

JDBC Quick Revision Notes

1. Date & Time Handling

- java.util.Date -> contains both date and time.
- java.sql.Date -> contains only date.
- java.sql.Time -> contains only time.
- java.sql.Timestamp -> contains both date and time.

2. Connection Management

- JDBC connection is expensive to create repeatedly.
 - > Best Practice: Create at startup and reuse.
- Connection is an interface.
- DriverManager.getConnection() -> used to get DB connection.
- DataSource -> provides connection pooling.
- JDBC 4.0 auto-registers drivers using:
 - > META-INF/services/java.sql.Driver

3. Transactions

- setAutoCommit(false) -> disables auto-commit mode.
 - > Allows manual control of commit() and rollback().
- Improves performance by batching SQL statements.
- rollback() -> undoes changes made in current transaction.

4. JDBC Execution Methods

- executeQuery() -> for SELECT (returns ResultSet).
- executeUpdate() -> for INSERT/UPDATE/DELETE (returns int).
- execute() -> returns:
 - > true if it returns a ResultSet
 - > false if it returns an update count

5. Statement vs PreparedStatement vs CallableStatement

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- Statement -> Simple SQL, prone to SQL injection
- PreparedStatement -> Precompiled, parameterized, safe
- CallableStatement -> Used to call Stored Procedures
- PreparedStatement uses '?' for parameters.
- addBatch() -> used in batch processing for speed.
- PreparedStatement is compiled, stored in DB.
- Parameters are initialized during query execution.
- Best for DML: executeUpdate() with PreparedStatement.

6. ResultSet

- Default: TYPE_FORWARD_ONLY
- Scrollable & Read-Only:
 - > con.prepareStatement(sql, TYPE_SCROLL_INSENSITIVE, CONCUR_READ_ONLY);
- Methods: next(), previous(), absolute(int)
- Types:
 - > TYPE_SCROLL_INSENSITIVE, TYPE_SCROLL_SENSITIVE
- Concurrency:
 - > CONCUR_READ_ONLY, CONCUR_UPDATABLE

7. JDBC Drivers

- Type 1 -> JDBC-ODBC Bridge
- Type 2 -> Native-API Driver
- Type 3 -> Network Protocol Driver (for internet use)
- Type 4 -> Native-Protocol (Thin) Driver (most efficient and preferred)

8. JDBC Miscellaneous

- setMaxRows(int) -> limits number of rows in a query.
- SQLException -> must be handled (checked exception).
- Precompiled SQL is stored in PreparedStatement.
- static block in driver class registers it with DriverManager.