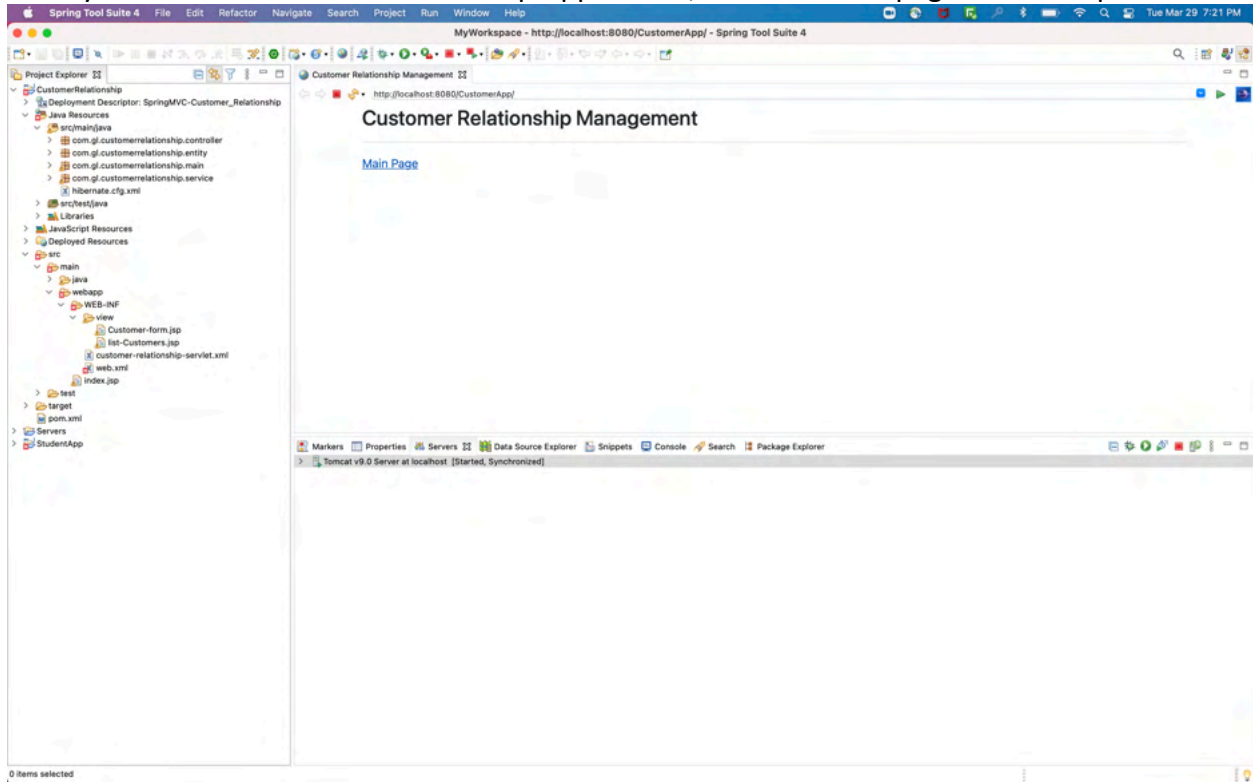
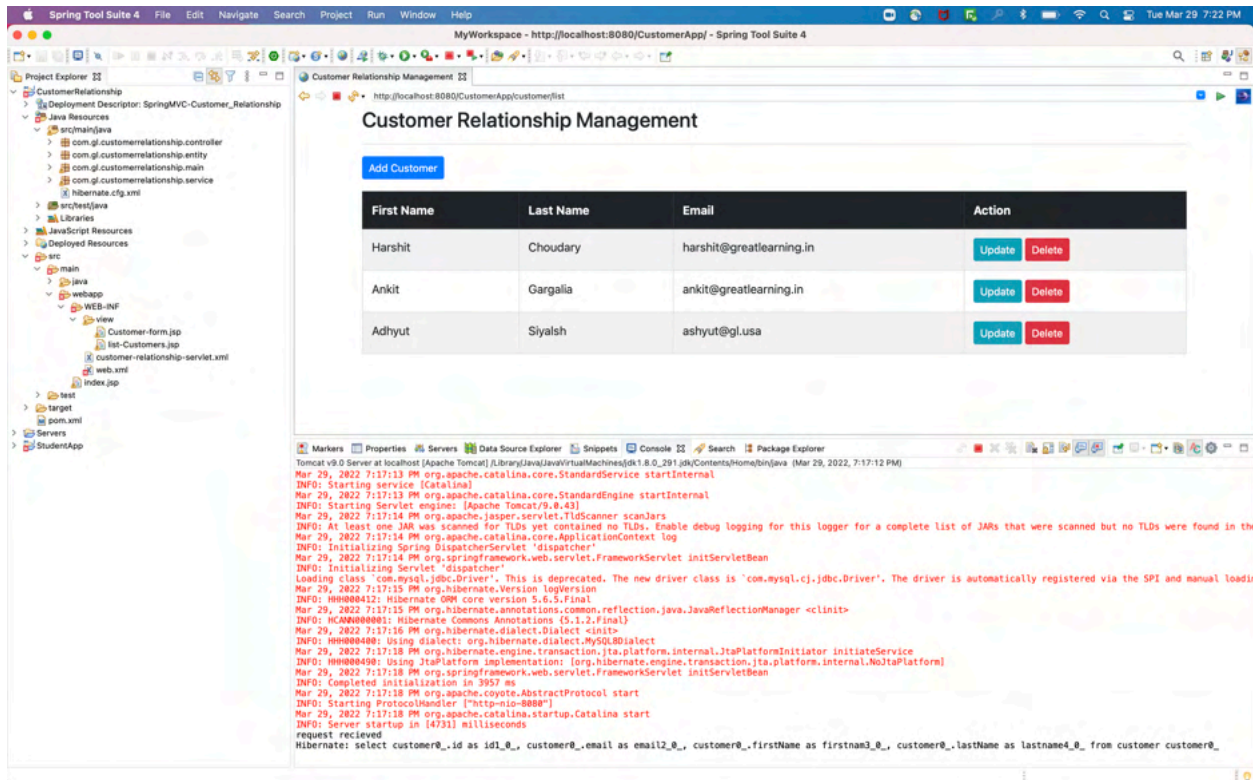


Once you run the Customer Relationship Application, this is the first page it shows up.



