# Section 4 Lesson 1: Review of Joins

## Try It / Solve It

| LAST_NAME | SID | MID |
|---|---|---|
| Abernathy | 349 | Null |
| Avery | 342 | Null |
| Barnaby | 1420 | 349 |
| Chang | 555 | 349 |
| Dixon | 554 | 349 |
| Evans | 873 | 342 |
| Franco | 1933 | 342 |
| Gallaway | 943 | 349 |

STUDENTS

| COURSES | CID |
|---|---|
| Oracle_Internet_Academy_DM | 101 |
| Oracle_Internet_Academy_Java | 102 |
| Oracle_Internet_Academy_Java | 103 |

COURSES

| SID | CID |
|---|---|
| 1420 | 101 |
| 555 | 101 |
| 554 | 101 |
| 873 | 102 |
| 342 | 103 |
| 349 | 103 |
| 943 | 103 |
| 1933 | 103 |

ENROLLED

1. Use the three tables shown above to answer the following questions:

   a. What kind of join would you use to join all three tables? Write the syntax that would produce the desired result.

```
SELECT *
FROM STUDENTS
NATURAL JOIN ENROLLED
NATURAL JOIN COURSES;
```

b. Name two tables that could be used to retrieve data from a natural join.
Write the syntax that would produce the desired result.

```
SELECT *
FROM STUDENTS
NATURAL JOIN ENROLLED;
```

c. What kind of join would you use to return only those students who have mentors?
Write the syntax that would produce the desired result.

A JOIN DOES NOT APPEAR TO BE NECESSARY.

```
SELECT *
FROM STUDENTS
WHERE MID IS NOT NULL;
```

d. What kind of join would you use to return all students whether they have a mentor or not.
Write the syntax that would produce the desired result.

A JOIN DOES NOT APPEAR TO BE NECESSARY.

```
SELECT *
FROM STUDENTS;
```

2. Using the tables in the Human Resources database, list the different join types that could be used to accomplish the following: (For any outer joins, also write the syntax.):

a. Return all matching cities and countries (NATURAL JOIN, EQUIJOIN/JOIN-ON)

b. Return all matching cities and countries including those cities that do not have countries listed.

```
SELECT CITY, C.COUNTRY_ID
FROM COUNTRIES C
LEFT OUTER JOIN LOCATIONS L
ON (L.COUNTRY_ID = C.COUNTRY_ID);
```

c. Return a list of employees and their job titles (NATURAL JOIN, EQUIJOIN/JOIN-ON)

d. Return all matching cities, departments, and employee names (NATURAL JOIN, EQUIJOIN/JOIN-ON)

e. Return all cities, departments, and employee names including all employees without a department, and all departments without an employee

```
SELECT CITY, DEPARTMENT_NAME, FIRST_NAME || ' ' || LAST_NAME AS NAME
FROM EMPLOYEES E
FULL OUTER JOIN DEPARTMENTS D
NATURAL JOIN LOCATIONS
ON E.DEPARTMENT_ID = D.DEPARTMENT_ID;
```

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# Section 4 Lesson 2: Group Functions

## Try It / Solve It

1. Define and give an example of the seven group functions: AVG, COUNT, MAX, MIN, STDDEV, SUM, and VARIANCE.
   The AVG() function returns the average value of a numeric column.
   Ex.: SELECT AVG(salary) FROM employees; *(Returns 8775)*

   The COUNT() function returns the number of values of a numeric column.
   Ex.: SELECT COUNT(city) FROM locations; *(Returns 5)*

   The MAX() function returns the highest value of a numeric column.
   Ex.: SELECT MAX(salary) FROM employees; *(Returns 24000)*

