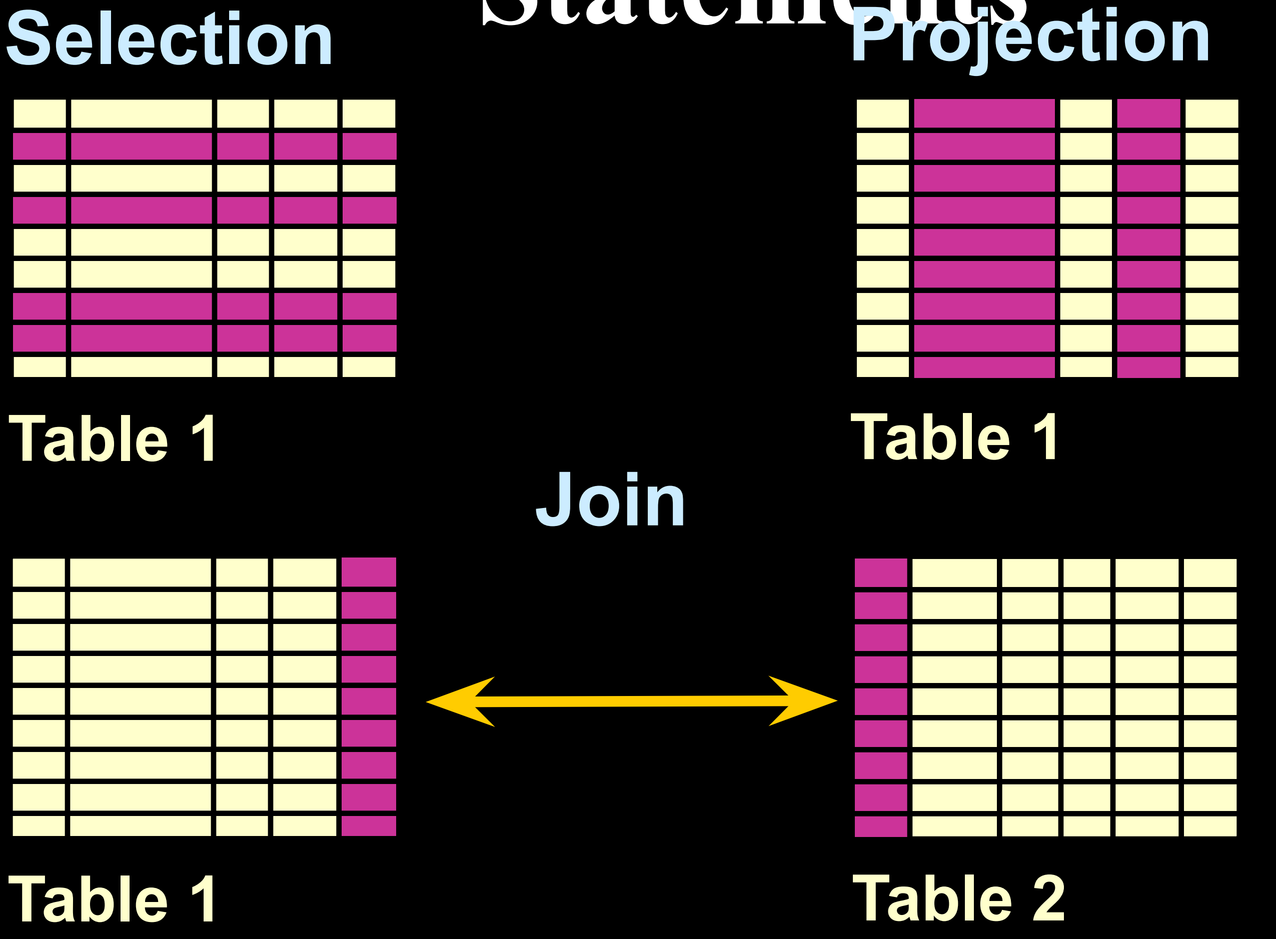
Writing Basic SQL Statements

Objectives

- After completing this lesson, you should be able to do the following:
  - List the capabilities of SQL SELECT statements
  - Execute a basic SELECT statement

Capabilities of SQL SELECT Statements



Selection

Table 1

Projection

Table 1

Join

Table 1

Table 2

Basic SELECT Statement

```
SELECT [DISTINCT] {*, column [alias],...}
FROM   table;
```

– SELECT identifies *what* columns.

– FROM identifies *which* table.

Writing SQL Statements

- SQL statements are not case sensitive.
- SQL statements can be on one or more lines.
- Keywords cannot be abbreviated or split across lines.
- Clauses are usually placed on separate lines.
- Tabs and indents are used to enhance readability.

Selecting All Columns

```
SQL> SELECT *
  2  FROM    dept;
```

```
   DEPTNO DNAME          LOC
--------- -------------- -------------
       10 ACCOUNTING     NEW YORK
       20 RESEARCH       DALLAS
       30 SALES          CHICAGO
       40 OPERATIONS     BOSTON
```

Selecting Specific Columns

```
SQL> SELECT deptno, loc
  2  FROM   dept;
```

```
   DEPTNO LOC
--------- -------------
       10 NEW YORK
       20 DALLAS
       30 CHICAGO
       40 BOSTON
```

Column Heading Defaults

- – Default justification
  - Left: Date and character data
  - Right: Numeric data
- – Default display: Uppercase

Arithmetic Expressions

- Create expressions on NUMBER and DATE data by using arithmetic operators.