When you click on Main Page, it brings the home page listing the customer details



The DB has the same customer details as shown below.

The screenshot shows a database management interface with a SQL editor and a results grid. The SQL editor contains the following code:

```
1 • create schema customer;
2
3 • use customer;
4
5 • create table customer(
6   'ID' int primary key auto_increment,
7   'FirstName' varchar(100) ,
8   'LastName' varchar(100),
9   'Email' varchar(100)
10 );
11
12
13
14 • insert into 'customer'(FirstName,LastName,Email) values("Harshit","Choudary","harshit@greatlearning.in");
15 • insert into 'customer'(FirstName,LastName,Email) values("Ankit","Garg","ankit@greatlearning.in");
16
17 • select * from customer;
18
19
```

The results grid displays the following data:

ID	FirstName	LastName	Email
1	Harshit	Choudary	harshit@greatlearning.in
2	Ankit	Garg	ankit@greatlearning.in
4	Adhyut	Siyalsh	adhyut@glg.usa

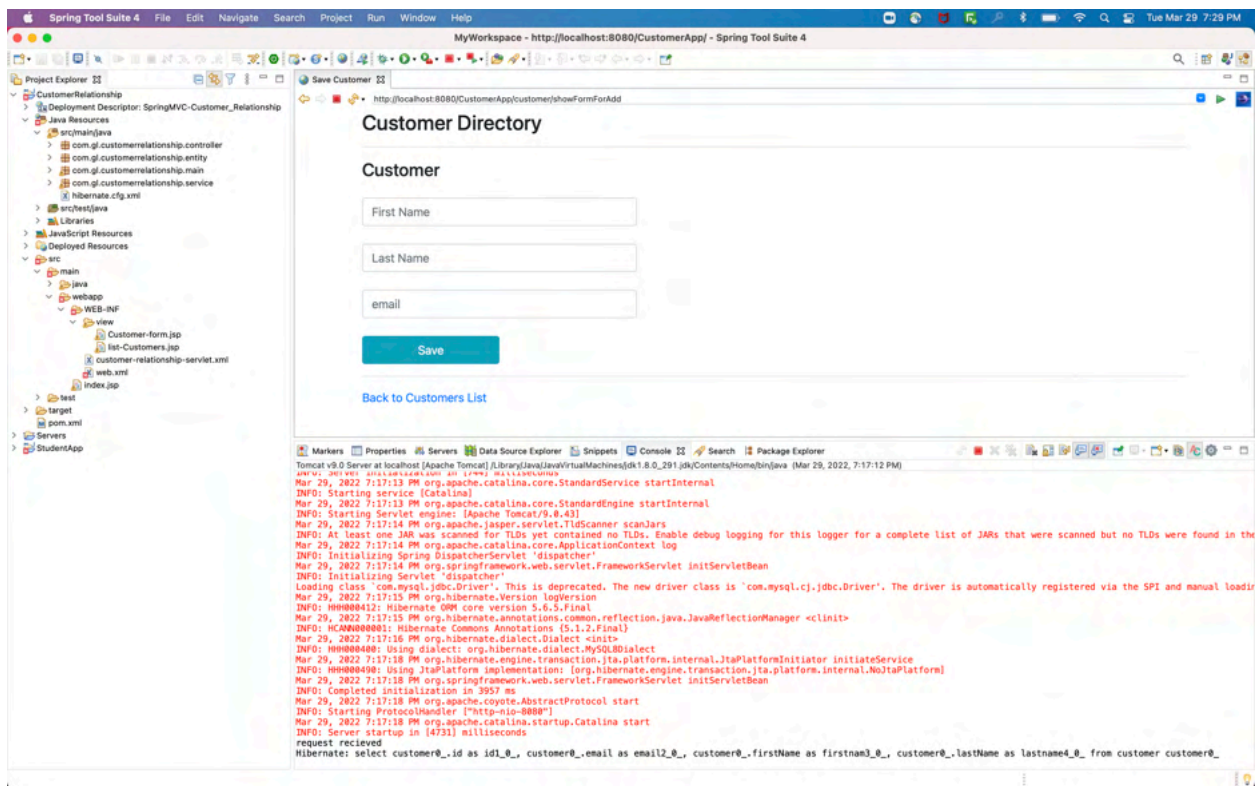
The bottom section shows the Action Output:

Time	Action	Response	Duration / Fetch Time
19-24-52	use customer	0 row(s) affected	0.00016 sec
19-24-59	select * from customer LIMIT 0, 1000	3 row(s) returned	0.00042 sec / 0.000...

