

---

## **Oracle Database 10g: SQL Fundamentals II**

**Electronic Presentation**

---

D17111GC11  
Production 1.1  
August 2004  
D39754

**ORACLE®**

**Author**

Priya Vennapusa

**Technical Contributors and Reviewers**

Brian Boxx

Andrew Brannigan

Zarko Cesljas

Marjolein Dekkers

Joel Goodman

Nancy Greenberg

Stefan Grenstad

Rosita Hanoman

Angelika Krupp

Christopher Lawless

Malika Marghadi

Priya Nathan

Ruediger Steffan

**Publisher**

Hemachitra K

**Copyright © 2004, Oracle. All rights reserved.**

This documentation contains proprietary information of Oracle Corporation. It is provided under a license agreement containing restrictions on use and disclosure and is also protected by copyright law. Reverse engineering of the software is prohibited. If this documentation is delivered to a U.S. Government Agency of the Department of Defense, then it is delivered with Restricted Rights and the following legend is applicable:

**Restricted Rights Legend**

Use, duplication or disclosure by the Government is subject to restrictions for commercial computer software and shall be deemed to be Restricted Rights software under Federal law, as set forth in subparagraph (c)(1)(ii) of DFARS 252.227-7013, Rights in Technical Data and Computer Software (October 1988).

This material or any portion of it may not be copied in any form or by any means without the express prior written permission of the Education Products group of Oracle Corporation. Any other copying is a violation of copyright law and may result in civil and/or criminal penalties.

If this documentation is delivered to a U.S. Government Agency not within the Department of Defense, then it is delivered with "Restricted Rights," as defined in FAR 52.227-14, Rights in Data-General, including Alternate III (June 1987).

The information in this document is subject to change without notice. If you find any problems in the documentation, please report them in writing to Worldwide Education Services, Oracle Corporation, 500Oracle Parkway, Box SB-6, Redwood Shores, CA 94065. Oracle Corporation does not warrant that this document is error-free.

Oracle and all references to Oracle Products are trademarks or registered trademarks of Oracle Corporation.

All other products or company names are used for identification purposes only, and may be trademarks of their respective owners.

# I Introduction

# Objectives

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

- **List the course objectives**
- **Describe the sample tables used in the course**