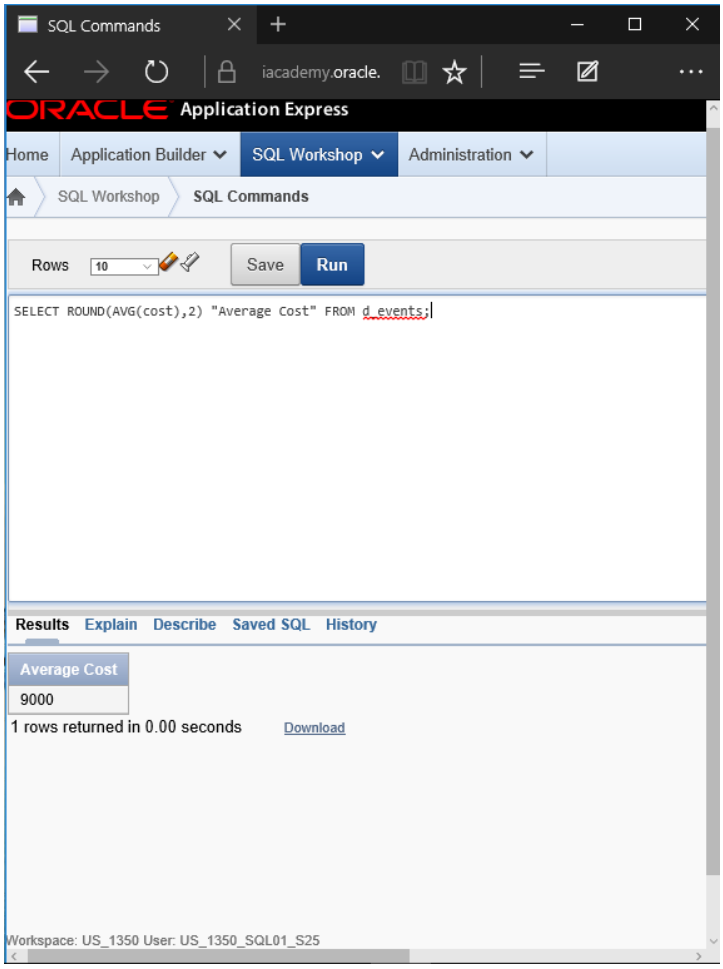
   The MIN() function returns the lowest value of a numeric column.
   Ex.: SELECT MIN(salary) FROM employees; *(Returns 2500)*

   The STDDEV() function returns the standard deviation (square root of the variance defined) of an expression.
   Ex.: SELECT STDDEV(salary) FROM employees; *(Returns 5659.633…)*

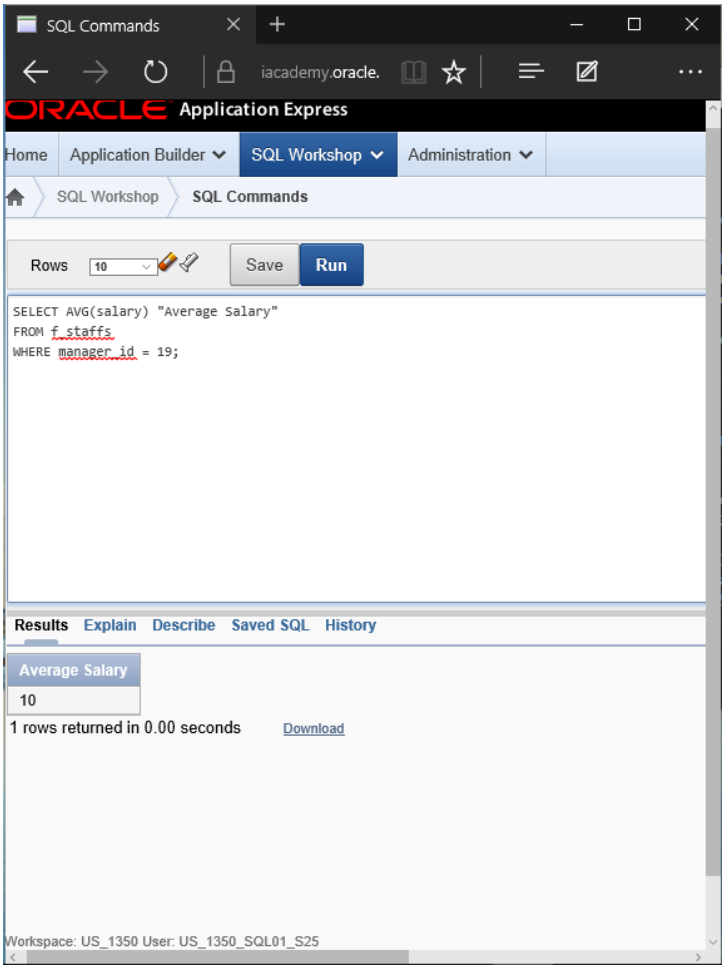
   The SUM() function returns the total of the values in an expression.
   Ex. SELECT SUM(salary) FROM employees; *(Returns 175500 )*

   The VARIANCE() function returns the amount of variance between values of a numeric column.
   Ex. SELECT last_name, salary,
   ROUND(MONTHS_BETWEEN(current_date, hire_date)/12) "Years Employed",
   ROUND(salary*(MONTHS_BETWEEN(current_date, hire_date)/12)) "Cumulative Salary",
   **ROUND(VARIANCE(salary) OVER (ORDER BY hire_date)) "Variance"**
   FROM employees;

