

# Spring Data JPA in Spring Boot





# Various DAO Techniques



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- ✔ Version 1: Use EntityManager but leverage native Hibernate API



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- ✓ Version 1: Use EntityManager but leverage native Hibernate API
- ✓ Version 2: Use EntityManager and standard JPA API

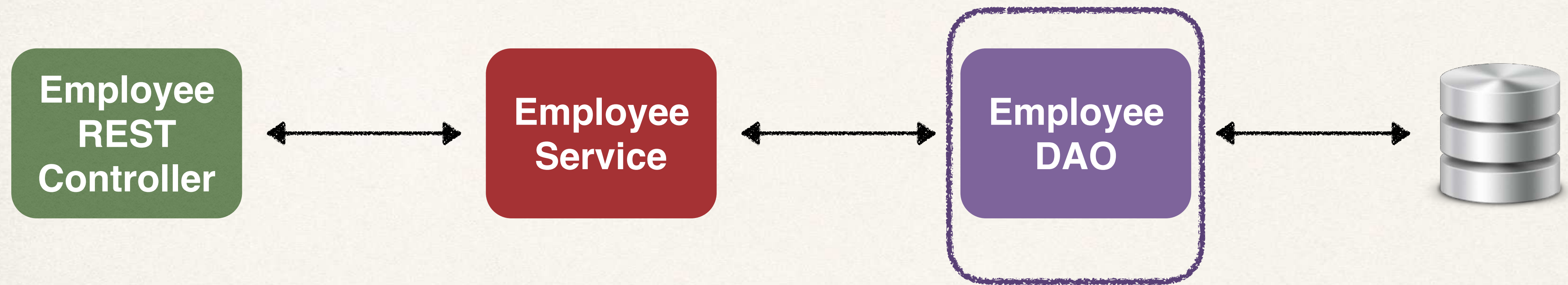


# Various DAO Techniques

- ✓ Version 1: Use EntityManager but leverage native Hibernate API
- ✓ Version 2: Use EntityManager and standard JPA API
- ✎ Version 3: Spring Data JPA

