**Lab# 05 Assignment**

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| **Join** | **Sub queries** |
| It’s a form to combine data from multiple tables. | It’s a form to gather data from same or different tables based on output of some inner queries. |
| Joins are used to return rows. | It can retrieve either single (scalar) value or set of values. |
| If the result does not need the result from more than one column, then it can be converted into sub query. | All sub queries can be converted into joins but not vice versa in all the cases. |
| Joins usually perform cross product before applying condition and filtering out the data. | The sub queries does not perform cross product of all the rows, instead just matches the result of the inner query with the inner query. |
| Join is an integral part of select statement, it can stand on its own. | Sub query can also stand on it’s own. |

**Advantages of Sub queries:**

1. A complex query can be divided into simpler queries and can be nested in subqueries.
2. They isolate each part of the statement and perform operation on each part and then combine the results.
3. It allows the results of outer query to be used in the inner query.
4. Sub queries improves the readability of the query.
5. It often replaces complex joins and unions.

**Disadvantages of Sub queries:**

1. It takes more time to execute then the joins.
2. The database optimizer who process the queries are more mature for joins than the subqueries.
3. The database optimizer might need to perform some additional steps such as sorting before the results from the sub queries are used.
4. You cannot modify and select from the same table in the sub query statement.

**Advantages of Joins:**

1. It executes faster than the sub queries.
2. The retrieval time for the database optimizers are always faster than the sub queries.
3. There are multiple types of join to specify what specifically is needed by the user.
4. Joins are generally simpler and shorter to write and understand.

**Disadvantages of Joins:**

1. The cost of join operation goes up as the more and more tables are joined.
2. It requires the additional runtime for sql serves to load cross products into the joins.
3. Using a lot of joins might cause a maintenance issue in the future if many joins are used.
4. You need to make foreign keys and integrity constraints to make sure joins perform adequately.