# Course Objectives

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

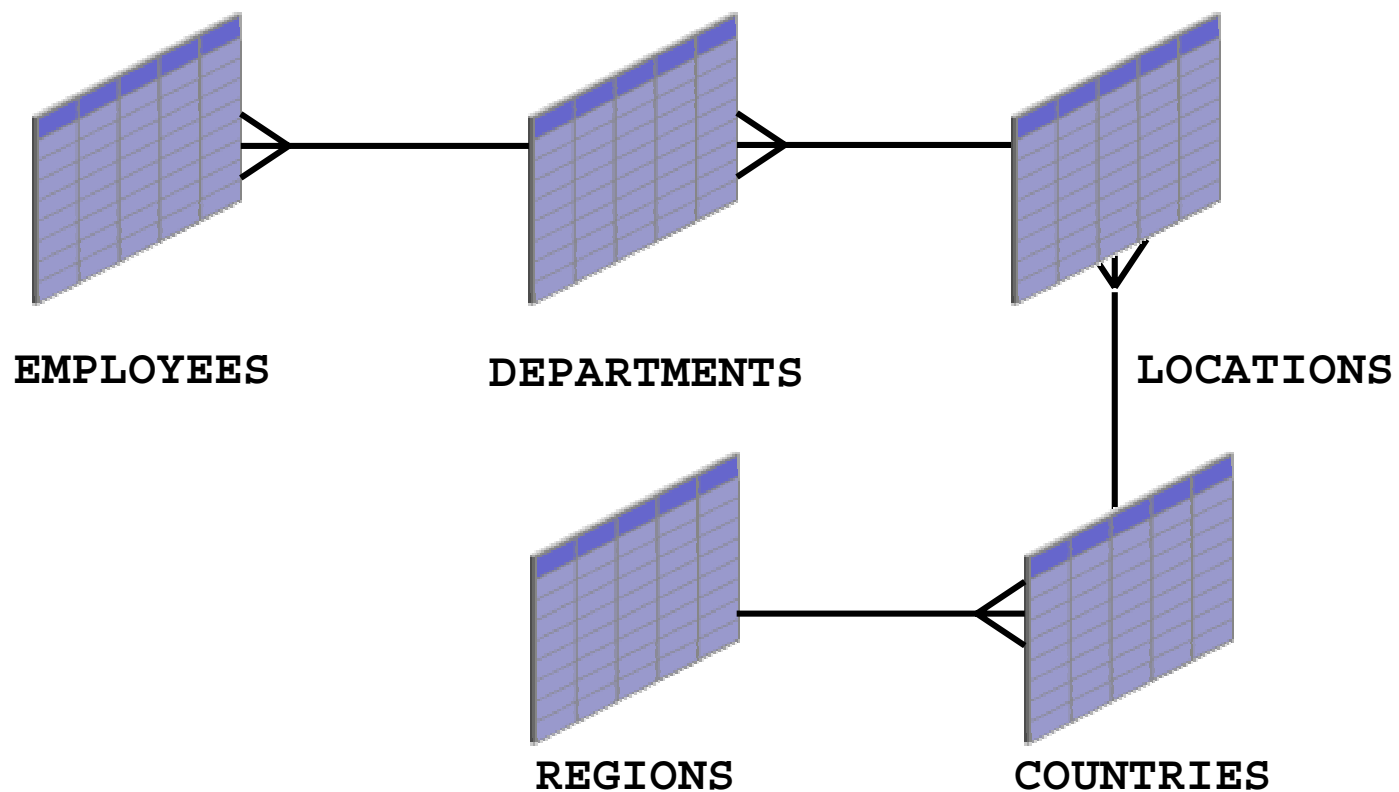
- **Use advanced SQL data retrieval techniques to retrieve data from database tables**
- **Apply advanced techniques in a practice that simulates real life**

# Course Overview

**In this course, you will use advanced SQL data retrieval techniques such as:**

- **Datetime functions**
- **ROLLUP, CUBE operators, and GROUPING SETS**
- **Hierarchical queries**
- **Correlated subqueries**
- **Multitable inserts**
- **Merge operation**
- **External tables**
- **Regular expression usage**

