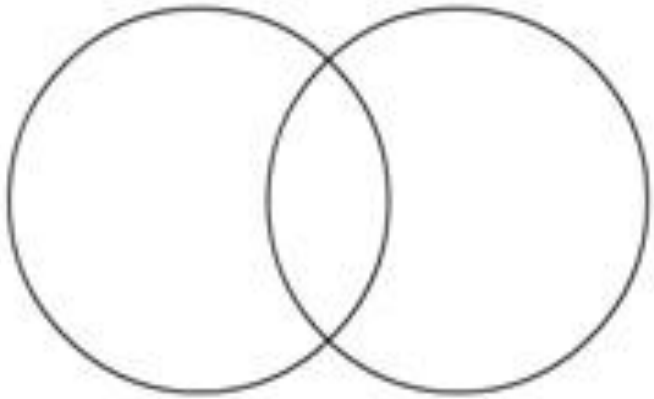
Objectives

- In this session, you will learn to:
  - Describe the operators that work on relations

UNION

- The union operator builds a relation from tuples appearing in either or both of the specified relations.
- The following diagram represents the mathematical representation of the union operator.



UNION (Contd.)

- Consider the tables, A and B, as shown in the following diagram.

A

ROLLNO	NAME
0910	Anthony
0856	Nancy

B

ROLLNO	NAME
0856	Nancy
0976	Susan

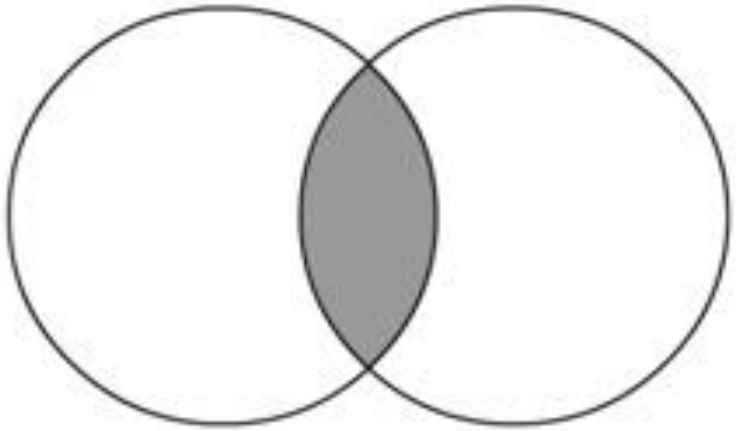
UNION

A UNION B

ROLLNO	NAME
0910	Anthony
0856	Nancy
0976	Susan

INTERSECT

- The intersect operator builds a relation consisting of tuples that appear in both the relations.
- The following diagram represents the mathematical representation of the intersect operator.



INTERSECT (Contd.)

- Consider the tables, A and B, as shown in the following diagram.

A

ROLLNO	NAME
0910	Anthony
0856	Nancy

B

ROLLNO	NAME
0856	Nancy
0976	Susan

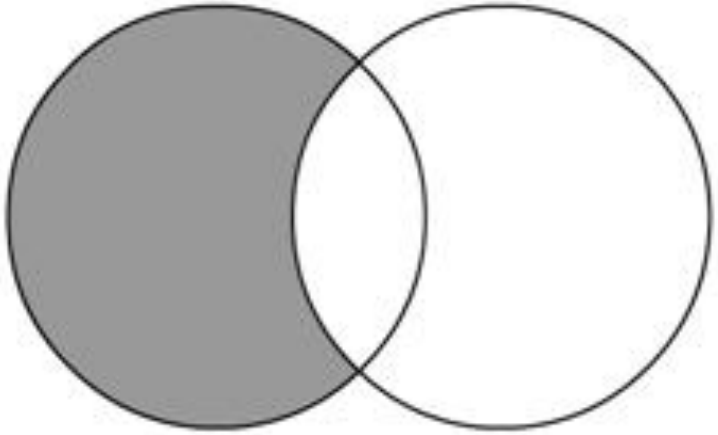
INTERSECT

A INTERSECT B

ROLLNO	NAME
0856	Nancy

DIFFERENCE

- The difference operator builds a relation of tuples appearing in the first but not in the second of the two specified relations.
- The following diagram represents the mathematical representation of the difference operator.



