

WEEK 3

SPRING DATA JPA

Spring Data JPA - Quick Example

Output snapshots:

```
Console X
OrmLearnApplication [Java Application] C:\Program Files\Java\jre1.8.0_202\bin\javaw.exe (03-Jul-2025, 8:13:23 pm elapsed: 0:00:57) [pid: 18680]

=====
:: Spring Boot ::
(v2.7.0)

03-07-25 20:13:24.862 main INFO c.c.o.OrmLearnApplication logStarting 55 Starting OrmLearnApplication using Java 1.8.0_202 on LAPTOP-AP
03-07-25 20:13:24.865 main DEBUG c.c.o.OrmLearnApplication logStarting 56 Running with Spring Boot v2.7.0, Spring v5.3.20
03-07-25 20:13:24.866 main INFO c.c.o.OrmLearnApplication logStartupProfileInfo 634 No active profile set, falling back to 1 default profile: "def
03-07-25 20:13:25.627 main INFO toryConfigurationDelegate registerRepositoriesIn 132 Bootstrapping Spring Data JPA repositories in DEFAULT mode.
03-07-25 20:13:25.701 main INFO toryConfigurationDelegate registerRepositoriesIn 201 Finished Spring Data repository scanning in 59 ms. Found 1 JPA
03-07-25 20:13:26.622 main INFO s.b.w.e.t.TomcatWebServer initialize 108 Tomcat initialized with port(s): 9090 (http)
03-07-25 20:13:26.640 main INFO o.a.c.c.StandardService log 173 Starting service [Tomcat]
03-07-25 20:13:26.641 main INFO o.a.c.c.StandardEngine log 173 Starting Servlet engine: [Apache Tomcat/9.0.63]
03-07-25 20:13:26.807 main INFO o.a.c.c.C.[.[./] log 173 Initializing Spring embedded WebApplicationContext
03-07-25 20:13:26.807 main INFO bServerApplicationContext prepareWebApplicationContext 292 Root WebApplicationContext: initialization completed in 188
03-07-25 20:13:27.045 main INFO o.h.j.i.util.LogHelper logPersistenceUnitInformation 31 HH000204: Processing PersistenceUnitInfo [name: default]
03-07-25 20:13:27.102 main INFO org.hibernate.Version logVersion 44 HH000412: Hibernate ORM core version 5.6.9.Final
03-07-25 20:13:27.371 main INFO o.h.a.common.Version <clinit> 56 HCANN000001: Hibernate Commons Annotations {5.1.2.Final}
03-07-25 20:13:27.523 main INFO c.z.h.HikariDataSource getConnection 110 HikariPool-1 - Starting...
03-07-25 20:13:28.040 main INFO c.z.h.HikariDataSource getConnection 123 HikariPool-1 - Start completed.
03-07-25 20:13:28.062 main INFO o.h.dialect.Dialect <init> 175 HH000400: Using dialect: org.hibernate.dialect.MySQL5Dialect
03-07-25 20:13:28.761 main INFO .p.i.JtaPlatformInitiator initiateService 52 HH000490: Using JtaPlatform implementation: [org.hibernate.en
03-07-25 20:13:28.775 main INFO rEntityManagerFactoryBean buildNativeEntityManagerFactory 437 Initialized JPA EntityManagerFactory for persistence uni
03-07-25 20:13:29.229 main WARN ation$JpaWebConfiguration openEntityManagerInViewInterceptor 219 spring.jpa.open-in-view is enabled by default. Theref
03-07-25 20:13:29.609 main INFO s.b.w.e.t.TomcatWebServer start 220 Tomcat started on port(s): 9090 (http) with context path ''
03-07-25 20:13:29.622 main INFO c.c.o.OrmLearnApplication logStarted 61 Started OrmLearnApplication in 5.228 seconds (JVM running for
03-07-25 20:13:29.627 main INFO c.c.o.OrmLearnApplication testGetAllCountries 24 Inside main
03-07-25 20:13:29.628 main INFO c.c.o.OrmLearnApplication testGetAllCountries 32 Start
03-07-25 20:13:29.993 main DEBUG org.hibernate.SQL logStatement 144 select country0_.co_code as co_code1_0_, country0_.co_name as
03-07-25 20:13:30.009 main TRACE o.h.t.d.s.BasicExtractor extract 60 extracted value ([co_code1_0_] : [VARCHAR]) - [IN]
03-07-25 20:13:30.020 main TRACE o.h.t.d.s.BasicExtractor extract 60 extracted value ([co_name2_0_] : [VARCHAR]) - [India]
03-07-25 20:13:30.023 main TRACE o.h.t.d.s.BasicExtractor extract 60 extracted value ([co_code1_0_] : [VARCHAR]) - [US]