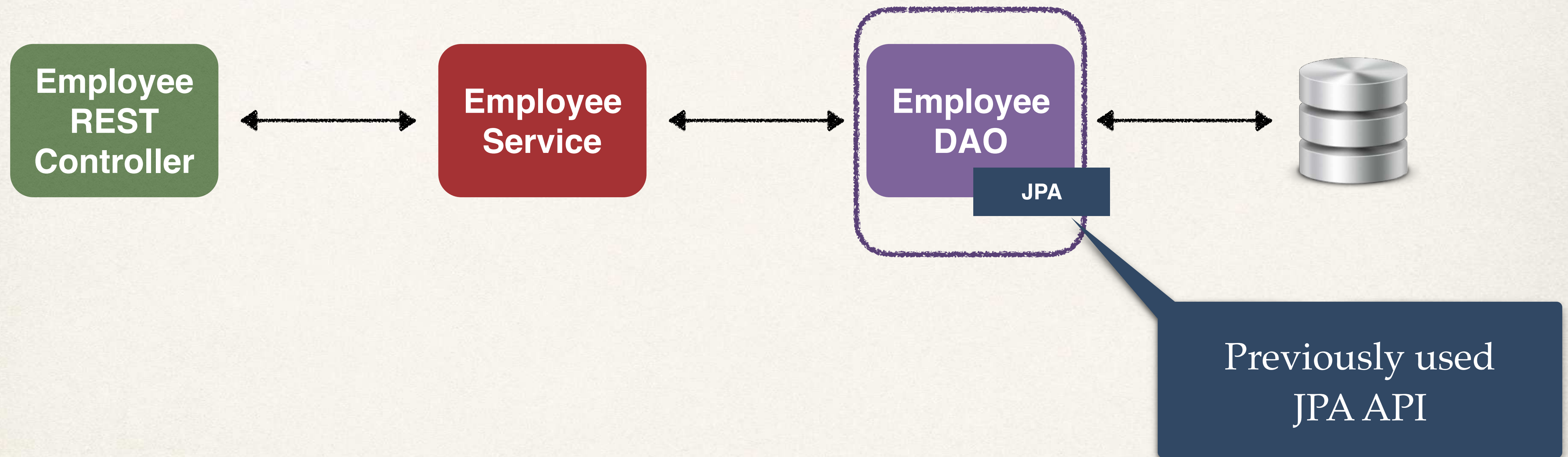


# Application Architecture



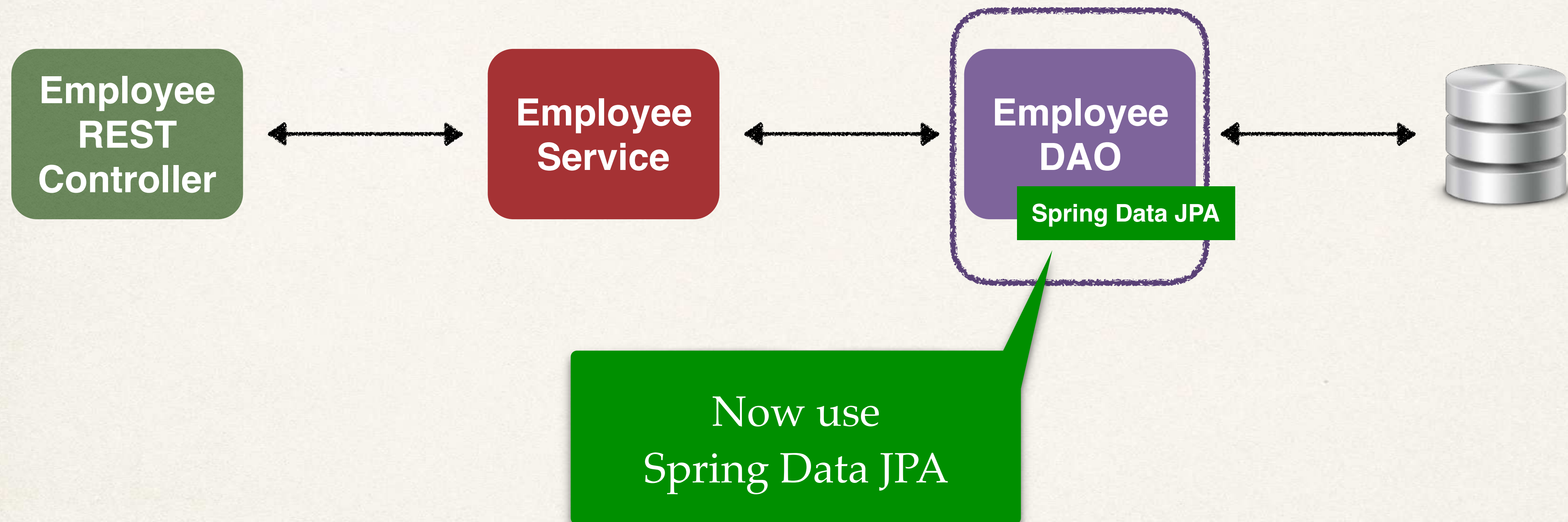


# Application Architecture





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@Repository  
public class EmployeeDAOJpaImpl implements EmployeeDAO {  
  
    private EntityManager entityManager;  
  
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- What if we need to create a DAO for another entity?
- **Customer, Student, Product, Book ...**
- Do we have to repeat all of the same code again???