DIFFERENCE (Contd.)

- The following set of tables illustrates the difference operation on tables, A and B.

A

ROLLNO	NAME
0910	Anthony
0856	Nancy

B

ROLLNO	NAME
0856	Nancy
0976	Susan

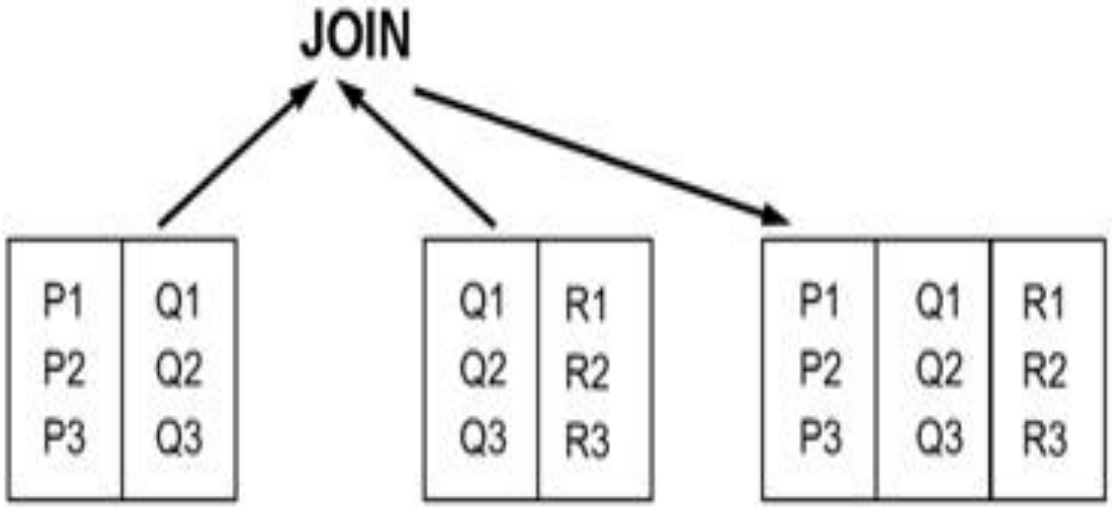
DIFFERENCE

A-B

ROLLNO	NAME
0910	Anthony

JOIN

- The join operator:
  - Builds a relation that consists of all the possible combinations of tuples, one from each relation that satisfies the specified condition.
  - Requires a common attribute.
- The following diagram shows how the join operator works.



JOIN (Contd.)

- The following set of tables illustrates the join operation on tables, X and Y.