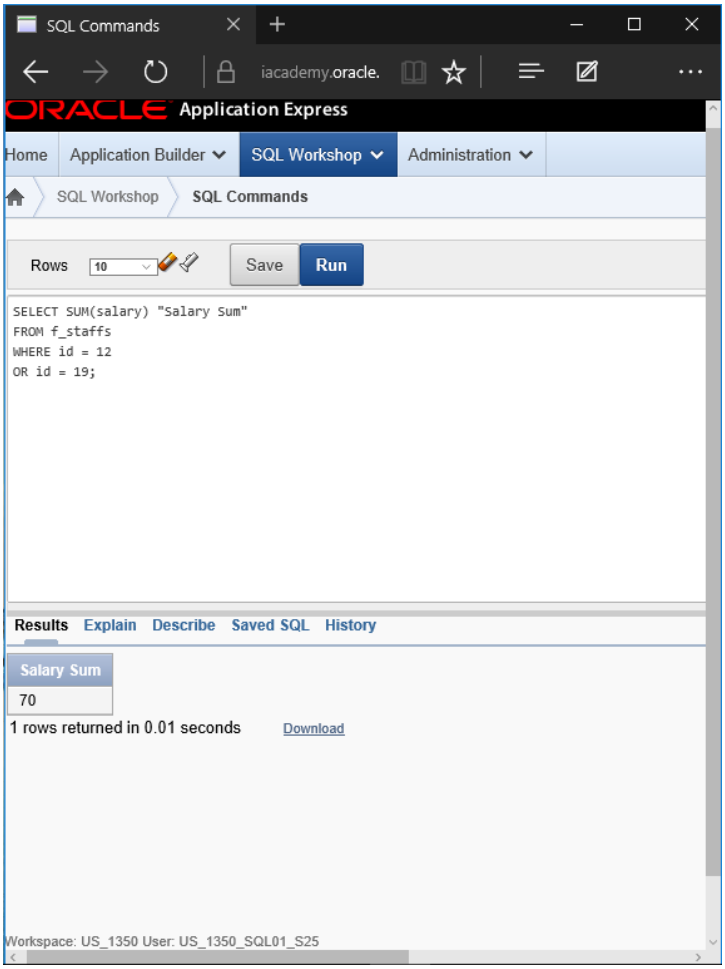
2. Create a query that will show the average cost of the DJs on Demand events. Round to two decimal places.



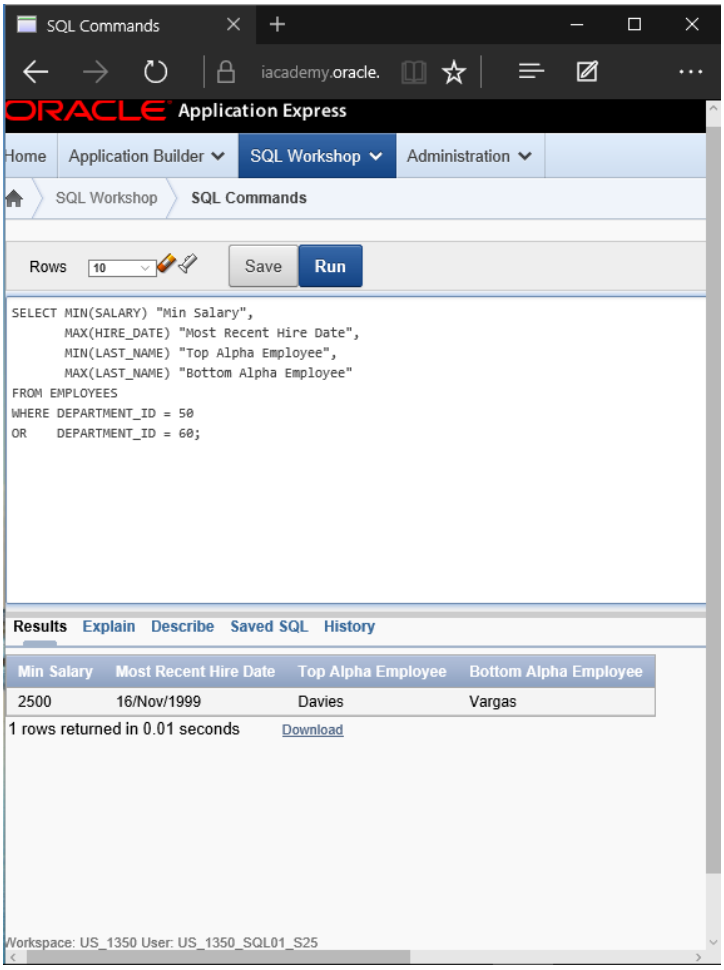
3. Find the average salary for Global Fast Foods staff members whose manager ID is 19.



