



UNIT 4 TRANSACTIONS

Transaction Concepts – ACID Properties – Schedules – Serializability –
Concurrency Control – Need for Concurrency – Locking Protocols – Two
Phase Locking – Deadlocks – Transaction Recovery – **Save Points** –
Isolation Levels – SQL Facilities for Concurrency and Recovery

Recap

- Deadlock Detection
- Deadlock Recovery
- Failure Classification
- Storage Structure





Save Point

- Command in SQL
- Used with the rollback command.
- Transaction Control Language, that is used to mark the transaction in a table.
- very long table, and you want to **roll back only to a certain position** in a table then; this can be achieved using the savepoint.

Create: Savepoint <savepoint_name>;

Rollback: Rollback to <savepoint_name>;

Drop: Release <savepoint_name>;



Savepoint Example

- ROLLBACK: Similar to the undo operation.

SQL> select * from customer;

CUSTID	PID	QUANTITY
100	1234	10
101	1235	15
102	1236	15
103	1237	10

SQL> savepoint s1;

Savepoint created.



Savepoint Example

SQL> Delete from customer where custid=103;

CUSTID	PID	QUANTITY
100	1234	10
101	1235	15
102	1236	15

SQL> rollback to s1;

Rollback complete.



Savepoint Example

SQL> select * from customer;

CUSTID	PID	QUANTITY
100	1234	10
101	1235	15
102	1236	15
103	1237	10

SQL> commit;



Isolation Level

- Isolation determines how **transaction integrity is visible** to other users and systems.
- A transaction isolation level is defined by the following phenomena
 - **Dirty Read**
 - **Non Repeatable read**
 - **Phantom Read**



Isolation Level

- **Dirty Reads:** This situation occurs **when transactions read data that has not been committed.**
- **Nonrepeatable Reads:** This situation occurs when a **transaction reads the same query multiple times and results are not the same each time**
- **Phantoms:** This situation occurs when **a row of data matches the first time but does not match subsequent times**



Isolation Level

- The SQL standard defines four isolation levels
 - Read Uncommitted - Lowest Isolation Level
 - Read Committed
 - Repeatable Read - most restrictive isolation level
 - Serializable – Highest isolation Level

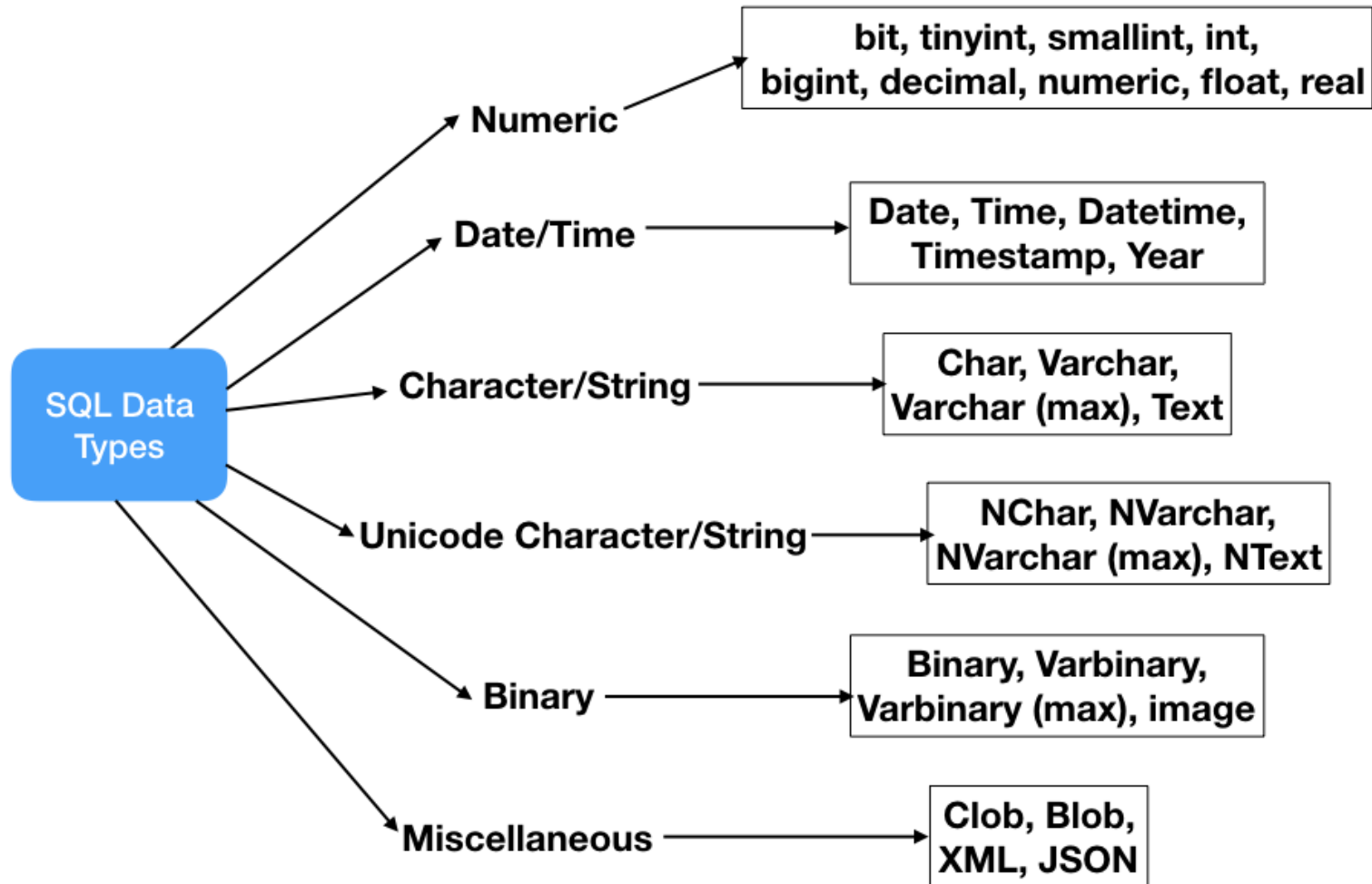


Isolation Level

Isolation Level	Dirty reads	Non-repeatable reads	Phantoms
Read Uncommitted	May occur	May occur	May occur
Read Committed	Don't occur	May occur	May occur
Repeatable Read	Don't occur	Don't occur	May occur
Serializable	Don't occur	Don't occur	Don't occur



SQL Data Types





Assessment

1. Write an SQL query to fetch “FIRST_NAME” from Worker table using the alias name as <WORKER_NAME>.

Select FIRST_NAME AS WORKER_NAME from Worker;

2. Write an SQL query to fetch “FIRST_NAME” from Worker table in upper case.

Select upper(FIRST_NAME) from Worker;

3. Write an SQL query to fetch unique values of DEPARTMENT from Worker table.

Select distinct DEPARTMENT from Worker;



*Thank
you*