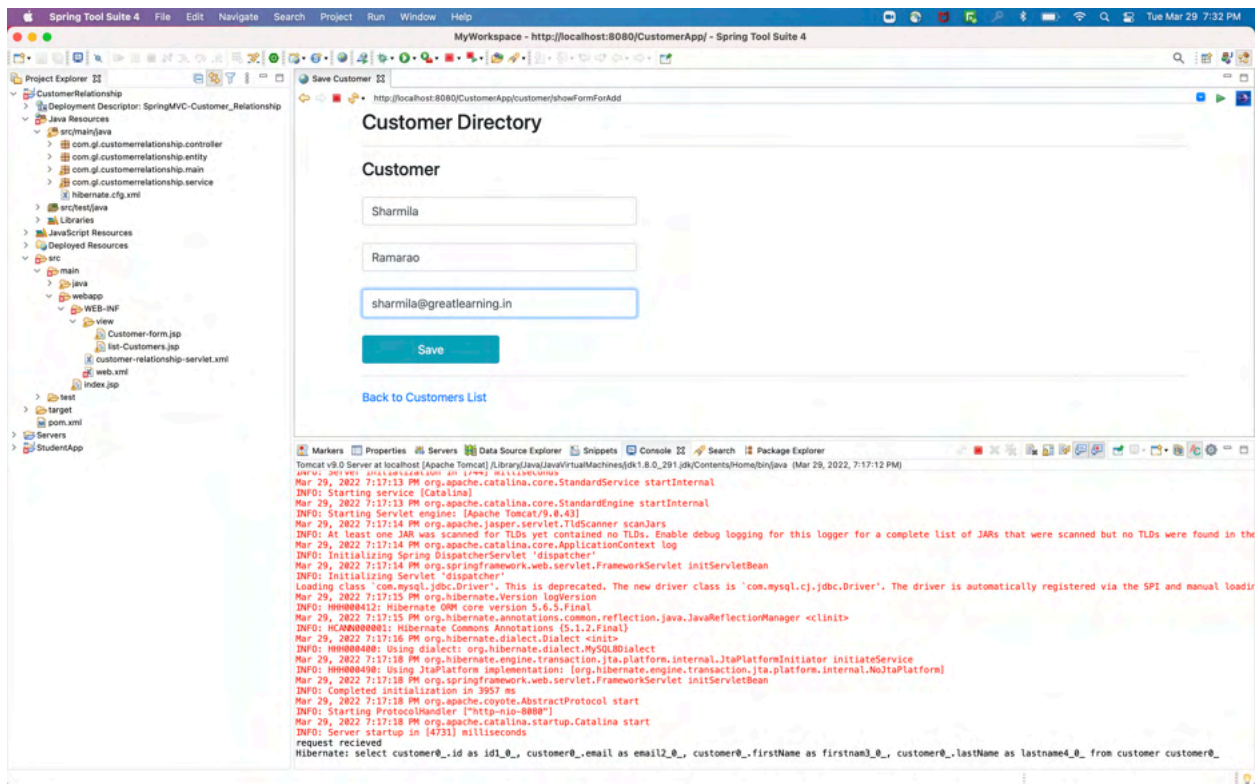
CRUD Operations

Insert

When you click on Add Customer, please find below the form it takes to enter the details.



After entering the details, the user clicks on save.



Once we save, we can see the customer got added to the list.

Customer Relationship Management

[Add Customer](#)

First Name	Last Name	Email	Action
Harshit	Choudary	harshit@greatlearning.in	Update Delete
Ankit	Gargalia	ankit@greatlearning.in	Update Delete
Adhyut	Siyalsh	ashyut@gl.usa	Update Delete
Sharmila	Ramarao	sharmila@greatlearning.in	Update Delete

Console

```
Tomcat v9.0 Server at localhost [Apache Tomcat] /Library/Java/JavaVirtualMachines/jdk1.8.0_291.jdk/Contents/Home/bin/java (Mar 29, 2022, 7:17:12 PM)
Mar 29, 2022 7:17:14 PM org.apache.jasper.servlet.TldScanner scanJars
INFO: At least one JAR was scanned for TLDs yet contained no TLDs. Enable debug logging for this logger for a complete list of JARs that were scanned but no TLDs were found in the
Mar 29, 2022 7:17:14 PM org.apache.catalina.core.ApplicationContext log
INFO: Initializing Spring DispatcherServlet 'dispatcher'
Mar 29, 2022 7:17:14 PM org.springframework.web.servlet.FrameworkServlet initServletBean
INFO: Initializing Servlet 'dispatcher'
Loading class 'com.mysql.jdbc.Driver'. This is deprecated. The new driver class is 'com.mysql.cj.jdbc.Driver'. The driver is automatically registered via the SPI and manual loadin
Mar 29, 2022 7:17:15 PM org.hibernate.Version logVersion
INFO: HH0000412: Hibernate ORM core version 5.6.5.Final
Mar 29, 2022 7:17:15 PM org.hibernate.annotations.common.reflection.java.JavaReflectionManager <init>
INFO: HH0000401: Hibernate Commons Annotations (5.1.2.Final)
Mar 29, 2022 7:17:16 PM org.hibernate.dialect.Dialect <init>
INFO: HH0000406: Using dialect: org.hibernate.dialect.MySQLDialect
Mar 29, 2022 7:17:18 PM org.hibernate.engine.transaction.jta.platform.internal.JtaPlatformInitiator initiateService
INFO: HH0000498: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]
Mar 29, 2022 7:17:18 PM org.springframework.web.servlet.FrameworkServlet initServletBean
INFO: Completed initialization in 3957 ms
Mar 29, 2022 7:17:18 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler ["http-nio-8080"]
Mar 29, 2022 7:17:18 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in [4731] milliseconds
Hibernate: select customer0_id as id1_0_, customer0_email as email2_0_, customer0_firstName as firstName4_0_, customer0_lastName as lastName4_0_ from customer customer0_
0
Hibernate: insert into customer (email, firstName, lastName) values (?, ?, ?)
request received
Hibernate: select customer0_id as id1_0_, customer0_email as email2_0_, customer0_firstName as firstName4_0_, customer0_lastName as lastName4_0_ from customer customer0_
request received
```