4. Find the sum of the salaries for Global Fast Foods staff members whose IDs are 12 and 9.



5. Using the Oracle database, select the lowest salary, the most recent hire date, the last name of the person who is at the top of an alphabetical list of employees, and the last name of the person who is at the bottom of an alphabetical list of employees. Select only employees who are in departments 50 or 60.



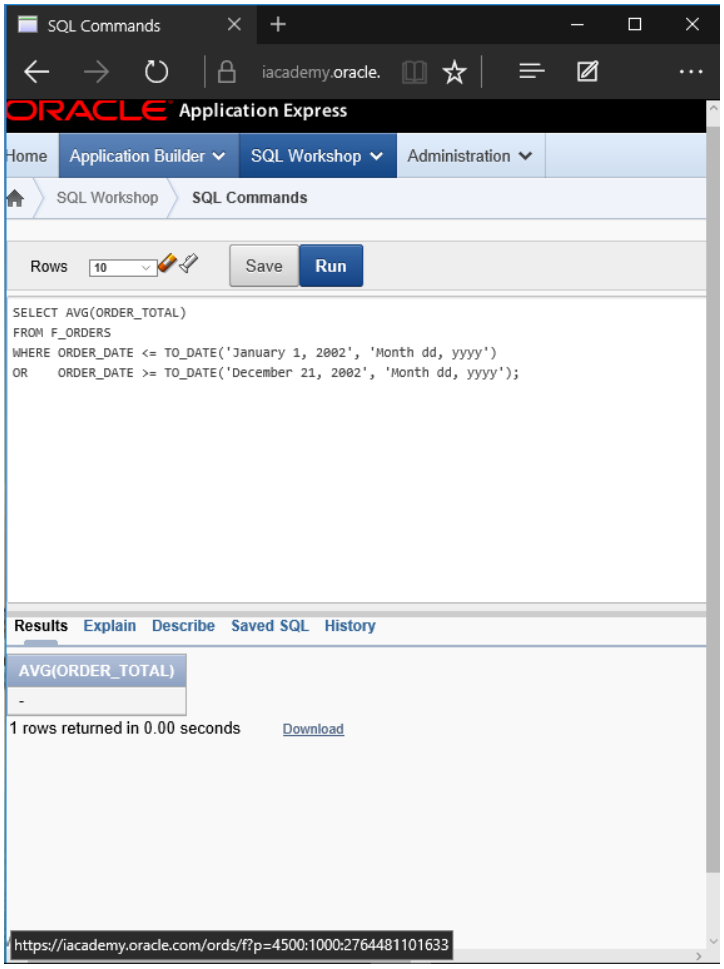

6. Your new Internet business has had a good year financially. You have had 1,289 orders this year. Your customer order table has a column named total_sales. If you submit the following query, how many rows will be returned? Only one row will be returned.

```
SELECT sum(total_sales)
FROM orders;
```

7. You were asked to create a report of the average salaries for all employees in each division of the company. Some employees in your company are paid hourly instead of by salary. When you ran the report, it seemed as though the averages were not what you expected—they were much higher than you thought! What could have been the cause? The salary amount was averaged out of both hourly and yearly employees.

8. Employees of Global Fast Foods have birth dates of July 1, 1980, March 19, 1979, and March 30, 1969. If you select MIN(birthdate), which date will be returned? The date March 30, 1969 will be returned.

9. Create a query that will return the average order total for all Global Fast Foods orders from January 1, 2002, to December 21, 2002.




10. What was the hire date of the last Oracle employee hired? The hire date of the last Oracle employee hired was January 29, 2000.

11. In the following SELECT clause, which value returned by the SELECT statement will be larger? The return value from the SUM clause's output value will be larger.