# Course Application



# Summary

**In this lesson, you should have learned the following:**

- **The course objectives**
- **The sample tables used in the course**



# 1

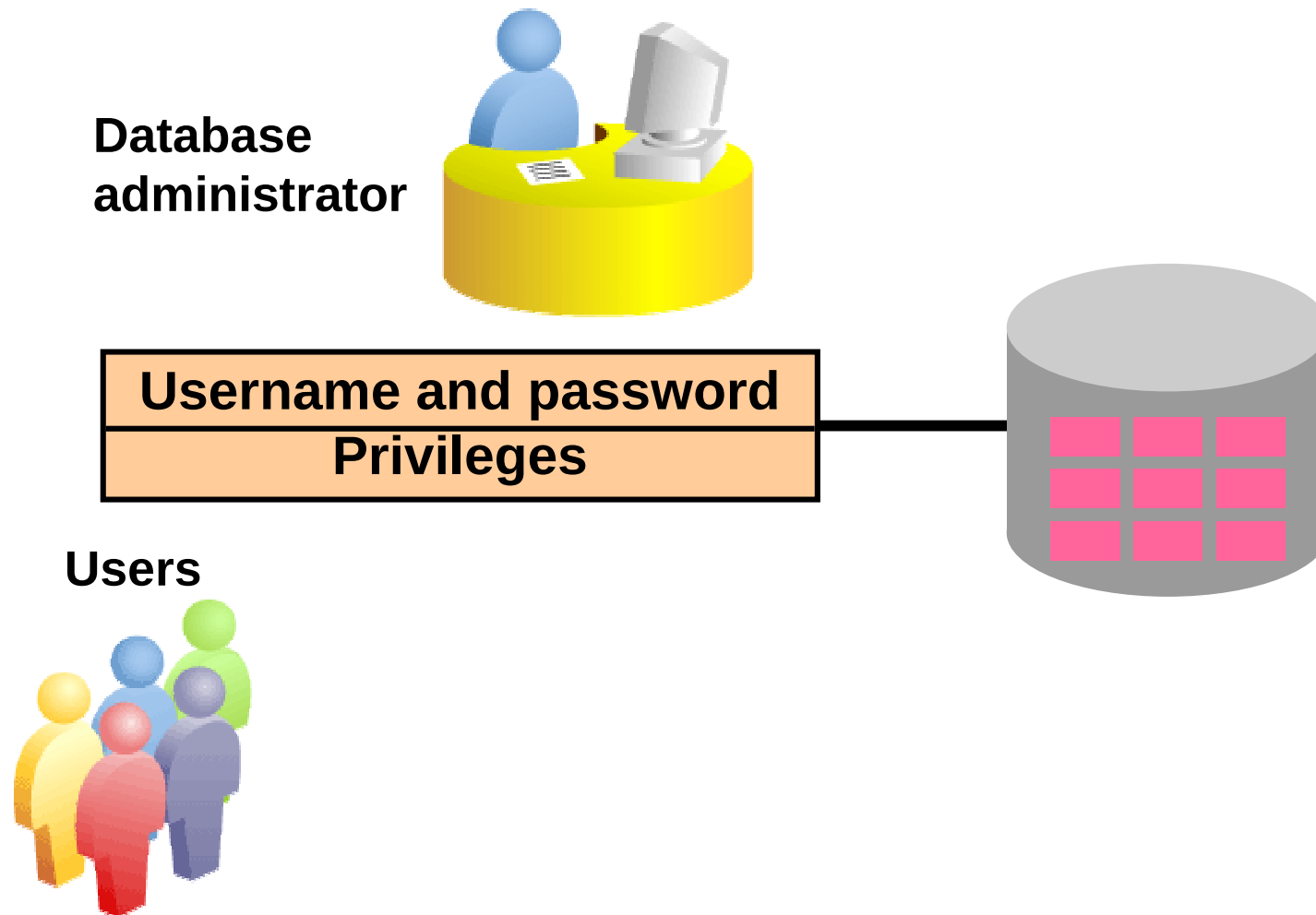
## Controlling User Access

# Objectives

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

- **Differentiate system privileges from object privileges**
- **Grant privileges on tables**
- **View privileges in the data dictionary**
- **Grant roles**
- **Distinguish between privileges and roles**

# Controlling User Access



# Privileges

- **Database security:**
  - System security
  - Data security
- **System privileges: Gaining access to the database**
- **Object privileges: Manipulating the content of the database objects**
- **Schemas: Collection of objects such as tables, views, and sequences**

# System Privileges

- **More than 100 privileges are available.**
- **The database administrator has high-level system privileges for tasks such as:**
  - **Creating new users**
  - **Removing users**
  - **Removing tables**
  - **Backing up tables**

# Creating Users

The DBA creates users with the `CREATE USER` statement.

```
CREATE USER user  
IDENTIFIED BY password;
```

```
CREATE USER HR  
IDENTIFIED BY HR;  
User created.
```

# User System Privileges

- After a user is created, the DBA can grant specific system privileges to that user.

```
GRANT privilege [, privilege...]  
TO user [, user / role, PUBLIC...];
```

- An application developer, for example, may have the following system privileges:
  - CREATE SESSION
  - CREATE TABLE
  - CREATE SEQUENCE
  - CREATE VIEW
  - CREATE PROCEDURE

