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Lecture Activity

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Answer the following items:

1. What is an SQL **JOIN** command, and when do you need it?

- An SQL JOIN command combines rows from two or more tables based on a common column. When you wish to retrieve data from many tables which have a common key or field, you need to use a JOIN.

2. How would you write a query to JOIN these two tables?

- Assuming you have two tables, *Table1* and *Table2*, and you want to join them on a common column, say *id*, the SQL query might look like this:

```
SELECT Table1.column1, Table2.column2  
FROM Table1  
JOIN Table2 ON Table1.id = Table2.id;
```

3. What types of JOINS are there?

- **INNER JOIN:** Returns only rows where there is a match between both tables.
- **LEFT (OUTER) JOIN:** Returns all rows from the left table and the corresponding rows from the right table. If no match is found, the right side returns NULL.
- **RIGHT (OUTER) JOIN:** Returns all rows from the right table as well as the rows that match those in the left table. If no match is found, the left side returns NULL.
- **FULL (OUTER) JOIN:** When a match is found in one of the tables, all rows are returned. If there is no match, NULL is returned in the table's columns.

4. What is an OUTER JOIN?

- The **FULL OUTER JOIN** (aka **OUTER JOIN**) is used to return all of the records that have values in either the left or right table.

5. What is the difference between an SQL INNER JOIN and an SQL LEFT JOIN?

- Use an **INNER JOIN** when you want to retrieve only the rows where there is a match in both tables based on the join condition. Use a **LEFT JOIN** when you want to retrieve all rows from the left table and the matched rows from the right table, with NULL values for non-matching rows.

6. What is the difference between a LEFT JOIN and a FULL JOIN?

- **LEFT JOIN** returns only unmatched rows from the left table, as well as matched rows in both tables. **FULL OUTER JOIN** returns unmatched rows from both tables, as well as matched rows in both tables.

7. Write a query that will JOIN these two tables so that all rows from Table 1 are in the result.

- Assuming you have *Table1* and *Table2* and want all rows from *Table1*, you would use a **LEFT JOIN**:

```
SELECT Table1.column1, Table2.column2  
FROM Table1  
LEFT JOIN Table2 ON Table1.id = Table2.id;
```

8. How do you join more than two tables?

- To join more than two tables, you can chain multiple JOIN clauses. For example:

```
SELECT Table1.column1, Table2.column2, Table3.column3  
FROM Table1 JOIN Table2 ON Table1.id = Table2.id  
JOIN Table3 ON Table2.id = Table3.id;
```

9. How do you join a table to itself?

- Joining a table to itself is called a self-join. You can do this using table names :

```
SELECT A.column1, B.column2  
FROM Table1 A  
JOIN Table1 B ON A.id = B.parent_id;
```

10. Must the JOIN condition be equality?

- No, the JOIN condition does not have to be equality. You can use other conditions, such as inequalities or ranges. For example:

```
SELECT A.column1, B.column2  
FROM Table1 A  
JOIN Table2 B ON A.column1 > B.column2;
```