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Database Programming with SQL

1-1
Oracle Application Express

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Objectives

This lesson covers the following objectives:

- Distinguish between application software and system software and give an example of each
- Log-in to the Oracle Application Express practice environment
- Execute a simple query to retrieve information from the Database
- Apply the rules of SQL to display all columns and a subset of columns specified by criteria

Purpose

- Every day, in one way or another, we come in contact with computer applications.
- If you checked your email today, it was probably done using an application.
- If you bought an item at a grocery store, the clerk scanned the item using an application that calculated your bill and updated the store inventory.
- In this course, you will learn the syntax of SQL using the application called Oracle Application Express.

Application Programs

- Although computers have been around for a very long time (possibly before you were born), their use for business and personal computing didn't take place until application software programs were developed.
- Application programs allowed the end user—people like you and me—to be able to buy fully developed, ready-to-use programs.
- It was no longer necessary to know how the program worked, just that it did work and accomplished what we wanted it to do.

Application Programs

- Application program software is different from system software.
- System software consists of low-level programs designed to interact with the computer hardware.
- Operating systems, compilers, and system utilities are examples of system software.
- In contrast, application software includes programs for word processing, databases, gaming, email, and graphics.

Application Programs

- Yahoo.com uses the Oracle database to store data.
- Rather than having everyone who wants to search the database or retrieve email learn SQL, an application has all of the SQL (and other coding languages) pre-programmed into it.
- With a few mouse clicks, users have access to all of the information they need.

Using Applications

- An application is like a car.
- To drive a car, you need to know enough to make it work.
- It has a friendly "shell" to hide all the things that you don't need to know, such as how the transmission works or how fuel like petrol or diesel is used to power the engine.
- Could you ever get your driver's license if you had to demonstrate an understanding of every system—electrical, powertrain, hydraulic, fuel, etc.—used to make the car run?

Oracle Application Express

- In this course, you will use Oracle Application Express.
- This application enables many developers to build and access applications as if they were running in separate databases.
- With built-in features such as design themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process.

Oracle Application Express

- Oracle Application Express has three components:
  - SQL Workshop
  - Application Builder
  - Object Browser
- To learn SQL, you will use the SQL Workshop component.
- To design an application, you use Application Builder.

Oracle Application Express

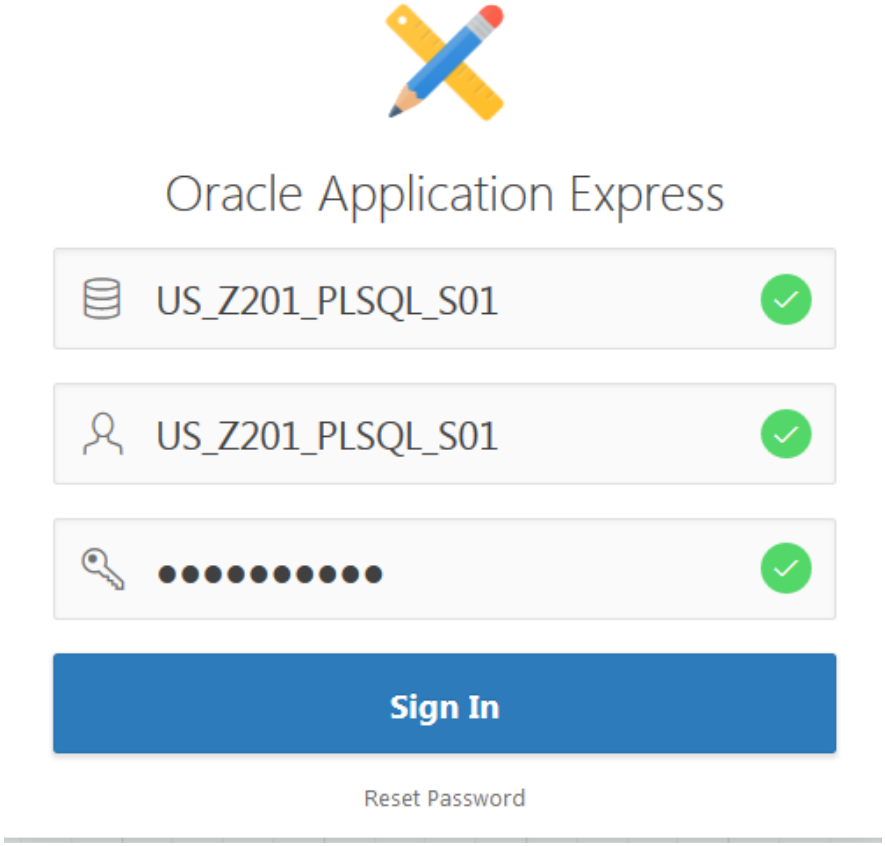
- Oracle Application Express (APEX) is the tool that we will use to allow you to build tables and retrieve information from an Oracle database.
- When retrieving information from a database, you will often have to find a subset of the data based on specific search criteria.
- Becoming familiar with SQL will help you more quickly find the information that you need.

