**JPA – Java Persistence API**

**What it is**: A **standard specification** (JSR 338) for ORM (Object Relational Mapping) in Java.

**What it does**: Defines how Java objects are mapped to database tables.

**What it doesn’t do**: It **doesn’t implement anything** — it’s just a set of interfaces and annotations.

**Requires**: An implementation (like Hibernate, EclipseLink, etc.)

JPA is an interface.

**Hibernate**

**What it is**: A **concrete ORM framework** and the most popular **implementation of JPA**.

**What it does**:

Manages the database connection

Maps Java classes to DB tables

Handles transactions, caching, lazy loading, etc.

Hibernate **implements JPA** and also provides additional powerful features beyond JPA.

Code:

public Integer addEmployee(Employee employee){

Session session = factory.openSession();

Transaction tx = null;

Integer employeeID = null;

try {

tx = session.beginTransaction();

employeeID = (Integer) session.save(employee);

tx.commit();

} catch (HibernateException e) {

if (tx != null) tx.rollback();

e.printStackTrace();

} finally {

session.close();

}

return employeeID;

}

manage the session and transaction manually

use SessionFactory, Transaction, etc.

More control, but **more boilerplate**

**Spring Data JPA**

**What it is**: A part of the Spring ecosystem — a **layer on top of JPA (and Hibernate)**.

**What it does**:

**Removes boilerplate code** (e.g., no need to write queries for CRUD)

Automatically creates repository implementations at runtime

Simplifies configuration

Manages transactions behind the scenes

Spring Data JPA **uses Hibernate under the hood** (by default) and provides a **super easy abstraction layer**.

Code:

public interface EmployeeRepository extends JpaRepository<Employee, Integer> {

}

@Autowired

private EmployeeRepository employeeRepository;

@Transactional

public void addEmployee(Employee employee) {

employeeRepository.save(employee);

}

No session/transaction management needed

Just call save() method

Works because Spring auto-implements the repository