    SELECT SUM(operating_cost), AVG(operating_cost)

12. Refer to the DJs on Demand database D_EVENTS table:

    Which clauses represent valid statements?
    _____ a. FROM event_date
    **VALID** b. SELECT SUM(cost)
    _____ c. SELECT SUM(event_date)

_VALID_ d. SELECT description, AVG(cost) AS "Expense"
_____ e. WHERE MIN(id) = 100
_____ f. SELECT MAX(AVG(cost)
_VALID_ g. SELECT MIN(event_date)

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# Section 4 Lesson 3: Count, Distinct, NVL

## Try It / Solve It

1. How many songs are listed in the DJs on Demand D_SONGS table? 8 songs are listed in D_SONGS table.

2. In how many different location types has DJs on Demand had venues? There are 4 distinct location types.

3. The d_track_listings table in the DJs on Demand database has a song_id column and a cd_number column. How many song IDs are in the table and how many different CD numbers are in the table? There are 5 song IDs and 4 different CD numbers in the table.

4. How many of the DJs on Demand customers have email addresses? 5 customers have email addresses.

5. Some of the partners in DJs on Demand do not have authorized expense amounts (auth_expense_amt). How many partners do have this privilege? Only 1 partner has the authorized expense privilege.

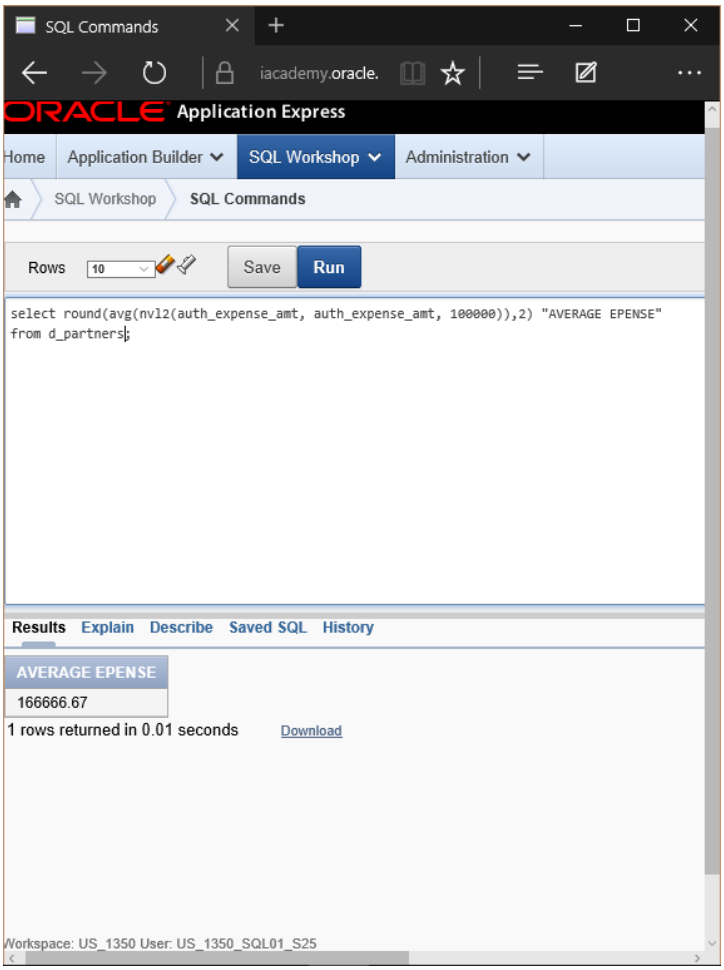
6. What values will be returned when the statement below is issued?

| ID | type | shoe_color |
|---|---|---|
| 456 | oxford | brown |
| 463 | sandal | tan |
| 262 | heel | black |
| 433 | slipper | tan |

SELECT COUNT(shoe_color), COUNT(DISTINCT shoe_color) FROM shoes;

| COUNT(shoe_color) | COUNT(DISTINCT shoe_color) |
|---|---|
| 4 | 3 |

7. Create a query that will convert any null values in the auth_expense_amt column on the DJs on Demand D_PARTNERS table to 100000 and find the average of the values in this column. Round the result to two decimal places.




8. Which statement(s) is/are True about the following SQL statement:
SELECT AVG(NVL(selling_bonus, 0.10))
FROM bonuses;

_____ a. The datatypes of the values in the NVL clause can be any datatype except date data.

_TRUE_ b. If the selling_bonus column has a null value, 0.10 will be substituted.

_TRUE_ c. There will be no null values in the selling_bonus column when the average is calculated.

_____ d. This statement will cause an error. There cannot be two functions in the SELECT statement.

9. Which of the following statements is/are TRUE about the following query?

```
SELECT DISTINCT colors, sizes
FROM items;
```

_TRUE_ a. Each color will appear only once in the result set.
_____ b. Each size will appear only once in the result set.
_TRUE_ c. Unique combinations of color and size will appear only once in the result set.
_____ d. Each color and size combination will appear more than once in the result set.