X

ROLLNO	COURSECD
0910	A21
0856	D21
0976	C67
0768	D21
0752	C67

Y

T_ID	COURSECD
0081	A21
0075	D21
0002	H42
0075	C67
0052	A21

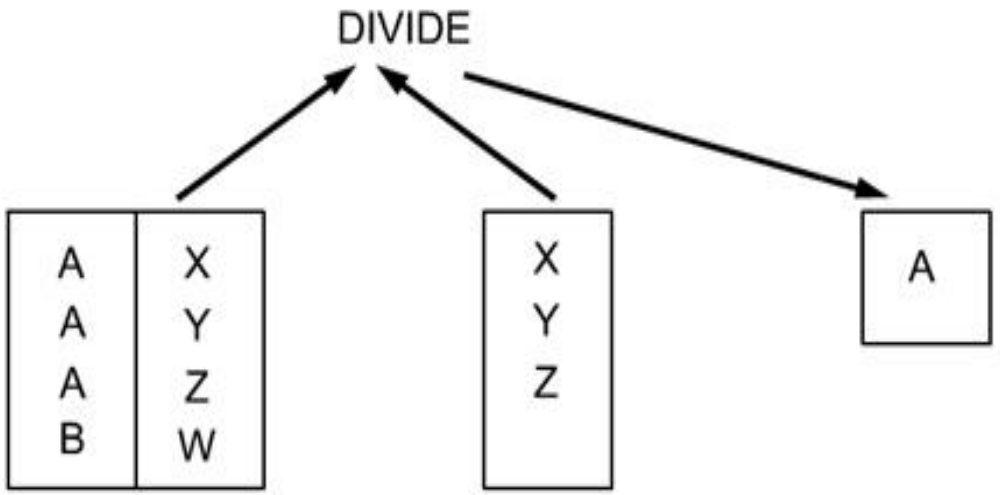
JOIN

JOIN

ROLLNO	T_ID	COURSECD
0910	0081	A21
0856	0075	D21
0976	0075	C67
0768	0075	D21
0910	0052	A21
0752	0075	C67

DIVIDE

- The divide operator :
  - Builds a relation that consists of values of an attribute of one relation that matches all the values in the other relation.
  - Is the opposite of the product operation.
- The following diagram shows how the divide operator works.



DIVIDE (Contd.)

- The following set of tables illustrates the divide operation on the STUDENT table.

STUDENT

NAME	COURSECD
Anthony	A21
Anthony	D21
Anthony	C67
Nancy	H42

DIVIDE

COURSE

COURSECD
A21
D21
C67

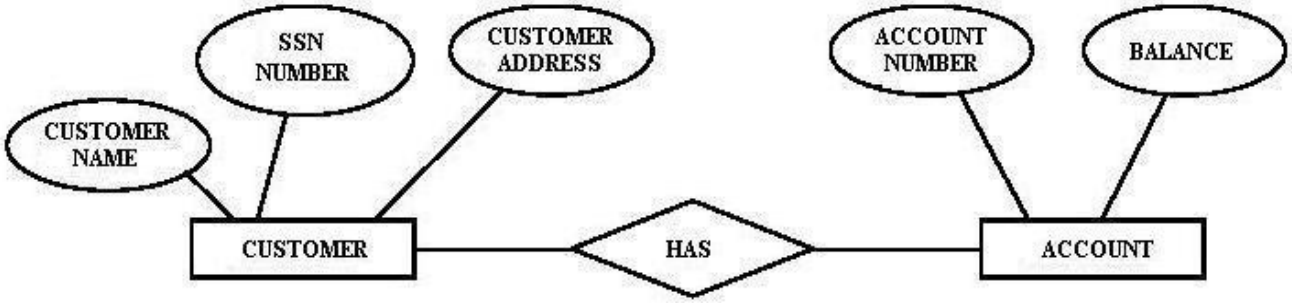
→

RESULT OF DIVIDE

NAME
Anthony

Practice Exercises

- Exercise 1:
  - Lee Wong is the newly appointed database administrator at Standard bank. The management of this bank wants to computerize the process of banking. According to the bank's policy, one customer can have many accounts but one account cannot be shared by many customers. The following ER diagram represents the relationship between a customer and the accounts owned by a particular customer.



In the preceding diagram, you have to identify entities and their attributes and type of relationship between the entities.

Practice Exercises (Contd.)

- Exercise 2:
  - Consider the following scenario:

    A customer can have many accounts in a bank but an account can be associated with only one customer. Identify the relationship between customer and account and represent it with an ER Diagram.

Summary

- In this session, you learned that:
  - The union operator builds a relation from tuples appearing in either or both of the specified relations where as intersect operator builds a relation consisting of tuples that appear in both the relations.
  - The difference operator builds a relation of tuples appearing in the first but not in the second of the two specified relations.
  - The join operator builds a relation from two specified relations. This relation consists of all the possible combinations of tuples, one from each relation that satisfies the specified condition.
  - The divide operator takes two relations and builds another relation consisting of values of an attribute of one relation that match all the values in the other relation.