Operator	Description
+	Add
-	Subtract
*	Multiply
/	Divide

Using Arithmetic Operators

```
SQL> SELECT ename, sal, sal+300
  2  FROM emp;
```

```
ENAME             SAL   SAL+300
---------- ---------- ---------
KING             5000      5300
BLAKE            2850      3150
CLARK            2450      2750
JONES            2975      3275
MARTIN           1250      1550
ALLEN            1600      1900
...
14 rows selected.
```

Operator Precedence

*   /   +   –

- Multiplication and division take priority over addition and subtraction.
- Operators of the same priority are evaluated from left to right.
- Parentheses are used to force prioritized evaluation and to clarify statements.

Operator Precedence

```
SQL> SELECT ename, sal, 12*sal+100
     FROM   emp;
```

```
ENAME            SAL 12*SAL+100
---------- --------- ----------
KING            5000      60100
BLAKE           2850      34300
CLARK           2450      29500
JONES           2975      35800
MARTIN          1250      15100
ALLEN           1600      19300
...
14 rows selected.
```

Using Parentheses

```
SQL> SELECT ename, sal, 12*(sal+100)
  2  FROM   emp;
```

```
ENAME            SAL 12*(SAL+100)
---------- --------- ------------
KING            5000        61200
BLAKE           2850        35400
CLARK           2450        30600
JONES           2975        36900
MARTIN          1250        16200
...
14 rows selected.
```

Defining a Null Value

– A null is a value that is unavailable, unassigned, unknown, or inapplicable.

– A null is not the same as zero or a blank space.

```
SQL> SELECT   ename, job, comm
  2  FROM     emp;
```

```
ENAME      JOB            COMM
---------- --------- ---------
KING       PRESIDENT
BLAKE      MANAGER
...
TURNER     SALESMAN          0
...
14 rows selected.
```

Null Values in Arithmetic Expressions

- Arithmetic expressions containing a null value evaluate to null.

```
SQL> select ename, 12*sal+comm
  2  from   emp
  3  WHERE  ename='KING';
```

```
ENAME      12*SAL+COMM
---------- -----------
KING
```

Defining a Column Alias

- Renames a column heading
- Is useful with calculations
- Immediately follows column name; optional AS keyword between column name and alias
- Requires double quotation marks if it contains spaces or special characters or is case sensitive

Using Column Aliases

```
SQL> SELECT ename AS name, sal salary
  2  FROM   emp;
```

```
NAME                SALARY
------------- ---------
...
```

```
SQL> SELECT ename "Name",
  2          sal*12 "Annual Salary"
  3  FROM   emp;
```

```
Name          Annual Salary
------------- -------------
...
```

Concatenation Operator

– Concatenates columns or character strings to other columns
– Is represented by two vertical bars (||)
– Creates a resultant column that is a character expression

Using the Concatenation Operator

```
SQL> SELECT   ename||job AS "Employees"
  2  FROM     emp;
```

```
Employees
-------------------
KINGPRESIDENT
BLAKEMANAGER
CLARKMANAGER
JONESMANAGER
MARTINSALESMAN
ALLENSALESMAN
...
14 rows selected.
```

Literal Character Strings

- A literal is a character, expression, or number included in the SELECT list.
- Date and character literal values must be enclosed within single quotation marks.
- Each character string is output once for each row returned.

Using Literal Character Strings

```
SQL> SELECT ename   ||' '||'is a'||' '||job
  2          AS "Employee Details"
  3  FROM   emp;
```

```
Employee Details
-------------------------
KING is a PRESIDENT
BLAKE is a MANAGER
CLARK is a MANAGER
JONES is a MANAGER
MARTIN is a SALESMAN
...
14 rows selected.
```

Duplicate Rows

- The default display of queries is all rows, including duplicate rows.

```
SQL> SELECT deptno
  2  FROM   emp;
```

```
   DEPTNO
---------
       10
       30
       10
       20
...
14 rows selected.
```

Eliminating Duplicate Rows

Eliminate duplicate rows by using the DISTINCT keyword in the SELECT clause.

```
SQL> SELECT DISTINCT deptno
  2  FROM   emp;
```

```
   DEPTNO
---------
       10
       20
       30
```

Displaying Table Structure

- Use the SQL*Plus DESCRIBE command to display the structure of a table.

```
DESC[RIBE] tablename
```

Displaying Table Structure

```
SQL> DESCRIBE dept
```

```
Name              Null?    Type
----------------- -------- ------------
DEPTNO            NOT NULL NUMBER(2)
DNAME                      VARCHAR2(14)
LOC                        VARCHAR2(13)
```

Practice Overview

- Selecting all data from different tables
- Describing the structure of tables
- Performing arithmetic calculations and specifying column names
- Using SQL*Plus editor