SQL Script:

```
1 create schema customer;
2
3 use customer;
4
5 create table customer(
6 'ID' int primary key auto_increment,
7 'FirstName' varchar(100),
8 'LastName' varchar(100),
9 'Email' varchar(100)
10 );
11
12
13
14 insert into 'customer' (FirstName,LastName,Email) values("Harshit","Choudary","harshit@greatlearning.in");
15 insert into 'customer' (FirstName,LastName,Email) values("Ankit","Garg","ankit@greatlearning.in");
16
17 select * from customer;
18
19
20
```

Result Grid:

ID	FirstName	LastName	Email
1	Harshit	Choudary	harshit@greatlearning.in
2	Ankit	Gargalia	ankit@greatlearning.in
4	Adhyut	Siyalsh	ashyut@gl.usa
6	Sharmila	Ramarao	sharmila@greatlearning.in

Action Output:

Time	Action	Response	Duration / Fetch Time
19:24:52	use customer	0 row(s) affected	0.00016 sec
19:24:59	select * from customer LIMIT 0, 1000	3 row(s) returned	0.00042 sec / 0.0000...
19:33:13	select * from customer LIMIT 0, 1000	4 row(s) returned	0.00031 sec / 0.0000...

Update

When we click on Update , the prepopulated data will be present in the form.

The screenshot shows the Spring Tool Suite 4 interface. The browser window displays the 'Customer Directory' page. The form for updating a customer is prepopulated with the following data:

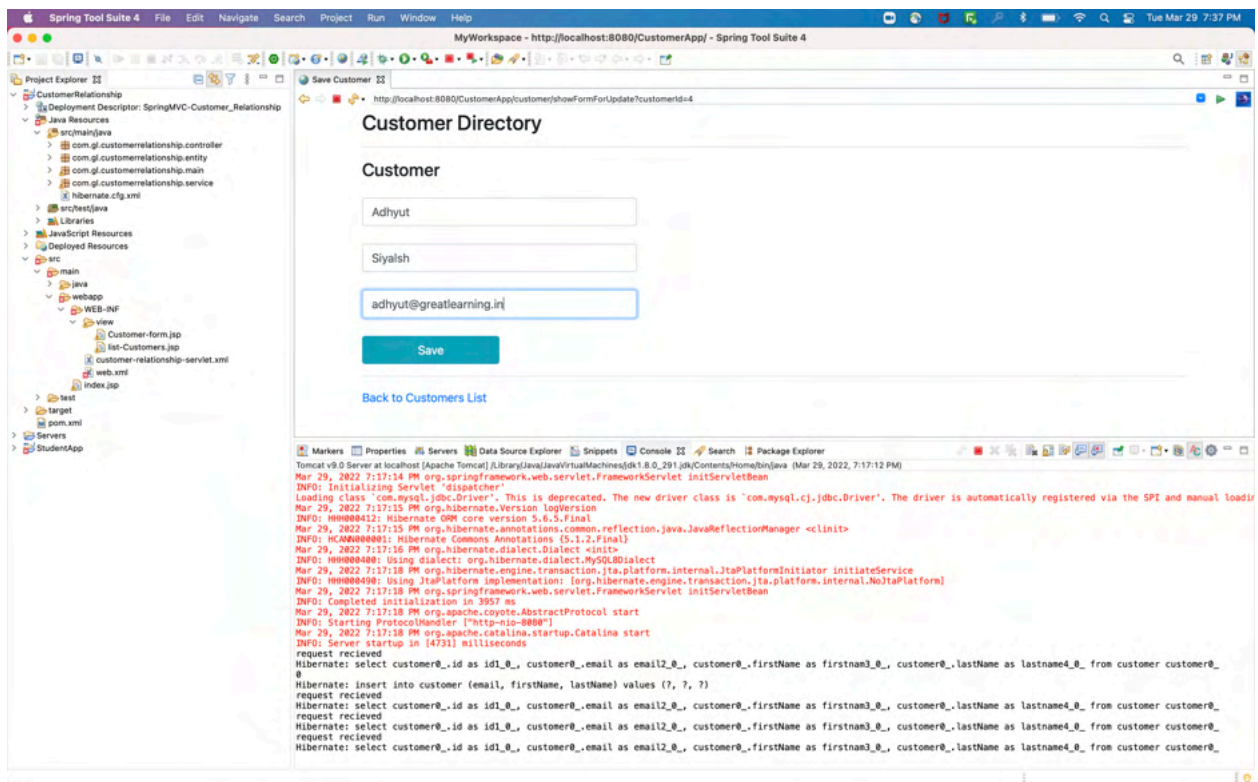
- Customer: Adhyut
- Customer: Siyalsh
- Customer: ashmyut@gl.usa

A 'Save' button is located below the form. Below the form is a link 'Back to Customers List'.