03-07-25 20:13:30.026 main TRACE o.h.t.d.s.BasicExtractor extract 60 extracted value ([co_name2_0_] : [VARCHAR]) - [United States o
03-07-25 20:13:30.062 main DEBUG c.c.o.OrmLearnApplication testGetAllCountries 34 countries=[Country [code=IN, name=India], Country [code=US, na
03-07-25 20:13:30.062 main INFO c.c.o.OrmLearnApplication testGetAllCountries 35 End
```

```
File Edit Navigate Search Project Run Window Help
C:\WINDOWS\system32\cmd.exe - min spring-bootrun x C:\WINDOWS\system32\cmd.exe
using Java 21.0.6 on LAPTOP-APTNIITHN with PID 11704 (D:\Dhaarini\spring_jpa\orm-learn\target\classes started by Lenovo in D:\Dhaarini\s
pring_jpa\orm-learn)
03-07-25 20:15:24.030 main DEBUG c.c.o.OrmLearnApplication logStarting 56 Running with Spring Boot v2.7
.0, Spring v5.3.20
03-07-25 20:15:24.031 main INFO c.c.o.OrmLearnApplication logStartupProfileInfo 634 No active profile set, fallin
g back to 1 default profile: "default"
03-07-25 20:15:24.648 main INFO toryConfigurationDelegate registerRepositoriesIn 132 Bootstrapping Spring Data JPA
repositories in DEFAULT mode.
03-07-25 20:15:24.695 main INFO toryConfigurationDelegate registerRepositoriesIn 201 Finished Spring Data reposito
ry scanning in 38 ms. Found 1 JPA repository interfaces.
03-07-25 20:15:25.266 main INFO s.b.w.e.t.TomcatWebServer initialize 108 Tomcat initialized with port(s)
: 9090 (http)
03-07-25 20:15:25.275 main INFO o.a.c.c.StandardService log 173 Starting service [Tomcat]
03-07-25 20:15:25.277 main INFO o.a.c.c.core.StandardEngine log 173 Starting Servlet engine: [Apa
che Tomcat/9.0.63]
03-07-25 20:15:25.392 main INFO o.a.c.c.C.[.[/]] log 173 Initializing Spring embedded
WebApplicationContext
03-07-25 20:15:25.392 main INFO bServerApplicationContext prepareWebApplicationContext 292 Root WebApplicationContext
: initialization completed in 1294 ms
03-07-25 20:15:25.568 main INFO o.h.j.i.util.LogHelper logPersistenceUnitInformation 31 HHH000204: Processing Per
sistenceUnit
03-07-25 20:15:26.864 main INFO rEntityManagerFactoryBean buildNativeEntityManagerFactory 437 Initialized JPA EntityManagerFactory for persistence unit
'default'
03-07-25 20:15:27.158 main WARN ation$JpaWebConfiguration openEntityManagerInViewInterceptor 219 spring.jpa.open-in-view is enabled by default. Therefor
e, database queries may be performed during view rendering. Explicitly configure spring.jpa.open-in-view to disable this warning
03-07-25 20:15:27.492 main INFO s.b.w.e.t.TomcatWebServer start 220 Tomcat started on port(s): 9090 (http) with context path ''
03-07-25 20:15:27.504 main INFO c.c.o.OrmLearnApplication logStarted 61 Started OrmLearnApplication in 3.883 seconds (JVM running for 4.
338)
03-07-25 20:15:27.507 main INFO c.c.o.OrmLearnApplication main 24 Inside main
03-07-25 20:15:27.508 main INFO c.c.o.OrmLearnApplication testGetAllCountries 32 Start
03-07-25 20:15:27.653 main DEBUG org.hibernate.SQL logStatement 144 select country0_.co_code as co_code1_0_, country0_.co_name as co
_name2_0_ from country country0_
03-07-25 20:15:27.661 main TRACE o.h.t.d.s.BasicExtractor extract 60 extracted value ([co_code1_0_] : [VARCHAR]) - [IN]
03-07-25 20:15:27.665 main TRACE o.h.t.d.s.BasicExtractor extract 60 extracted value ([co_name2_0_] : [VARCHAR]) - [India]
03-07-25 20:15:27.666 main TRACE o.h.t.d.s.BasicExtractor extract 60 extracted value ([co_code1_0_] : [VARCHAR]) - [US]
03-07-25 20:15:27.667 main TRACE o.h.t.d.s.BasicExtractor extract 60 extracted value ([co_name2_0_] : [VARCHAR]) - [United States of
America]
03-07-25 20:15:27.685 main DEBUG c.c.o.OrmLearnApplication testGetAllCountries 34 countries=[Country [code=IN, name=India], Country [code=US, name=
```