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# My Wish



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- I wish we could tell Spring:



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*Create a DAO for me*



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*Plug in my entity type and primary key*



# My Wish

- I wish we could tell Spring:

*Create a DAO for me*

*Plug in my entity type and primary key*

*Give me all of the basic CRUD features for free*



# My Wish Diagram



# My Wish Diagram

`findAll()`

CRUD methods



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`findAll()`  
`findById(...)`

CRUD methods



# My Wish Diagram

`findAll()`  
`findById(...)`  
`save(...)`

**CRUD methods**



# My Wish Diagram

`findAll()`  
`findByld(...)`  
`save(...)`  
`deleteByld(...)`  
*... others ...*

**CRUD methods**



# My Wish Diagram

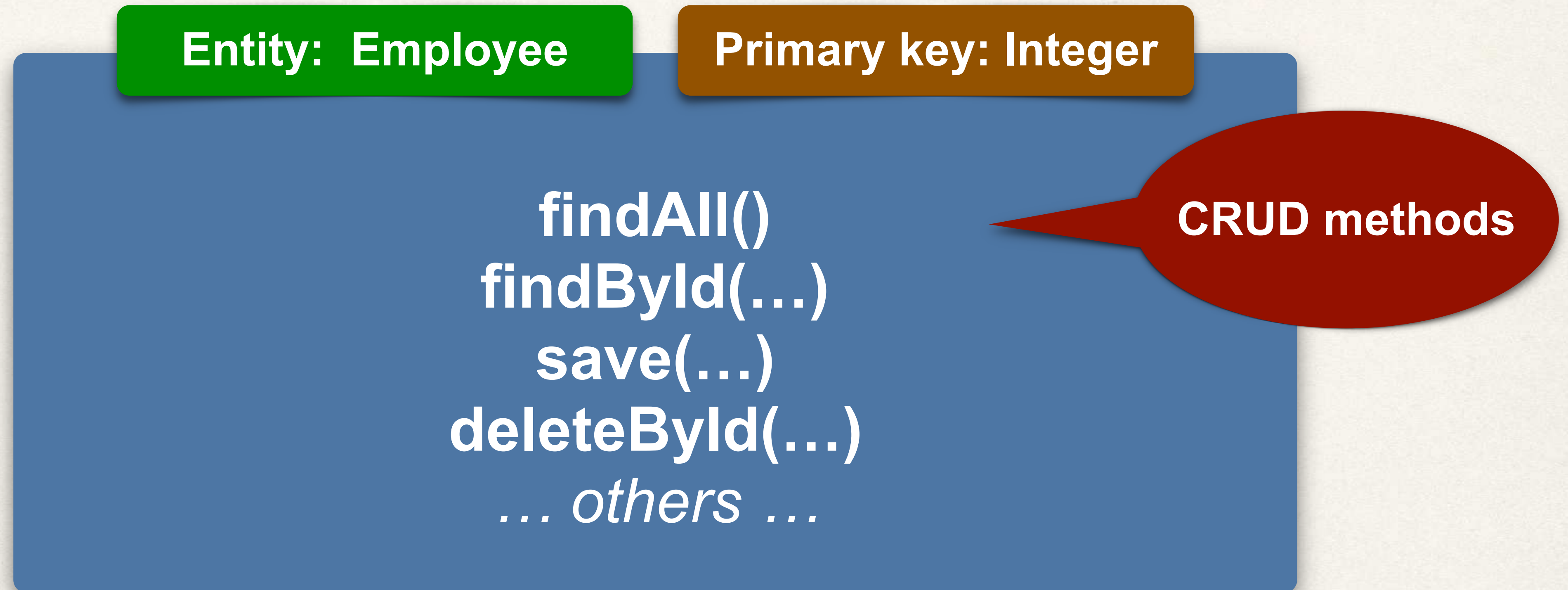
**Entity: Employee**

`findAll()`  
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`save(...)`  
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**CRUD methods**