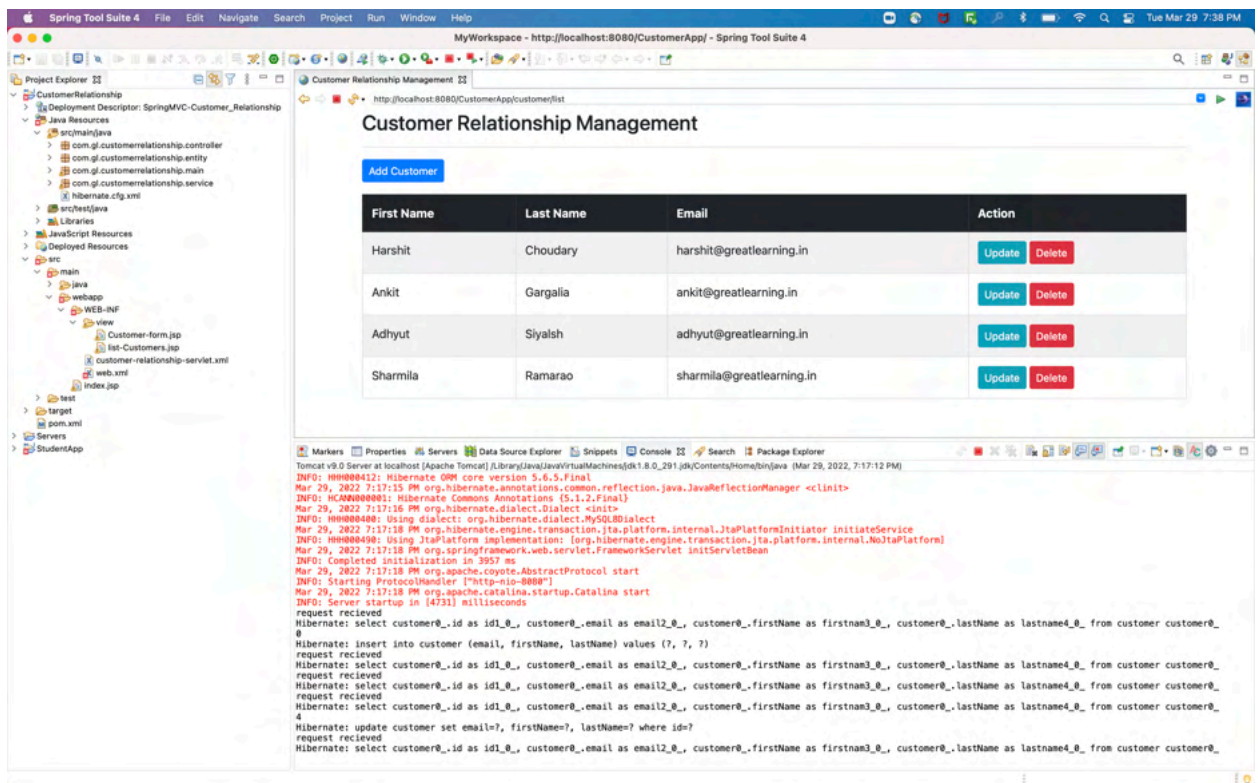
The console shows the following logs:

```
Mar 29, 2022 7:17:14 PM org.springframework.web.servlet.FrameworkServlet initServletBean
INFO: Initializing Servlet 'dispatcher'
Loading class 'com.mysql.jdbc.Driver'. This is deprecated. The new driver class is 'com.mysql.cj.jdbc.Driver'. The driver is automatically registered via the SPI and manual loadin
Mar 29, 2022 7:17:15 PM org.hibernate.Version logVersion
INFO: HHH0000412: Hibernate ORM core version 5.6.5.Final
Mar 29, 2022 7:17:15 PM org.hibernate.annotations.common.reflection.java.JavaReflectionManager <clinit>
INFO: HCAN0000001: Hibernate Commons Annotations (5.1.2.Final)
Mar 29, 2022 7:17:16 PM org.hibernate.dialect.Dialect <init>
INFO: HHH0000408: Using dialect: org.hibernate.dialect.MySQLDialect
Mar 29, 2022 7:17:18 PM org.hibernate.engine.transaction.jta.platform.internal.JtaPlatformInitiator initiateService
INFO: HHH0000408: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]
Mar 29, 2022 7:17:18 PM org.springframework.web.servlet.FrameworkServlet initServletBean
INFO: Completed initialization in 3957 ms
Mar 29, 2022 7:17:18 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler ["http-nio-8080"]
Mar 29, 2022 7:17:18 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in [4731] milliseconds
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
where customer0_.id=7
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
where customer0_.id=7
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
where customer0_.id=7
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
where customer0_.id=7
```

Updated the email ID as shown below and click on save.



The customer details got updated in the UI as well as in the DB.



Local instance 3306

Administration Schemas GL SQL lms.sql customer*

Schemas

- customer
 - Tables
 - Views
 - Stored Procedures
 - Functions
- eCommerce_DBMS
- employee_DBMS
- hibernate_crud
- lms
- ordergl
- sys
- travel_DBMS

```

1 • create schema customer;
2
3 • use customer;
4
5 • create table customer(
6   'ID' int primary key auto_increment,
7   'FirstName' varchar(100),
8   'LastName' varchar(100),
9   'Email' varchar(100)
10 );
11
12
13
14 • insert into 'customer' (FirstName, LastName, Email) values ("Harshit", "Choudary", "harshit@greatlearning.in");
15 • insert into 'customer' (FirstName, LastName, Email) values ("Ankit", "Garg", "ankit@greatlearning.in");
16
17 • select * from customer;
18
19

```

Result Grid

ID	FirstName	LastName	Email
1	Harshit	Choudary	harshit@greatlearning.in
2	Ankit	Garg	ankit@greatlearning.in
4	Adhyut	Siyash	adhyut@greatlearning.in
6	Sharmila	Ramarao	sharmila@greatlearning.in

Object Info Session

No object selected

Action Output

Time	Action	Response	Duration / Fetch Time
19-24:59	select * from customer LIMIT 0, 1000	3 row(s) returned	0.00042 sec / 0.000...
19-33:13	select * from customer LIMIT 0, 1000	4 row(s) returned	0.00031 sec / 0.000...
19-38:28	select * from customer LIMIT 0, 1000	4 row(s) returned	0.00030 sec / 0.000...

