## **Database Lab**

CSE 3104

**Session 08** 

# Set Operators in SQL Server (UNION, UNION ALL, INTERSECT, EXCEPT)

SET operators are mainly used to combine the same type of data from two or more tables. Although more than one select statement will then be present, only one result set is returned.

## **Rules on Set Operations:**

- The result sets of all queries must have the same number of columns.
- In every result set the data type of each column must match the data type of its corresponding column in the first result set.
- In order to sort the result, an ORDER BY clause should be part of the last statement.
- The records from the top query must match the positional ordering of the records from the bottom query.
- The column names or aliases must be found out by the first select statement.

## **Four Set Operators:**

The four set operators union, union all, intersect and except allow us to serially combine two or more select statements.

Operator	Returns
UNION	Combine two or more result sets into a single set, without duplicates.
UNION ALL	Combine two or more result sets into a single set, including all duplicates.
INTERSECT	Takes the data from both result sets which are in common.
EXCEPT	Takes the data from first result set, but not the second (i.e. no matching to each other)

#### **SYNTAX**

For set operators, the syntax is simple.

```
2. SELECT [Column_Namse, . . .] FROM [table2] [set operator]
3. ...
4. ...
5. SELECT [Column_Name, . . . ] FROM [tableN]
```

#### **Example**

Create two tables with same column name and data type.

```
CREATE TABLE AUST(
Name VARCHAR(15),
TotalMark INT);

CREATE TABLE ULAB(
Name VARCHAR(15),
TotalMark INT);

CREATE TABLE BRACU(
Name VARCHAR(15),
TotalMark INT);
```

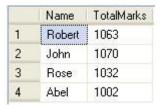
Let us insert a few values into the tables.

```
INSERT INTO AUST VALUES('Robert',1063);
INSERT INTO AUST VALUES('John',1070);
INSERT INTO AUST VALUES('Rose',1032);
INSERT INTO AUST VALUES('Abel',1002);

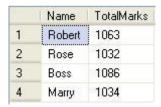
INSERT INTO ULAB VALUES('Robert',1063);
INSERT INTO ULAB VALUES('Rose',1032);
INSERT INTO ULAB VALUES('Boss',1086);
INSERT INTO ULAB VALUES('Marry',1034);
INSERT INTO BRACU VALUES('Rose',1069);
INSERT INTO BRACU VALUES('Rose',1032);
INSERT INTO BRACU VALUES('Rose',1034);
INSERT INTO BRACU VALUES('Rose',1034);
INSERT INTO BRACU VALUES('Rose',1034);
INSERT INTO BRACU VALUES('Steven',1034);
```

#### Result

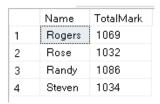
#### Result Set for AUST table



#### Result Set for ULAB table



#### Result Set for BRACU table

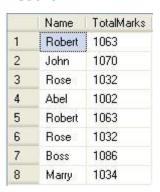


## **UNION ALL**

The SQL UNION ALL Operator is used to list all records from two or more select statements. All the records from both tables must be in the same order.

SELECT Name, Total Mark FROM AUST UNION ALL SELECT Name, Total Mark FROM ULAB;

#### Result



Here Robert and Rose are stored in both tables. UNION ALL returns all records (including duplicate records).

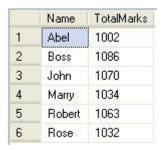
## **UNION**

The SQL Union ALL Operator is used to combine two tables using select statement when both tables have the same number of columns.

Union works like Distinct, Union all DOES NOT do distinct.

SELECT Name, Total Mark FROM AUST UNION SELECT Name, Total Mark FROM ULAB;

#### Result



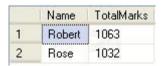
The Robert and Rose records are duplicate records. Thus, these are returned only once.

### **INTERSECT**

INTERSECT returns any distinct values that are returned by both the query on the left and right sides of the INTERSECT operand.

SELECT Name, Total Mark FROM AUST INTERSECT SELECT Name, Total Mark FROM ULAB;

#### Result



Only the Robert and Rose records are returned, because they are found in both tables.

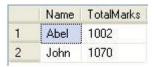
## **EXCEPT**

EXCEPT query returns all rows which are in the first query but those are not returned in the second query.

## **Example 1**

SELECT Name, TotalMark FROM AUST EXCEPT
SELECT Name, TotalMark FROM ULAB;

#### Result

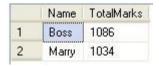


#### **Example 2**

EXCEPT returns any distinct values from the left select query that are not also found on the right select query.

SELECT Name, Total Mark FROM ULAB EXCEPT
SELECT Name, Total Mark FROM AUST;

#### Result



From the two results we understand that if any records are found in both tables, they are removed from the first table's record set.

The four set operators (union, union all, intersect and except) in SQL all have the same precedence. But

## \*Order of Operations:

1. Expressions in parentheses:

(SELECT Name FROM AUST UNION ALL SELECT Name FROM ULAB) INTERSECT SELECT Name FROM BRACU;

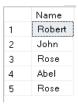
#### Result



2. The INTERSECT operator

SELECT Name FROM AUST UNION ALL SELECT Name FROM ULAB INTERSECT SELECT Name FROM BRACU;

#### Result



3. EXCEPT and UNION evaluated from left to right based on their position in the expression:

SELECT Name FROM AUST EXCEPT SELECT Name FROM ULAB UNION SELECT Name FROM BRACU;

#### Result

