Controlling User Access

8

Oracle for Base

Objectives

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

- Differentiate system privileges from object privileges
- Grant privileges on tables
- Grant roles
- Distinguish between privileges and roles

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- **System privileges**
- Creating a role
- Object privileges
- Revoking object privileges

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Controlling User Access

Database administrator

Username and password
Privileges

Users

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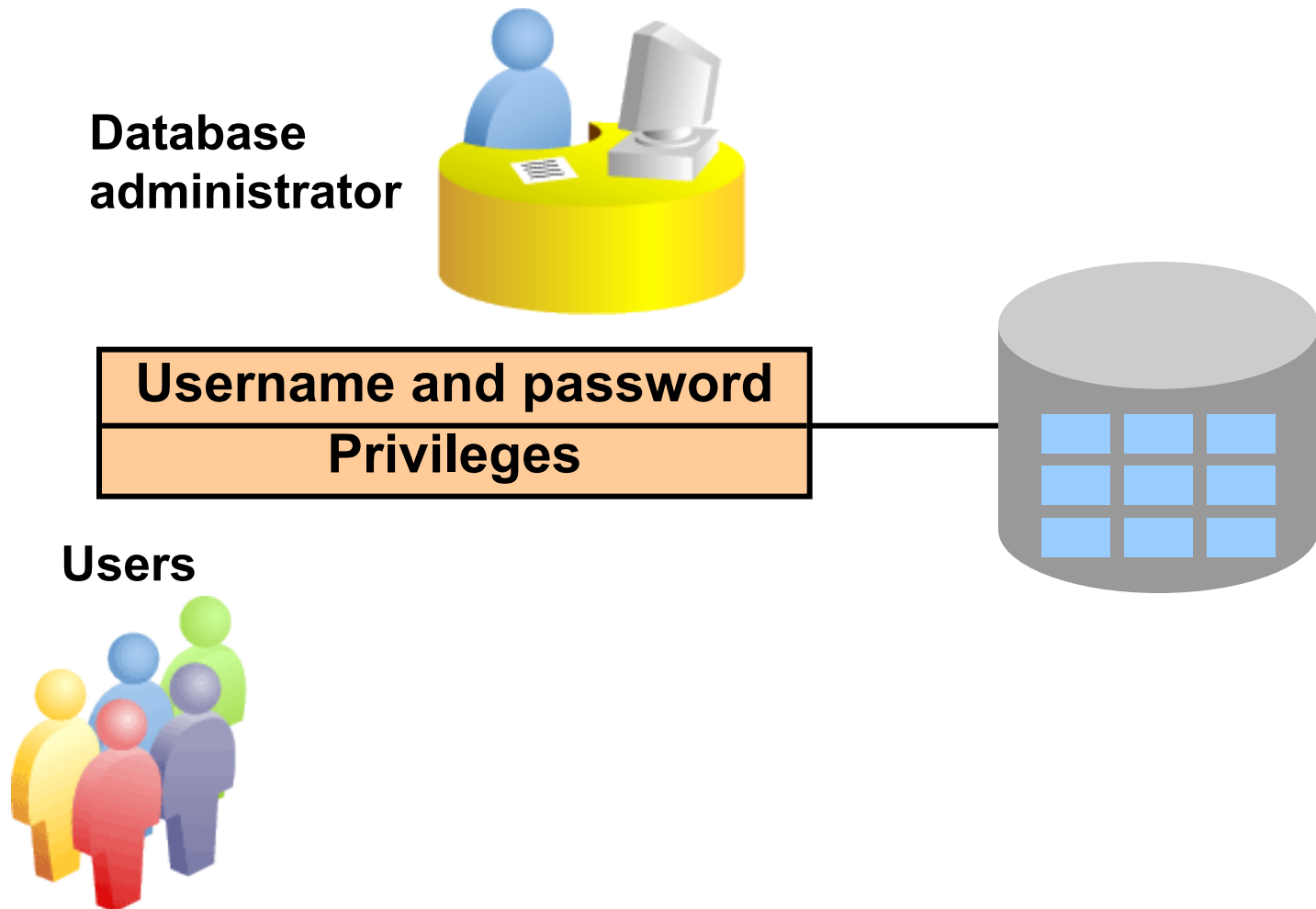
Privileges

- Database security:
  - System security
  - Data security
- System privileges: Performing a particular action within the database
- Object privileges: Manipulating the content of the database objects
- Schemas: Collection of objects such as tables, views, and sequences

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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

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Creating Users

The database administrator (DBA) creates users with the `CREATE USER` statement.