Query Completed

Delete

Spring Tool Suite 4

MyWorkspace - http://localhost:8080/CustomerApp/ - Spring Tool Suite 4

Customer Relationship Management

Are you sure you want to delete this Customer?

Cancel OK

First Name	Last Name	Email	Action
Harshit	Choudary	harshit@greatlearning.in	Update Delete
Ankit	Garg	ankit@greatlearning.in	Update Delete
Adhyut	Siyash	adhyut@greatlearning.in	Update Delete
Sharmila	Ramarao	sharmila@greatlearning.in	Update Delete

Markers Properties Servers Data Source Explorer Snippets Console Search Package Explorer

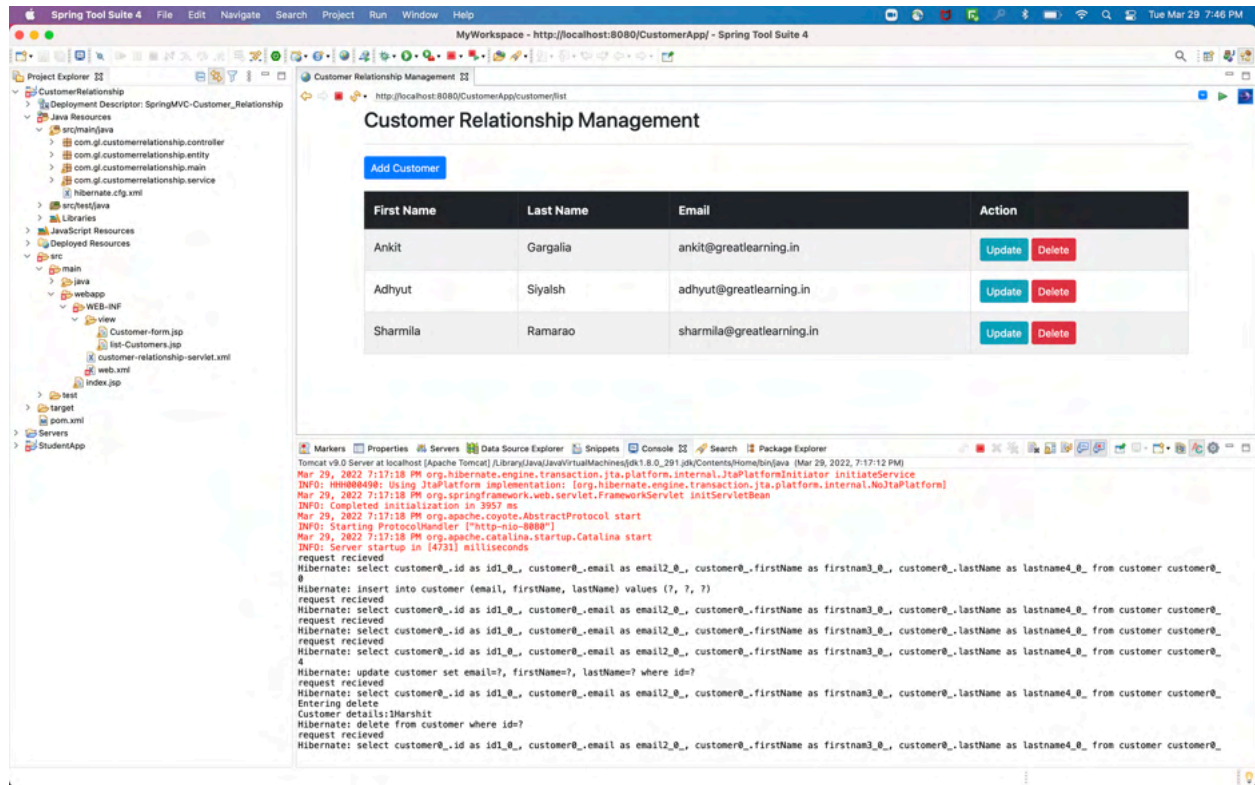
Tomcat v9.0 Server at localhost [Apache Tomcat] [Library:Java\jvm\bin\java (Mar 29, 2022, 7:17:12 PM)]

```

INFO: HH000041: Hibernate ORM core version 5.6.5.Final
Mar 29, 2022 7:17:15 PM org.hibernate.annotations.common.reflection.java.JavaReflectionManager <init>
INFO: HCANN00000: Hibernate Commons Annotations (5.1.2.Final)
Mar 29, 2022 7:17:16 PM org.hibernate.dialect.Dialect <init>
INFO: HH000040: Using dialect: org.hibernate.dialect.MySQLDialect
Mar 29, 2022 7:17:18 PM org.hibernate.engine.transaction.jta.platform.internal.JtaPlatformInitiator initiateService
INFO: HH000049: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]
Mar 29, 2022 7:17:18 PM org.springframework.web.servlet.FrameworkServlet initServletBean
INFO: Completed initialization in 3957 ms
Mar 29, 2022 7:17:18 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler ["http-nio-8080"]
Mar 29, 2022 7:17:18 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in [4731] milliseconds
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
request received
Hibernate: insert into customer (email, firstName, lastName) values (?, ?, ?)
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
request received
Hibernate: update customer set email=?, firstName=?, lastName=? where id=?
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_