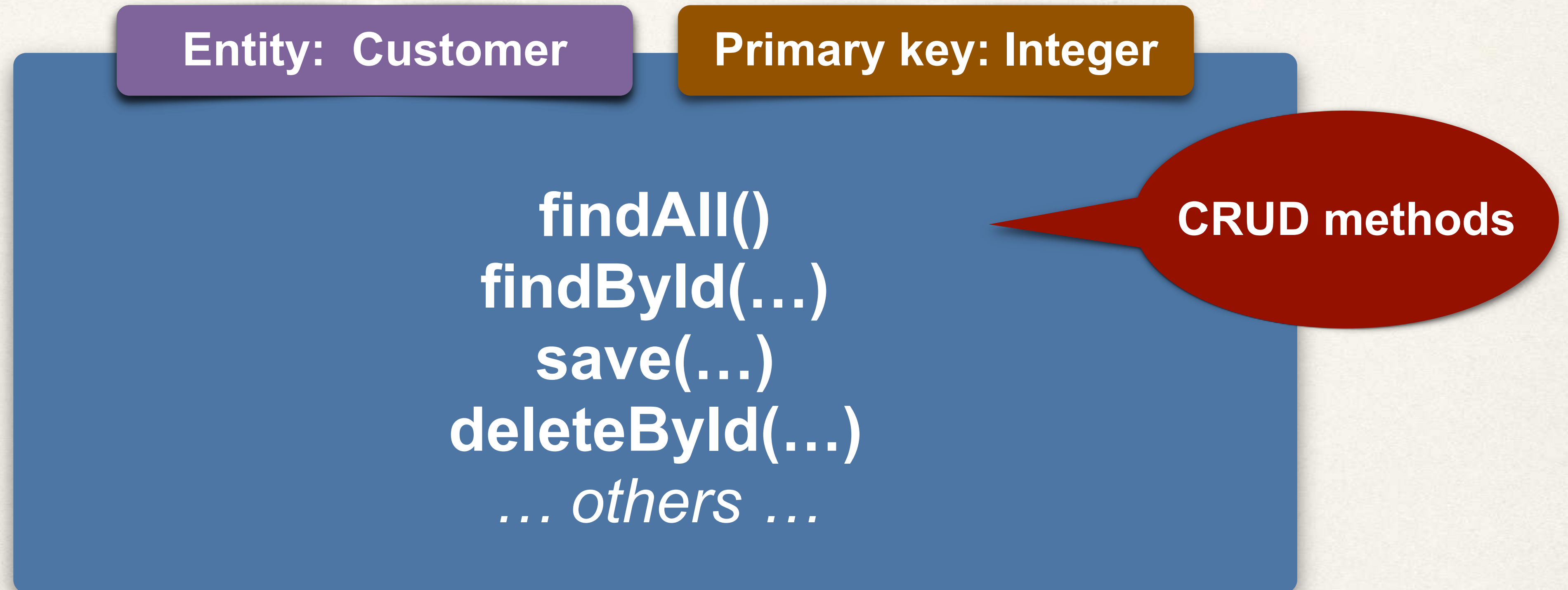


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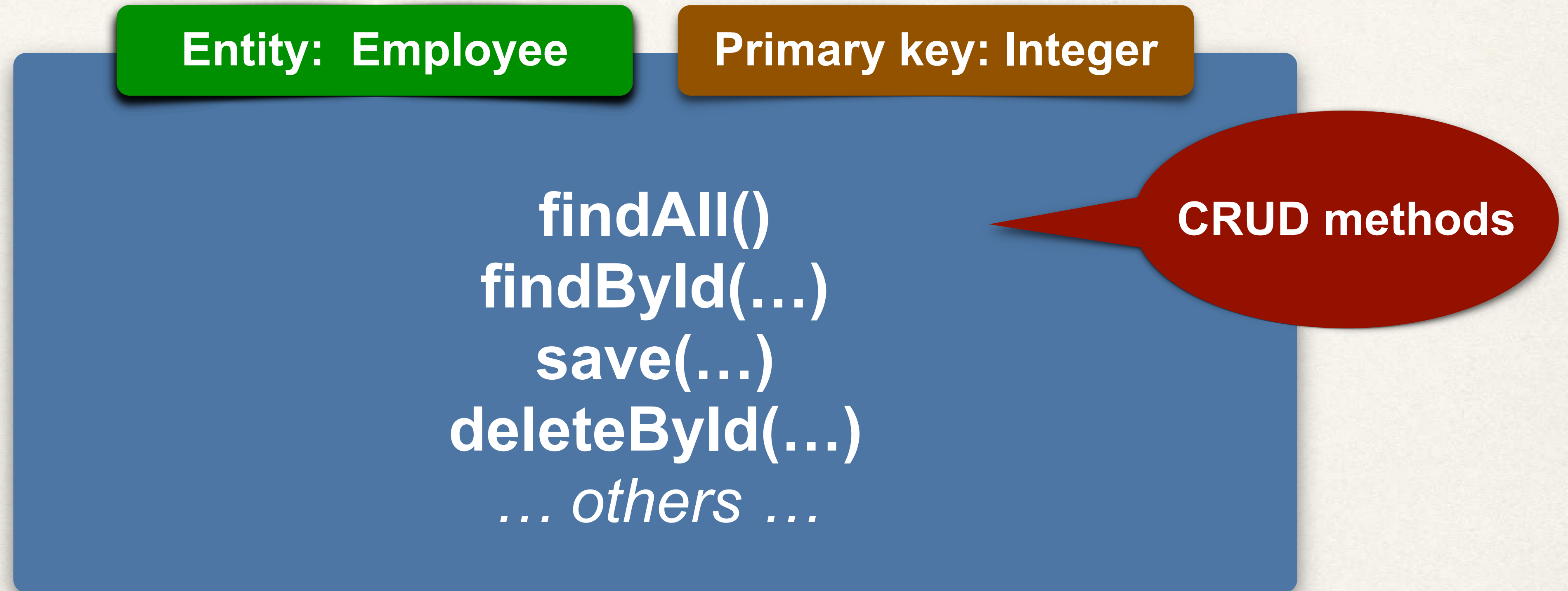


