# Difference between JPA, Hibernate, and Spring Data JPA

## Java Persistence API (JPA)

• JSR 338 Specification for persisting, reading and managing data from Java objects  
• Does not contain concrete implementation of the specification  
• Hibernate is one of the implementation of JPA

## Hibernate

• ORM Tool that implements JPA  
• Provides concrete implementation of JPA specification  
• Requires more boilerplate code (Session, Transaction, etc.)

## Spring Data JPA

• Does not have JPA implementation, but reduces boiler plate code  
• This is another level of abstraction over JPA implementation provider like Hibernate  
• Manages transactions automatically and provides built-in CRUD operations

## Comparison Table

|  |  |  |  |
| --- | --- | --- | --- |
| Feature | JPA | Hibernate | Spring Data JPA |
| Type | Specification (interface only) | Implementation of JPA | Abstraction on top of JPA & Hibernate |
| Boilerplate Code | Depends on implementation | More boilerplate (manual config) | Minimal boilerplate |
| Provided By | Java (JSR 338) | Hibernate.org | Spring Framework |
| Example Use | @Entity, @Id | Session, Transaction | JpaRepository, @Autowired |

## Code Comparison

### Hibernate Example

/\* Method to CREATE an employee in the database \*/  
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;  
}

### Spring Data JPA Example

// EmployeeRepository.java  
public interface EmployeeRepository extends JpaRepository<Employee, Integer> {}  
  
// EmployeeService.java  
@Autowired  
private EmployeeRepository employeeRepository;  
  
@Transactional  
public void addEmployee(Employee employee) {  
 employeeRepository.save(employee);  
}