```


Customer Harshit got deleted as shown below



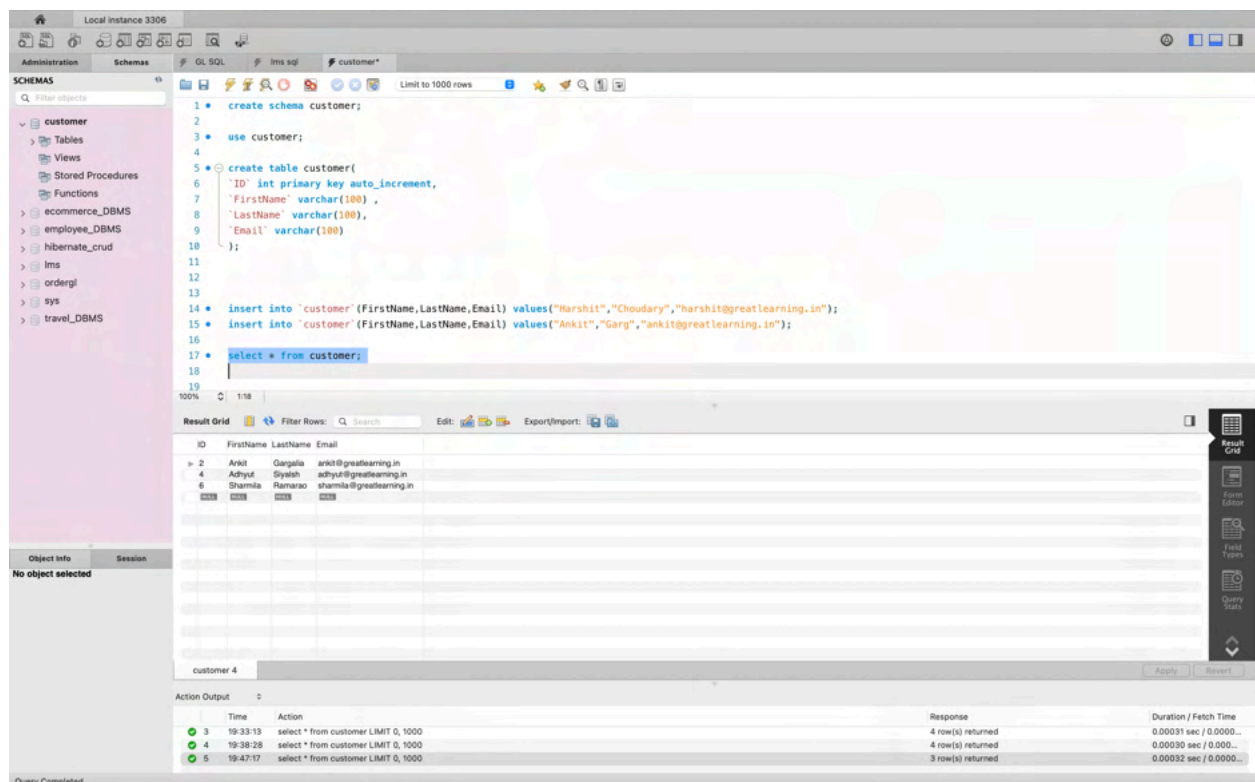
Customer Relationship Management

Add Customer

First Name	Last Name	Email	Action
Ankit	Gargalia	ankit@greatlearning.in	Update Delete
Adhyut	Siyalsh	adhyut@greatlearning.in	Update Delete
Sharmila	Ramarao	sharmila@greatlearning.in	Update Delete

Console Output:

```
Mar 29, 2022 7:17:18 PM org.hibernate.engine.transaction.jta.platform.internal.JtaPlatformInitiator initiateService
INFO: HHH0000498: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]
Mar 29, 2022 7:17:18 PM org.springframework.web.servlet.FrameworkServlet initServletBean
INFO: Completed initialization in 3957 ms
Mar 29, 2022 7:17:18 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler ["http-nio-8080"]
Mar 29, 2022 7:17:18 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in [4731] milliseconds
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
request received
Hibernate: insert into customer (email, firstName, lastName) values (?, ?, ?)
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
request received
Hibernate: update customer set email=?, firstName=?, lastName=? where id=?
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
request received
Customer details:Harshit
Hibernate: delete from customer where id=?
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstName3_0_, customer0_.lastName as lastName4_0_ from customer customer0_
```



Local instance 3306

Administration Schemas

customer*

Limit to 1000 rows

1 create schema customer;

2

3 use customer;

4

5 create table customer(

6 'ID' int primary key auto_increment,

7 'FirstName' varchar(100),

8 'LastName' varchar(100),

9 'Email' varchar(100)

10);

11

12

13

14 insert into 'customer' (FirstName,LastName,Email) values('Harshit','Choudary','harshit@greatlearning.in');

15 insert into 'customer' (FirstName,LastName,Email) values('Ankit','Garg','ankit@greatlearning.in');

16

17 select * from customer;

18

19

Result Grid

ID	FirstName	LastName	Email
2	Ankit	Gargalia	ankit@greatlearning.in
4	Adhyut	Siyalsh	adhyut@greatlearning.in
6	Sharmila	Ramarao	sharmila@greatlearning.in

