects can have the same name within the same namespace**

# Schema Object Namespaces

**The following are in the same namespace:**

- **Tables**
- **Views**
- **Sequences**
- **Private synonyms**
- **Stand-alone procedures**
- **Stand-alone stored functions**
- **Packages**
- **Materialized views**
- **User-defined types**

**The following have their own namespace:**

- **Indexes**
- **Constraints**
- **Clusters**
- **Database triggers**
- **Private database links**
- **Dimensions**

# Specifying Data Types in Tables

**Common data types:**

- `CHAR(size)`: **Fixed-length character data of length size bytes**

- `VARCHAR2(size)`: **Variable-length character string having maximum length size bytes**

- `DATE`: **Valid date range from January 1, 4712 BC to December 31, 9999 AD**

- `NUMBER(p,s)`: **Number having precision _p_ and scale _s_**

**ORACLE**

# Other Data Types

- **FLOAT**
- **INTEGER**
- **NCHAR**
- **NVARCHAR2**
- **LONG**
- **LONG RAW**
- **RAW**

- **ROWID**
- **UROWID**
- **BLOB**
- **CLOB**
- **NCLOB**
- **BFILE**
- **TIMESTAMP**

# Creating and Modifying Tables

Database: orcl.us.oracle.com > Tables > Create Table

## Create Table

General | Constraints | Storage | Options | Partitions

**Specify the table name and schema.** →

* Name `jobs`

Schema `shopowner`

Tablespace `<Default>`    Estima

Organization **Standard, Heap Organized**

## Columns

**Specify the column names, data types, and lengths.**

| Select | Name | Data Type | Size |
|--------|------|-----------|------|
| ● | job_id | NUMBER ▼ | 5 |
| ○ | job_title | VARCHAR2 ▼ | 30 |
| ○ | min_salary | NUMBER ▼ | 6 |
| ○ | max_salary | NUMBER ▼ | 6 |
| ○ | | VARCHAR2 ▼ | |

( Add 5 Table Columns )

ORACLE

# Understanding Data Integrity
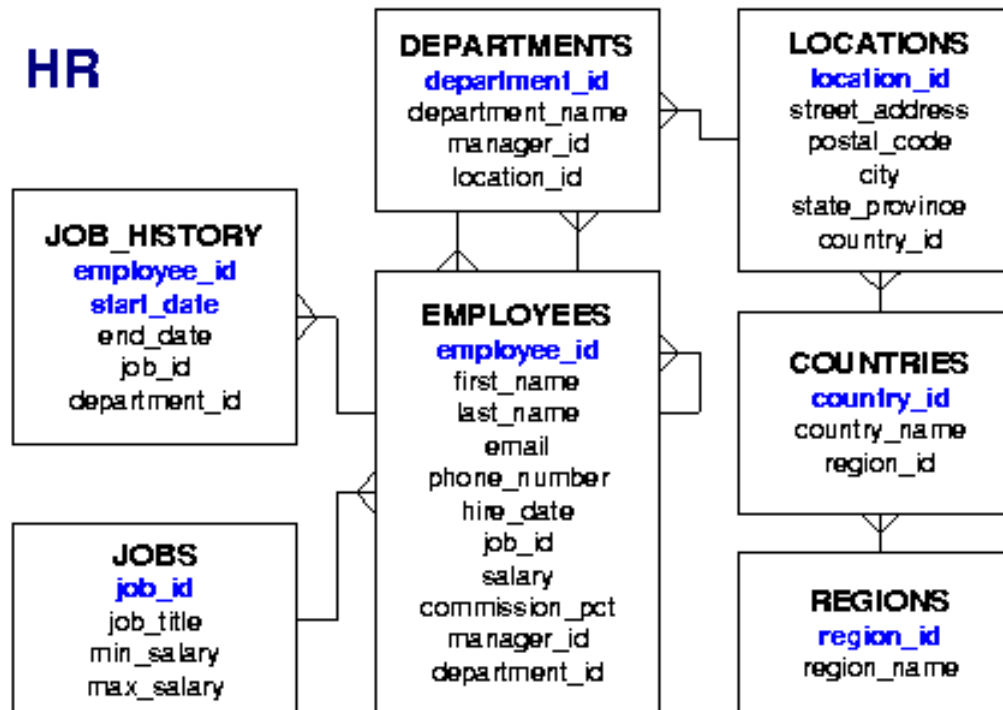
# Defining Constraints

Database: orcl.us.oracle.com > Tables > Edit Table: HR.COUNTRIES

## Add UNIQUE Constraint

Up to 32 columns can make up a UNIQUE key constraint. The unique key columns constitute a uni

### Definition

Name       `<System Assigned 3>`

### Table Columns

**Available Columns**

```
COUNTRY_ID
REGION_ID
_____
```

> Move

>> Move All

< Remove

<< Remove All

**Selected Columns**

```
COUNTRY_NAME
_____
```

ORACLE

# Viewing the Attributes of a Table

Database: orcl.us.oracle.com > Tables > Edit Table: HR.DEPARTMENTS

## Edit Table: HR.DEPARTMENTS

**General** | Constraints  Segments  Storage  Options

* Name | DEPARTMENTS

Schema | HR

Tablespace | EXAMPLE

Organization **Standard, Heap Organized**

## Columns

| Select | Name | Data Type | Size |
|--------|------|-----------|------|
| ◉ | DEPARTMENT_ID | NUMBER | 4 |
| ○ | DEPARTMENT_NAME | VARCHAR2 | 30 |
| ○ | MANAGER_ID | NUMBER | 6 |
| ○ | LOCATION_ID | NUMBER | 4 |