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- Helps to minimize boiler-plate DAO code ... yaaay!!!

More than 70% reduction in code ... depending on use case





# JpaRepository



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**findAll()**  
**findById(...)**



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findAll()  
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**Entity: Employee**

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**Entity: Employee**

**Primary key: Integer**

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# Development Process

**Step-By-Step**



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1. Extend **JpaRepository** interface



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No need for  
implementation class



# Step 1: Extend JpaRepository interface



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# JpaRepository Docs

- Full list of methods available ... see JavaDoc for **JpaRepository**



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Our repository



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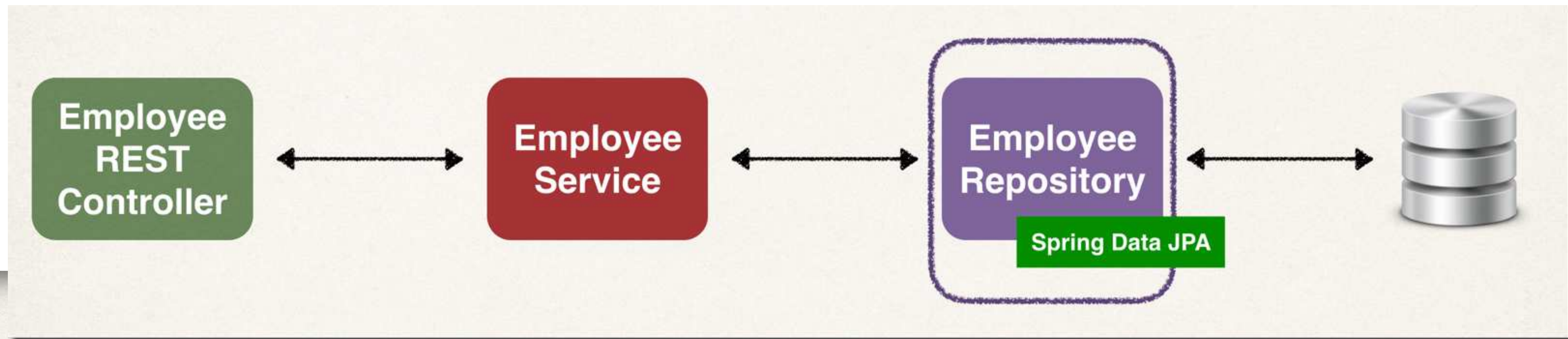
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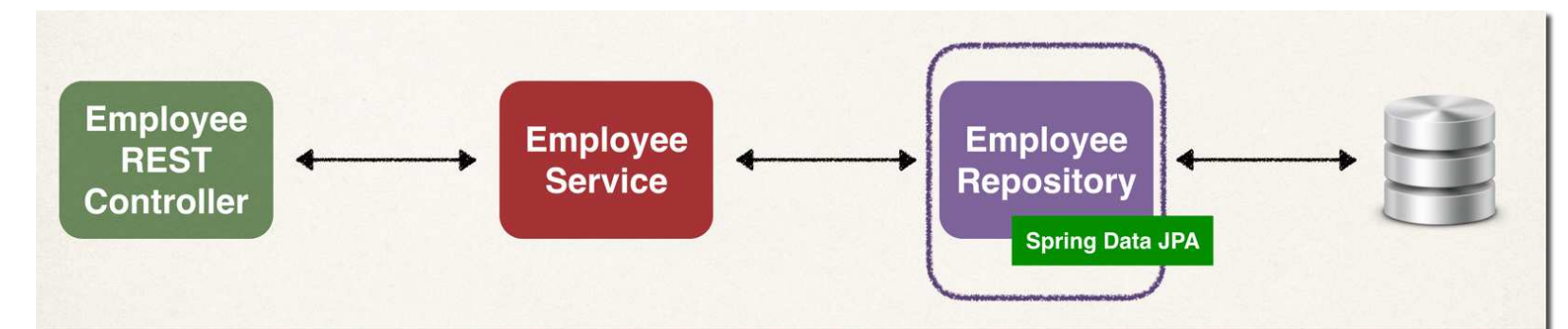
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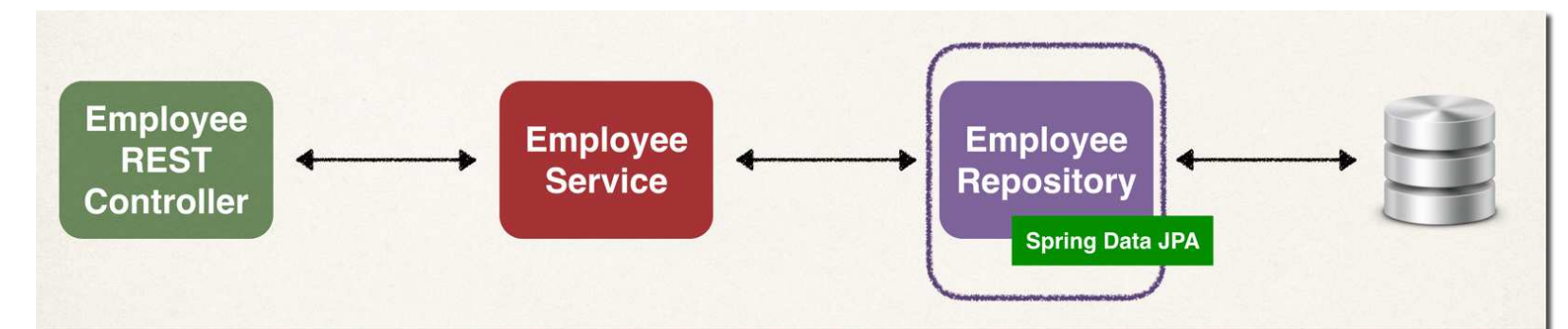
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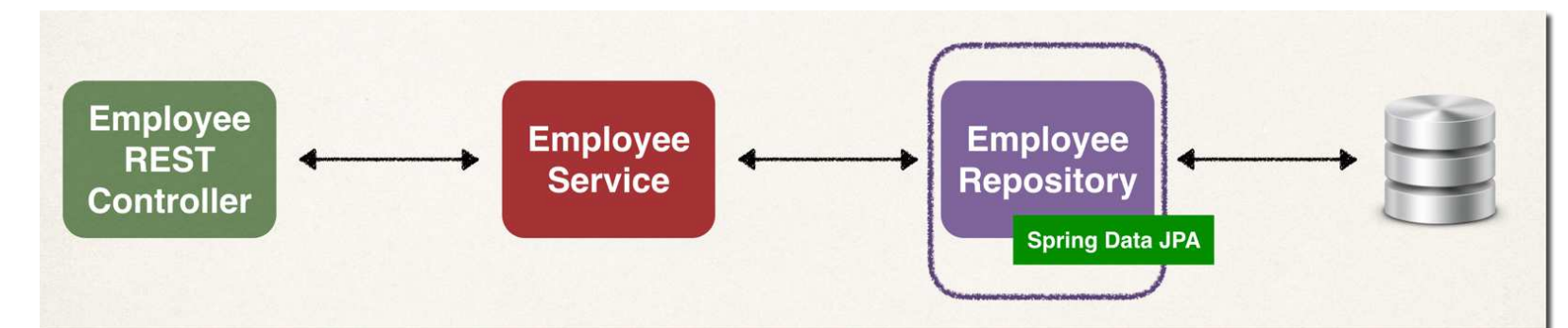
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Magic method that is available via repository