Object Info Session

No object selected

customer 4

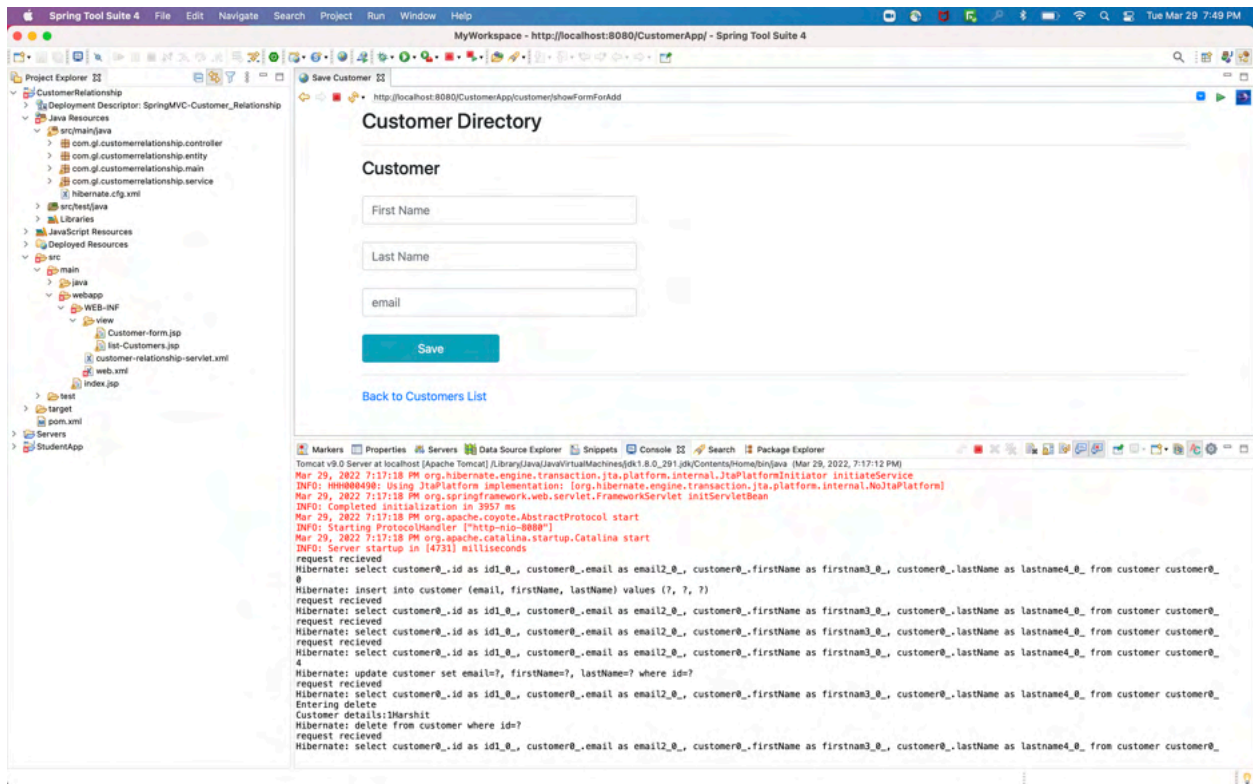
Action Output

Time	Action	Response	Duration / Fetch Time
3 19:33:13	select * from customer LIMIT 0, 1000	4 row(s) returned	0.00031 sec / 0.000...
4 19:38:28	select * from customer LIMIT 0, 1000	4 row(s) returned	0.00030 sec / 0.000...
5 19:47:17	select * from customer LIMIT 0, 1000	3 row(s) returned	0.00032 sec / 0.000...

Query Completed

View

We already saw the customers viewing the data in main page and also from add customer form, we can go to view customers.



When you click on Back to Customers List

Spring Tool Suite 4 File Edit Navigate Search Project Run Window Help

MyWorkspace - http://localhost:8080/CustomerApp/ - Spring Tool Suite 4

Customer Relationship Management

http://localhost:8080/CustomerApp/customer/list

Add Customer

First Name	Last Name	Email	Action
Ankit	Gargalia	ankit@greatlearning.in	Update Delete
Adhyut	Siyalsh	adhyut@greatlearning.in	Update Delete
Sharmila	Ramarao	sharmila@greatlearning.in	Update Delete

Markers Properties Servers Data Source Explorer Snippets Console Search Package Explorer

Tomcat v9.0 Server at localhost [Apache Tomcat] /Library/Java/JavaVirtualMachines/jdk1.8.0_291.jdk/Contents/Home/bin/java (Mar 29, 2022, 7:17:12 PM)

Mar 29, 2022 7:17:18 PM org.springframework.web.servlet.FrameworkServlet initServletBean
INFO: Completed initialization in 3957 ms
Mar 29, 2022 7:17:18 PM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler ["http-nio-8080"]
Mar 29, 2022 7:17:18 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in [4733] milliseconds

request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstnam3_0_, customer0_.lastName as lastname4_0_ from customer customer0_ where id=7
request received
Hibernate: insert into customer (email, firstName, lastName) values (?, ?, ?)
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstnam3_0_, customer0_.lastName as lastname4_0_ from customer customer0_ where id=7
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstnam3_0_, customer0_.lastName as lastname4_0_ from customer customer0_ where id=7
request received
Hibernate: update customer set email=?, firstName=?, lastName=? where id=7
request received
Entering delete
Customer details:Harshit
Hibernate: delete from customer where id=7
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstnam3_0_, customer0_.lastName as lastname4_0_ from customer customer0_ where id=7
request received
Hibernate: select customer0_.id as id1_0_, customer0_.email as email2_0_, customer0_.firstName as firstnam3_0_, customer0_.lastName as lastname4_0_ from customer customer0_ where id=7