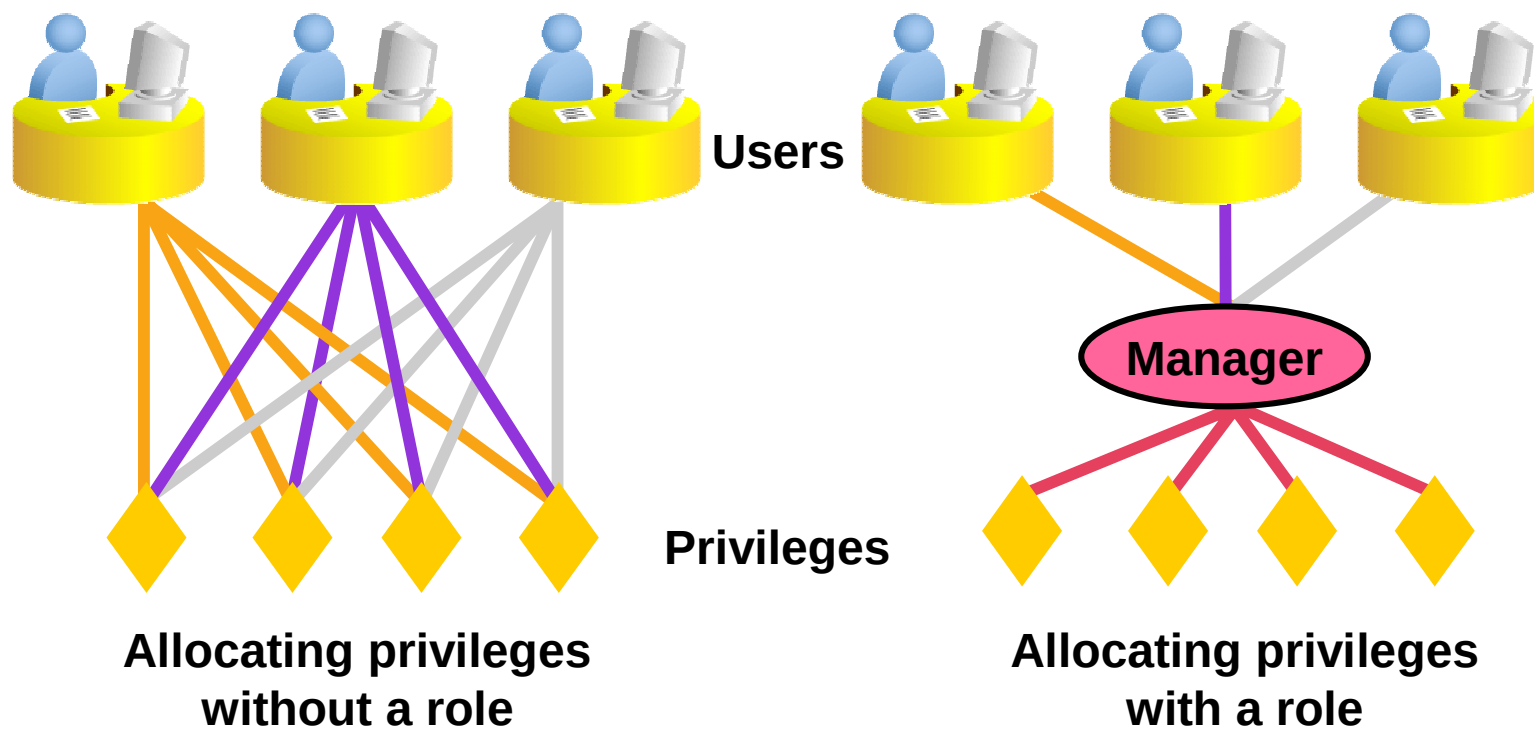
# Granting System Privileges

The DBA can grant specific system privileges to a user.

```
GRANT  create session, create table,  
       create sequence, create view  
TO     scott;  
Grant succeeded.
```