Query 1: student_details SQL File 4 SQL File 5 SQL File 6 SQL File 7 SQL File 8

Limit to 1000 rows

```
2 • create database employee
3 ✖ use ormlearn;
4 • use employee
5
6 ✖ create table country(
7     co_code varchar(2) primary key,
8     co_name varchar(50)
9 );
10 • create table employee(
11     id INT PRIMARY KEY AUTO_INCREMENT,
12     name varchar(50)
13 );
14 • drop table employee
15 ✖ select * from country
16 insert into country values ('IN', 'India');
17 • insert into country values ('US', 'United States of America');
18
```

Result Grid

	co_code	co_name
▶	IN	India
	US	United States of America
•	NULL	NULL

Hands on 4

Difference between JPA, Hibernate and Spring Data JPA

```
File Edit Source Refactor Navigate Search Project Run Window Help
<terminated> JpademoApplication [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (03-Jul-2025, 10:06:06 pm - 10:06:11 pm elapsed: 0:00:05.099) [pid: 16496]

=====
:: Spring Boot ::
(v2.7.0)

2025-07-03 22:06:08.302 INFO 16496 --- [main] com.examples.jpdemo.JpademoApplication : Starting JpademoApplication using Java 21.0.6 on LAPTOP-APTNIITHN wi
2025-07-03 22:06:08.304 INFO 16496 --- [main] com.examples.jpdemo.JpademoApplication : No active profile set, falling back to 1 default profile: "default"
2025-07-03 22:06:08.904 INFO 16496 --- [main] .s.d.r.c.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories in DEFAULT mode.
2025-07-03 22:06:08.973 INFO 16496 --- [main] .s.d.r.c.RepositoryConfigurationDelegate : Finished Spring Data repository scanning in 60 ms. Found 1 JPA repo
2025-07-03 22:06:09.509 INFO 16496 --- [main] o.hibernate.jpa.internal.util.LogHelper : HHH0000284: Processing PersistenceUnitInfo [name: default]
2025-07-03 22:06:09.586 INFO 16496 --- [main] org.hibernate.Version : HHH0000412: Hibernate ORM core version 5.6.9.Final
2025-07-03 22:06:09.794 INFO 16496 --- [main] o.hibernate.annotations.common.Version : HCANN000001: Hibernate Commons Annotations {5.1.2.Final}
2025-07-03 22:06:09.950 INFO 16496 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Starting...
2025-07-03 22:06:10.376 INFO 16496 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Start completed.
2025-07-03 22:06:10.393 INFO 16496 --- [main] org.hibernate.dialect.Dialect : HHH0000400: Using dialect: org.hibernate.dialect.MySQL5Dialect
2025-07-03 22:06:11.068 INFO 16496 --- [main] o.h.e.t.j.p.i.JtaPlatformInitiator : HHH0000490: Using JtaPlatform implementation: [org.hibernate.engine.
2025-07-03 22:06:11.085 INFO 16496 --- [main] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2025-07-03 22:06:11.623 INFO 16496 --- [main] com.examples.jpdemo.JpademoApplication : Started JpademoApplication in 3.715 seconds (JVM running for 4.132)

Hibernate: insert into employee (name) values (?)
Hibernate: select employee0_.id as id1_0_, employee0_.name as name2_0_ from employee employee0_
Employee(id=1, name='John Doe')
Employee(id=2, name='John Doe')
2025-07-03 22:06:11.844 INFO 16496 --- [ionShutdownHook] j.LocalContainerEntityManagerFactoryBean : Closing JPA EntityManagerFactory for persistence unit 'default'
2025-07-03 22:06:11.847 INFO 16496 --- [ionShutdownHook] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown initiated...
2025-07-03 22:06:11.862 INFO 16496 --- [ionShutdownHook] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown completed.
```

Query 1 student_details SQL File 4* SQL File 5* SQL File 6* SQL File 7* SQL File 8* SQL