Oracle Application Express

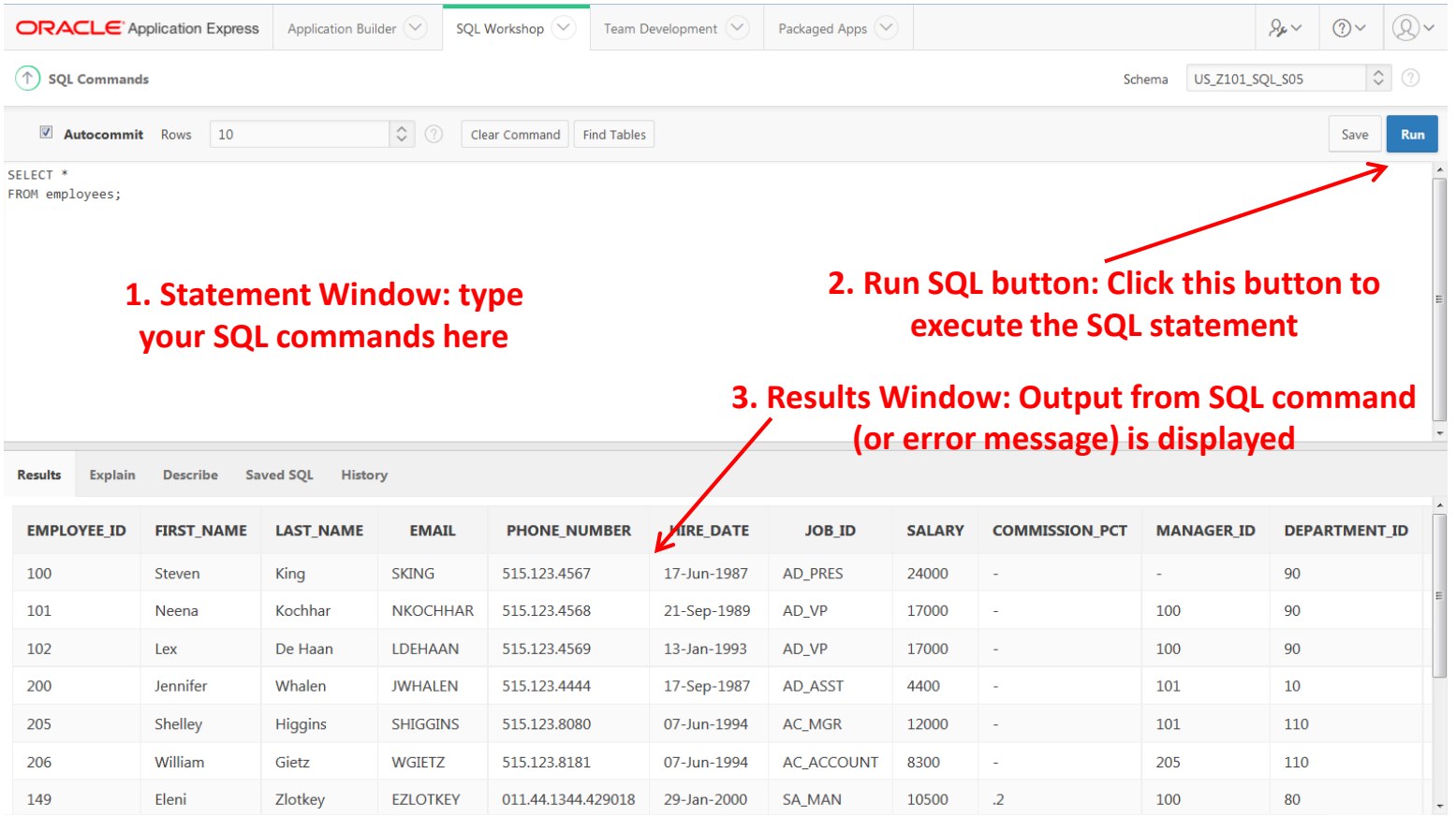
- Oracle Application Express (APEX) accounts are supplied without tables or data.
- A script file and instructions how to run the script can be found in iLearning, Database Programming with SQL course, Section 0, Course Resources, APEX Scripts and User Guides.
- On running the Script, the tables and data used throughout the course, will be added to your schema.

