

JDBC Transaction Management Basics

By default, JDBC connections operate in **auto-commit mode**, meaning every individual SQL statement is treated as a transaction and committed immediately.

To manually control transactions, you need to:

- Disable auto-commit (`conn.setAutoCommit(false)`)
- Execute multiple SQL statements
- Commit or rollback the transaction explicitly

Steps to Manage Transactions in JDBC

```
Connection conn = null;

try {
    // 1. Obtain a connection to the database
    conn = DriverManager.getConnection(DB_URL, USER, PASS);

    // 2. Disable auto-commit to manage transactions manually
    conn.setAutoCommit(false);

    // 3. Create statements and execute SQL queries/updates
    Statement stmt = conn.createStatement();

    // Example operation 1
    stmt.executeUpdate("UPDATE accounts SET balance = balance - 100 WHERE
account_id = 1");

    // Example operation 2
    stmt.executeUpdate("UPDATE accounts SET balance = balance + 100 WHERE
account_id = 2");

    // 4. Commit the transaction after all operations succeed
    conn.commit();

} catch (SQLException e) {
    // 5. Roll back the transaction in case of an error
    if (conn != null) {
        try {
            conn.rollback();
        } catch (SQLException ex) {
            ex.printStackTrace();
        }
    }
    e.printStackTrace();
} finally {
    // 6. Restore auto-commit mode and close the connection
    if (conn != null) {
        try {
            conn.setAutoCommit(true);
            conn.close();
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
}
```

```
}  
}
```

Explanation:

- **Disable Auto-commit:**
`conn.setAutoCommit(false);`
Prevents each SQL statement from committing immediately.
- **Execute multiple SQL statements:**
Perform all your related DB operations.
- **Commit:**
`conn.commit();` saves all changes as one transaction.
- **Rollback:**
If an exception happens, `conn.rollback();` reverts all changes since the last commit.
- **Finally block:**
Ensure the connection is cleaned up and auto-commit mode is restored.