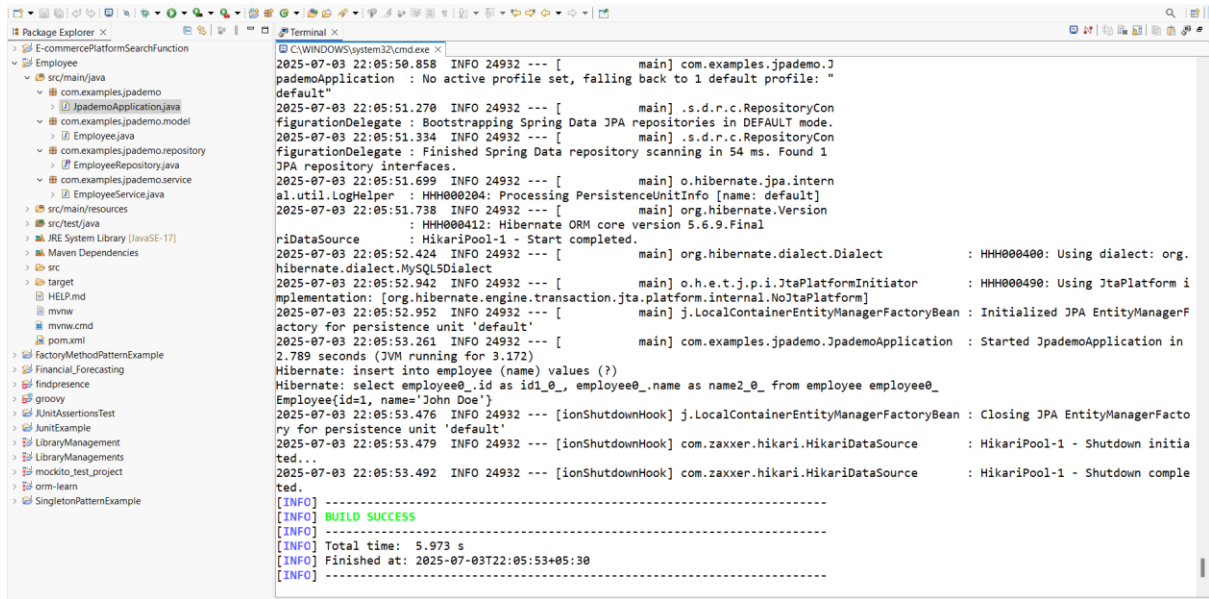
Limit to 1000 rows

```
1 • create schema ormlearn;
2 • create database employee
3 ✖ use ormlearn;
4 • use employee
5
6 ✖ create table country(
7     co_code varchar(2) primary key,
8     co_name varchar(50)
9 );
10 • create table employee(
11     id INT PRIMARY KEY AUTO_INCREMENT,
12     name varchar(50)
13 );
14 • drop table employee
15 ✖ select * from country
16 select * from employee
17 insert into country values ('IN', 'India');
18 • insert into country values ('US', 'United States of America');
```

Result Grid

	id	name
▶	1	John Doe
	2	John Doe
	3	John
*	NULL	NULL

employee 3



The screenshot displays an IDE interface with a Package Explorer on the left and a Terminal window on the right. The Package Explorer shows a project named 'Employee' with a source directory 'src/main/java' containing a package 'com.examples.jpdemo'. The package contains files 'JpdemoApplication.java', 'Employee.java', 'EmployeeRepository.java', and 'EmployeeService.java'. The Terminal window shows the output of a Maven build, including logs for Spring Data JPA repository scanning, Hibernate ORM core version 5.6.9.Final, and the successful completion of the build.

```
2025-07-03 22:05:50.858 INFO 24932 --- [main] com.examples.jpdemo.JpdemoApplication : No active profile set, falling back to 1 default profile: "default"
2025-07-03 22:05:51.270 INFO 24932 --- [main] .s.d.r.c.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories in DEFAULT mode.
2025-07-03 22:05:51.334 INFO 24932 --- [main] .s.d.r.c.RepositoryConfigurationDelegate : Finished Spring Data repository scanning in 54 ms. Found 1 JPA repository interfaces.
2025-07-03 22:05:51.699 INFO 24932 --- [main] o.hibernate.jpa.internal.util.LogHelper : HHH000204: Processing PersistenceUnitInfo [name: default]
2025-07-03 22:05:51.738 INFO 24932 --- [main] org.hibernate.Version : HHH000412: Hibernate ORM core version 5.6.9.Final
2025-07-03 22:05:52.424 INFO 24932 --- [main] org.hibernate.dialect.Dialect : HHH000400: Using dialect: org.hibernate.dialect.MySQL5Dialect
2025-07-03 22:05:52.942 INFO 24932 --- [main] o.h.e.t.j.p.i.JtaPlatformInitiator : HHH000490: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]
2025-07-03 22:05:52.952 INFO 24932 --- [main] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2025-07-03 22:05:53.261 INFO 24932 --- [main] com.examples.jpdemo.JpdemoApplication : Started JpdemoApplication in 2.789 seconds (JVM running for 3.172)
Hibernate: insert into employee (name) values (?)
Hibernate: select employee0_.id as id1_0_, employee0_.name as name2_0_ from employee employee0_
Employee{id=1, name='John Doe'}
2025-07-03 22:05:53.476 INFO 24932 --- [ionShutdownHook] j.LocalContainerEntityManagerFactoryBean : Closing JPA EntityManagerFactory for persistence unit 'default'
2025-07-03 22:05:53.479 INFO 24932 --- [ionShutdownHook] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown initiated...
2025-07-03 22:05:53.492 INFO 24932 --- [ionShutdownHook] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown completed.
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 5.973 s
[INFO] Finished at: 2025-07-03T22:05:53+05:30
[INFO] -----
```