( Add 5 Table Columns )

ORACLE

# Viewing the Contents of a Table

# Actions with Tables

ORACLE

# Creating Indexes

# What Is a View?

- **Tailored representation of data in a table or view**
- **Views do not contain data**
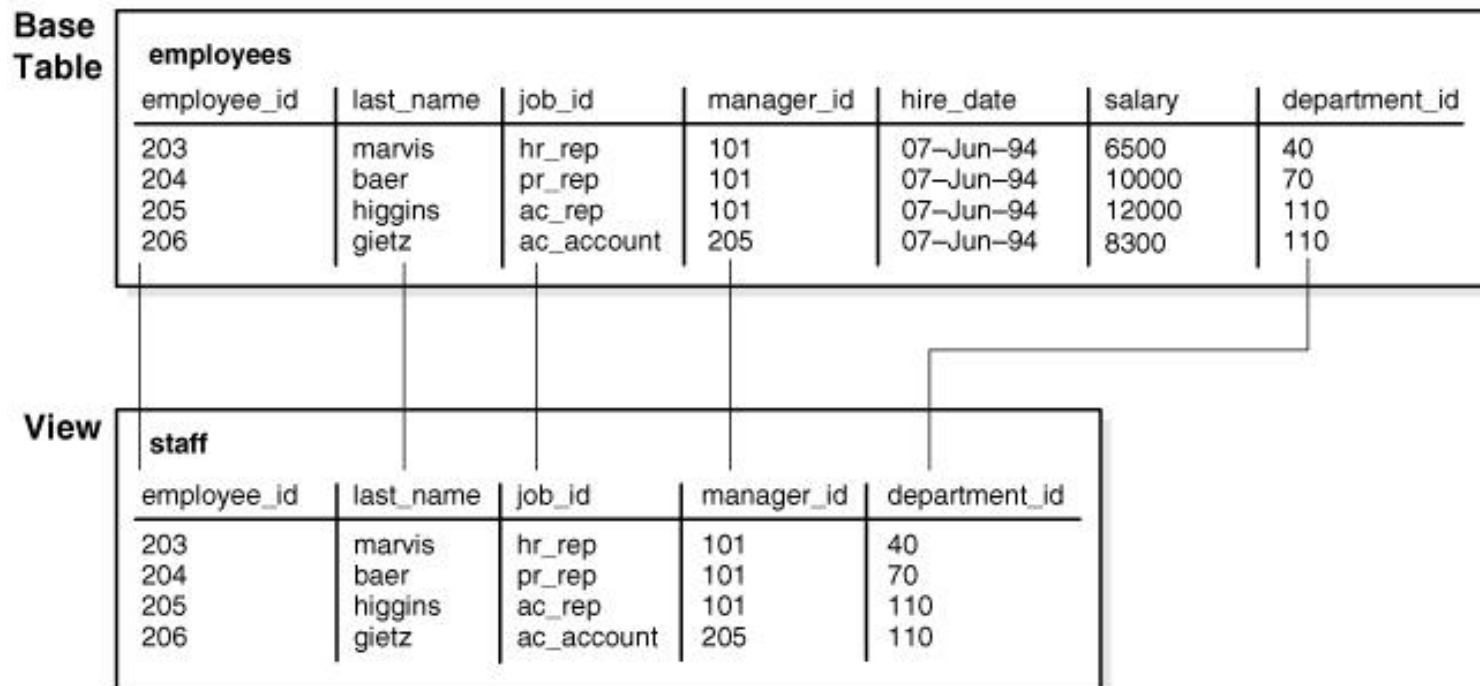
| Base Table | **employees** | | | | | | |
|---|---|---|---|---|---|---|---|
| | employee_id | last_name | job_id | manager_id | hire_date | salary | department_id |
| | 203 | marvis | hr_rep | 101 | 07–Jun–94 | 6500 | 40 |
| | 204 | baer | pr_rep | 101 | 07–Jun–94 | 10000 | 70 |
| | 205 | higgins | ac_rep | 101 | 07–Jun–94 | 12000 | 110 |
| | 206 | gietz | ac_account | 205 | 07–Jun–94 | 8300 | 110 |

| View | **staff** | | | | |
|---|---|---|---|---|---|
| | employee_id | last_name | job_id | manager_id | department_id |
| | 203 | marvis | hr_rep | 101 | 40 |
| | 204 | baer | pr_rep | 101 | 70 |
| | 205 | higgins | ac_rep | 101 | 110 |
| | 206 | gietz | ac_account | 205 | 110 |

# Creating Views

# What Is a Sequence?

# Using a Sequence

**Workspace**

Enter SQL, PL/SQL and SQL*Plus statements.                                    ( Clear )

```
INSERT INTO local_temp VALUES
(local_temp_id.nextval, sysdate, 8, 20);
```

( Execute )  ( Load Script )  ( Save Script )  ( Cancel )

1 row created.

# Summary

In this lesson, you should have learned how to:

- Create and modify tables
- Define constraints
- View the attributes of a table
- View the contents of a table
- Create indexes and views

**ORACLE**

# Practice 8:
# Working with Tables

**This practice covers the following:**

- **Creating tables and indexes**
- **Modifying tables**
- **Dropping a table**
- **Creating a view**