# What Is a Role?



# Creating and Granting Privileges to a Role

- Create a role

```
CREATE ROLE manager;  
Role created.
```

- Grant privileges to a role

```
GRANT create table, create view  
TO manager;  
Grant succeeded.
```

- Grant a role to users

```
GRANT manager TO DE HAAN, KOCHHAR;  
Grant succeeded.
```

# Changing Your Password

- The DBA creates your user account and initializes your password.
- You can change your password by using the **ALTER USER** statement.

```
ALTER USER HR  
IDENTIFIED BY employ;  
User altered.
```

# Object Privileges

Object Privilege	Table	View	Sequence	Procedure
ALTER	√		√	
DELETE	√	√		
EXECUTE				√
INDEX	√			
INSERT	√	√		
REFERENCES	√			
SELECT	√	√	√	
UPDATE	√	√		

# Object Privileges

- Object privileges vary from object to object.
- An owner has all the privileges on the object.
- An owner can give specific privileges on that owner's object.

```
GRANT      object_priv [(columns)]  
ON         object  
TO         {user|role|PUBLIC}  
[WITH GRANT OPTION];
```

# Granting Object Privileges

- Grant query privileges on the `EMPLOYEES` table.

```
GRANT  select
ON     employees
TO     sue, rich;
Grant succeeded.
```

- Grant privileges to update specific columns to users and roles.

```
GRANT  update (department_name, location_id)
ON     departments
TO     scott, manager;
Grant succeeded.
```

# Passing On Your Privileges

- Give a user authority to pass along privileges.

```
GRANT  select, insert
ON     departments
TO     scott
WITH   GRANT OPTION;
Grant succeeded.
```

- Allow all users on the system to query data from Alice's DEPARTMENTS table.

```
GRANT  select
ON     alice.departments
TO     PUBLIC;
Grant succeeded.
```

# Confirming Privileges Granted

Data Dictionary View	Description
<code>ROLE_SYS_PRIVS</code>	System privileges granted to roles
<code>ROLE_TAB_PRIVS</code>	Table privileges granted to roles
<code>USER_ROLE_PRIVS</code>	Roles accessible by the user
<code>USER_TAB_PRIVS_MADE</code>	Object privileges granted on the user's objects
<code>USER_TAB_PRIVS_RECD</code>	Object privileges granted to the user
<code>USER_COL_PRIVS_MADE</code>	Object privileges granted on the columns of the user's objects
<code>USER_COL_PRIVS_RECD</code>	Object privileges granted to the user on specific columns
<code>USER_SYS_PRIVS</code>	System privileges granted to the user



# Revoking Object Privileges

- You use the **REVOKE** statement to revoke privileges granted to other users.
- Privileges granted to others through the **WITH GRANT OPTION** clause are also revoked.

```
REVOKE {privilege [, privilege...] | ALL}  
ON      object  
FROM    {user[, user...] | role | PUBLIC}  
[CASCADE CONSTRAINTS];
```

# Revoking Object Privileges

As user Alice, revoke the **SELECT** and **INSERT** privileges given to user **Scott** on the **DEPARTMENTS** table.

```
REVOKE  select, insert  
ON      departments  
FROM    scott;
```

Revoke succeeded.

# Summary

In this lesson, you should have learned about statements that control access to the database and database objects.

Statement	Action
CREATE USER	Creates a user (usually performed by a DBA)
GRANT	Gives other users privileges to access the objects
CREATE ROLE	Creates a collection of privileges (usually performed by a DBA)
ALTER USER	Changes a user's password
REVOKE	Removes privileges on an object from users

# Practice 1: Overview

**This practice covers the following topics:**

- **Granting other users privileges to your table**
- **Modifying another user's table through the privileges granted to you**
- **Creating a synonym**
- **Querying the data dictionary views related to privileges**