Log on to Oracle Application Express (APEX)

- Using a web browser, navigate to the URL supplied by your teacher to access the APEX login page.
- Enter the account information and password supplied by your teacher to login.



SQL Command Window



EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
100	Steven	King	SKING	515.123.4567	17-Jun-1987	AD_PRES	24000	-	-	90
101	Neena	Kochhar	NKOCHHAR	515.123.4568	21-Sep-1989	AD_VP	17000	-	100	90
102	Lex	De Haan	LDEHAAN	515.123.4569	13-Jan-1993	AD_VP	17000	-	100	90
200	Jennifer	Whalen	JWHALEN	515.123.4444	17-Sep-1987	AD_ASST	4400	-	101	10
205	Shelley	Higgins	SHIGGINS	515.123.8080	07-Jun-1994	AC_MGR	12000	-	101	110
206	William	Gietz	WGIETZ	515.123.8181	07-Jun-1994	AC_ACCOUNT	8300	-	205	110
149	Eleni	Zlotkey	EZLOTKEY	011.44.1344.429018	29-Jan-2000	SA_MAN	10500	.2	100	80

Basic SELECT Statement

- The SELECT * command returns all the rows in a table.
- The syntax is:

```
SELECT *
FROM <table name>;
```

- For example:

```
SELECT *
FROM employees;
```

SELECT Statement with a Condition

- To return a subset of the data, modify the SELECT statement.
- The syntax is:

```
SELECT <column name 1, column name 2, etc.>
FROM <table name>
WHERE <condition>;
```

- For example:

```
SELECT first_name, last_name, job_id
FROM employees
WHERE job_id = 'SA_REP';
```

Correcting errors

- When entering SQL commands, it is important to use the correct spelling, otherwise you will get an error message.
- For example (SELECT: spelling incorrect):

```
SEECT *
FROM employees;
```

  - Would result in the error message:

```
ORA-00900: invalid SQL statement
```

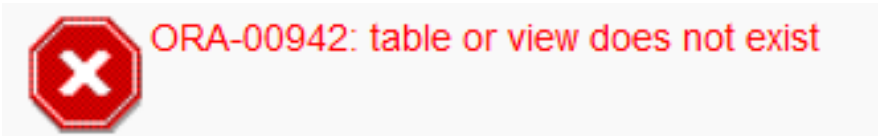
- To rectify, simply correct the spelling and run again.

Correcting errors

- It is also important to use the correct names and spelling for columns and tables.
- For example (employees table name - spelling incorrect):

```
SELECT *
FROM employee;
```

  - Would result in the error message:



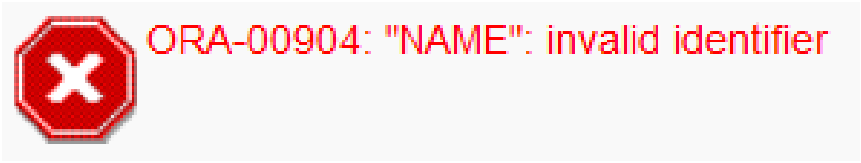
- To rectify, simply correct the spelling and run again.

Correcting errors

- For example (first_name column - entered incorrectly):

```
SELECT name
FROM employees;
```

  - Would result in the error message:



- To rectify, simply enter the correct column name and run again.

Terminology

Key terms used in this lesson included:

- Application software
- System software
- Oracle Application Express
- Syntax
- Subset
- Comparison Operator

Summary

In this lesson, you should have learned how to:

- Distinguish between application software and system software and give an example of each
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