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

```
CREATE USER  demo
IDENTIFIED BY demo;
```

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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

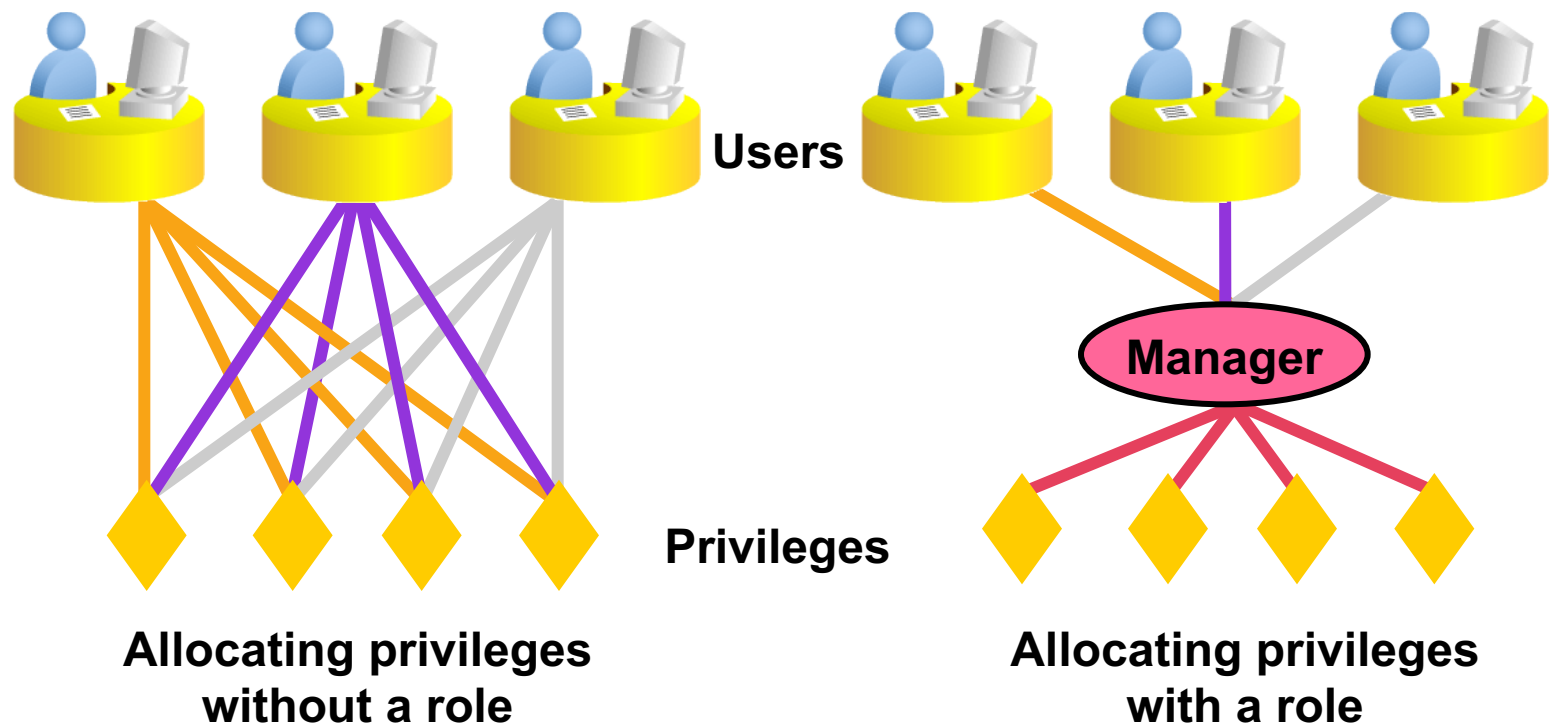The DBA can grant specific system privileges to a user.

```
GRANT   create session, create table,
        create sequence, create view
TO      demo;
```

Lesson Stanford

- System privileges
- Creating a role
- Object privileges
- Revoking object privileges

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What Is a Role?

Users

Privileges

**Allocating privileges
without a role**

Manager

**Allocating privileges
with a role**

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Creating and Granting Privileges to a Role

- Create a role:

```
CREATE ROLE manager;
```

- Grant privileges to a role:

```
GRANT create table, create view
TO manager;
```

- Grant a role to users:

```
GRANT manager TO BELL, KOCHHAR;
```

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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 demo
IDENTIFIED BY employ;
```

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Lesson Stanford

- System privileges
- Creating a role
- **Object privileges**
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Object Privileges

Object privilege	Table	View	Sequence
ALTER	✔		✔
DELETE	✔	✔	
INDEX	✔		
INSERT	✔	✔	
REFERENCES	✔		
SELECT	✔	✔	✔
UPDATE	✔	✔	

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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];
```

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Granting Object Privileges

- Grant query privileges on the `EMPLOYEES` table:

```
GRANT   select
ON      employees
TO      demo;
```

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

```
GRANT   update (department_name, location_id)
ON      departments
TO      demo, manager;
```

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Passing On Your Privileges

- Give a user authority to pass along privileges:

```
GRANT   select, insert
ON      departments
TO      demo
WITH    GRANT OPTION;
```

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

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

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Confirming Granted Privileges

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

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Lesson Stanford

- System privileges
- Creating a role
- Object privileges
- **Revoking object privileges**

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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

Revoke the SELECT and INSERT privileges given to the demo user on the DEPARTMENTS table.

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

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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

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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

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