

1

Controlling User Access

Objectives

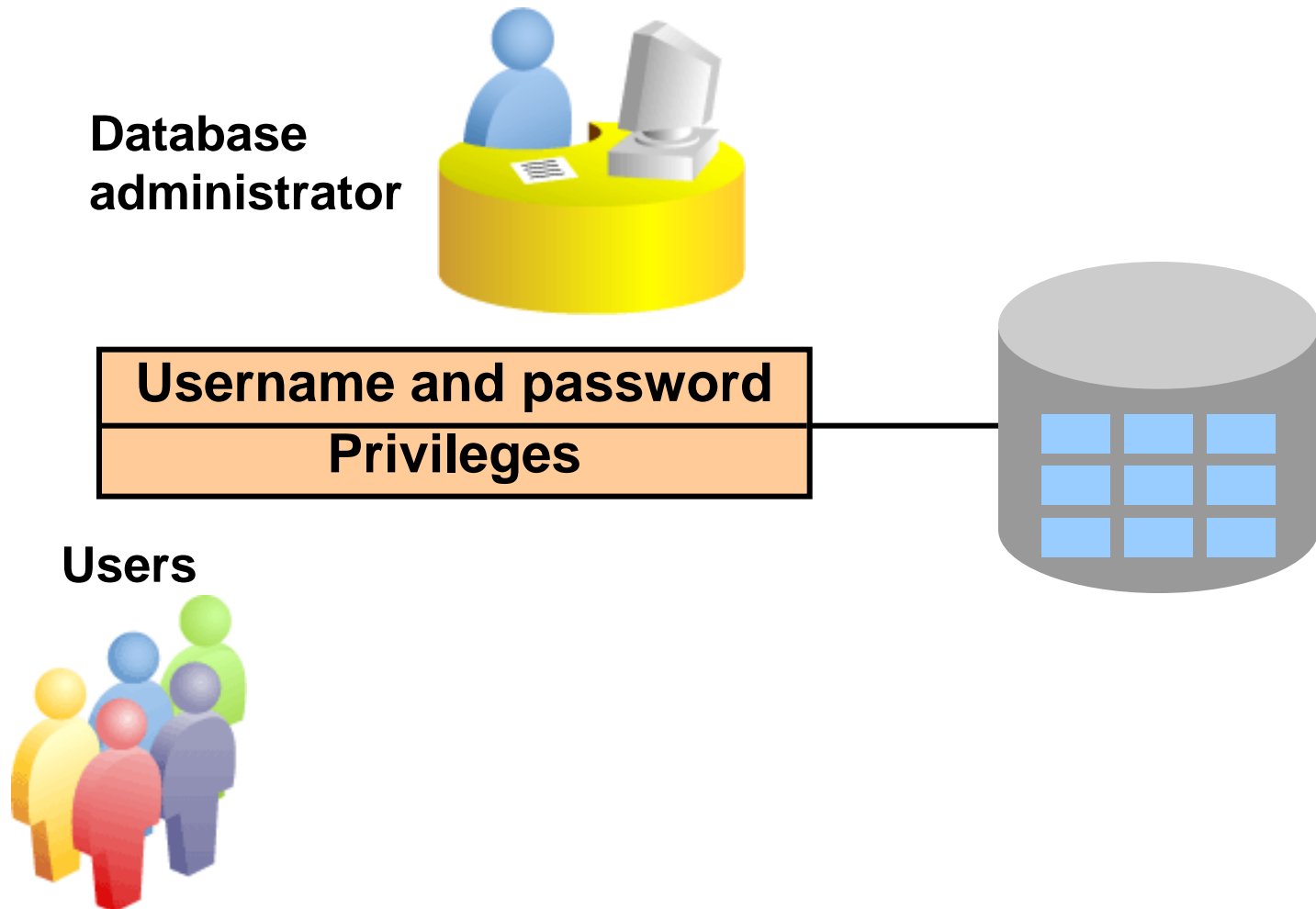
After completing this lesson, you should be able to do the following:

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

Lesson Agenda

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

Controlling User Access



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

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 demo  
IDENTIFIED BY demo;
```

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

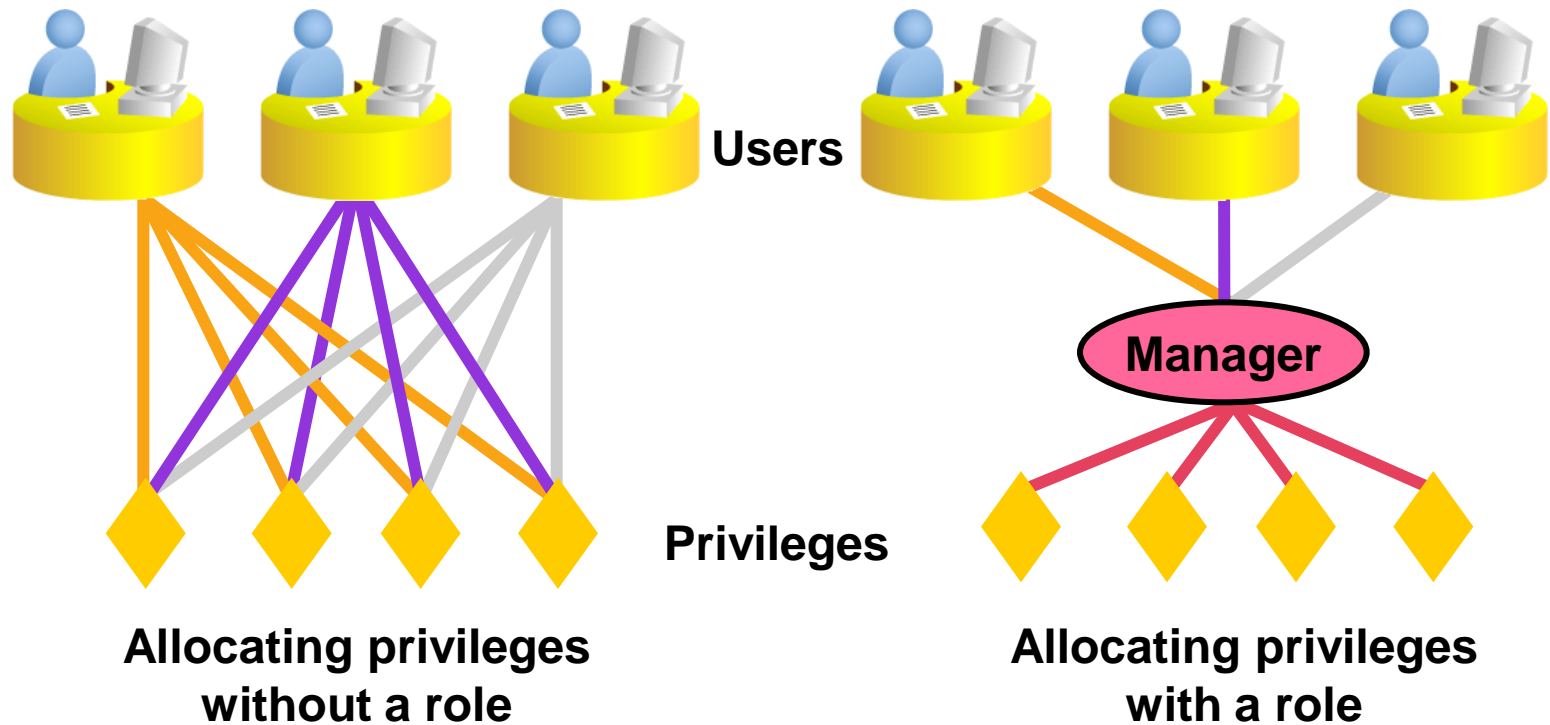
The DBA can grant specific system privileges to a user.

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

Lesson Agenda

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

What Is a Role?



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 alice;
```

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;
```

Lesson Agenda

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

Object Privileges

Object privilege	Table	View	Sequence
ALTER	✓		✓
DELETE	✓	✓	
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     demo;
```

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

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

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;
```

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

Lesson Agenda

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

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 ;
```

Quiz

Which of the following statements are true?

1. After a user creates an object, the user can pass along any of the available object privileges to other users by using the `GRANT` statement.
2. A user can create roles by using the `CREATE ROLE` statement to pass along a collection of system or object privileges to other users.
3. Users can change their own passwords.
4. Users can view the privileges granted to them and those that are granted on their objects.

Summary

In this lesson, you should have learned how to:

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

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