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**Before Spring Data JPA**



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```

**1 File  
3 lines of code!**



# Minimized Boilerplate Code

## Before Spring Data JPA

```
public interface EmployeeDAO {  
    public List<Employee> findAll();  
    public Employee findById(int theId);  
    public void save(Employee theEmployee);  
    public void deleteById(int theId);  
}
```

```
@Repository  
public class EmployeeDAOJpaImpl implements EmployeeDAO {  
    private EntityManager entityManager;  
  
    @Autowired  
    public EmployeeDAOJpaImpl(EntityManager theEntityManager) {  
        entityManager = theEntityManager;  
    }  
  
    @Override  
    public List<Employee> findAll() {  
        // create a query  
        TypedQuery<Employee> theQuery =  
            entityManager.createQuery("from Employee", Employee.class);  
  
        // execute query and get result list  
        List<Employee> employees = theQuery.getResultList();  
  
        // return the results  
        return employees;  
    }  
  
    @Override  
    public Employee findById(int theId) {  
        // get employee  
        Employee theEmployee =  
            entityManager.find(Employee.class, theId);  
  
        // return employee  
        return theEmployee;  
    }  
}
```

**2 Files**  
**30+ lines of code**

## After Spring Data JPA

```
public interface EmployeeRepository extends JpaRepository<Employee, Integer> {  
    // that's it ... no need to write any code LOL!  
}
```

**1 File**  
**3 lines of code!**

**No need for  
implementation class**





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## Before Spring Data JPA

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public interface EmployeeDAO {  
    public List<Employee> findAll();  
    public Employee findById(int theId);  
    public void save(Employee theEmployee);  
    public void delete(int theId);  
}
```

```
@Repository  
public class EmployeeDAOJpaImpl implements EmployeeDAO {  
    private EntityManager em;  
    @Autowired  
    public EmployeeDAOJpaImpl(EntityManager entityManager) {  
        this.em = entityManager;  
    }  
    @Override  
    public List<Employee> findAll() {  
        // create TypedQuery  
        TypedQuery<Employee> query = em.createQuery("select e from Employee e", Employee.class);  
        // execute query  
        List<Employee> results = query.getResultList();  
        return results;  
    }  
    @Override  
    public Employee findById(int theId) {  
        // get employee  
        Employee theEmployee = em.find(Employee.class, theId);  
        // return employee  
        return theEmployee;  
    }  
}
```

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30+ lines of code

## After Spring Data JPA

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public interface EmployeeRepository extends JpaRepository<Employee, Integer> {  
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# Advanced Features



# Advanced Features

- Advanced features available for



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- Advanced features available for
  - Extending and adding custom queries with JPQL



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  - Extending and adding custom queries with JPQL
  - Query Domain Specific Language (Query DSL)



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  - Query Domain Specific Language (Query DSL)
  - Defining custom methods (low-level coding)



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[www.luv2code.com/spring-data-jpa-defining-custom-queries](http://www.luv2code.com/spring-data-jpa-defining-custom-queries)