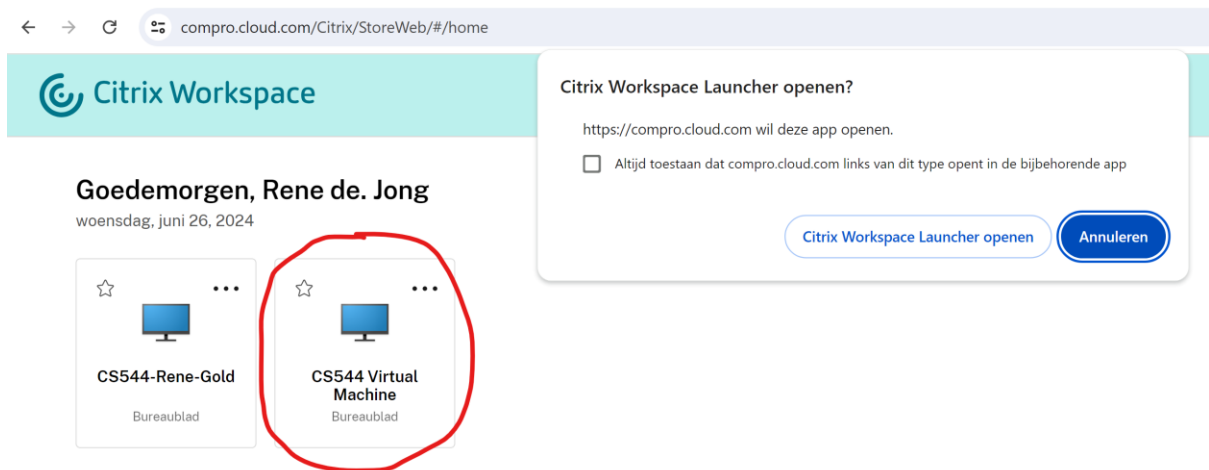


## Lab 3

### Using the Virtual Machine

1. In your browser (preferably Chrome) create an **incognito window** and browse to: ***compro.cloud.com***
2. Login with the correct username and password
3. Once you login, you should be able to see a large rectangular icon that bears the name of your VM. Click on it.



- Please never shut down your VM. It is safe to restart, but never shut down. If you do shut down your machine, we will have to manually restart it for you, and you will lose precious time.

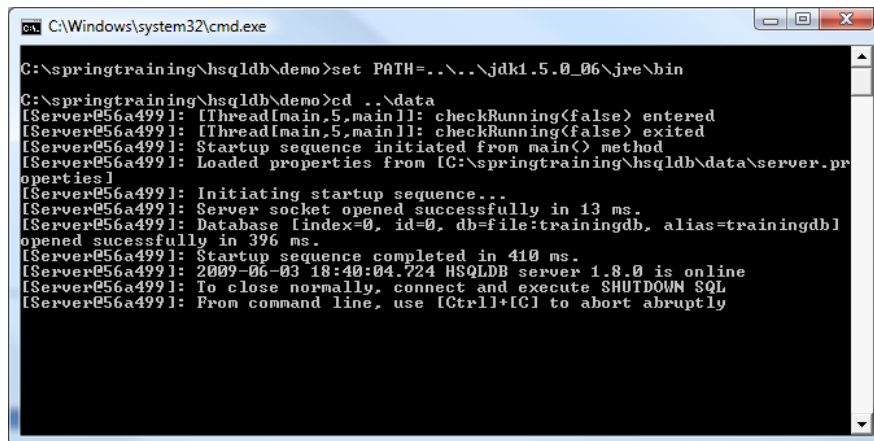
For any issues related to Citrix please create a ticket at: <https://cs-miu.happyfox.com/>

### Part A: JDBC

For this exercise, we will be using the HyperSQL database (HSQLDB)..

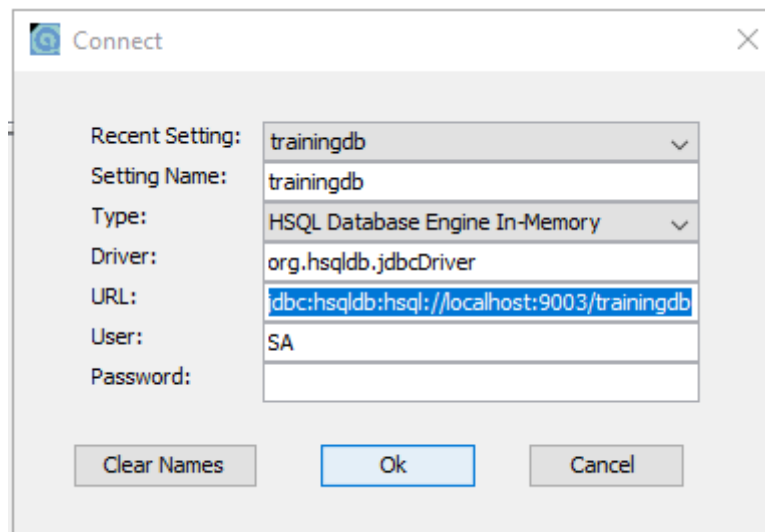
You can start the training database by double-clicking on

**C:\EnterpriseArchitecture\hsqldb\bin\runServerTrainingdb.bat**. This should open the following window to indicate that the database is running.



```
C:\Windows\system32\cmd.exe
C:\springtraining\hsqldb\demo>set PATH=..\..\jdk1.5.0_06\jre\bin
C:\springtraining\hsqldb\demo>cd ..\data
[Server@56a499]: [Thread[main,5,main]]: checkRunning(false) entered
[Server@56a499]: [Thread[main,5,main]]: checkRunning(false) exited
[Server@56a499]: Startup sequence initiated from main() method
[Server@56a499]: Loaded properties from [C:\springtraining\hsqldb\data\server.pr
operties]
[Server@56a499]: Initiating startup sequence...
[Server@56a499]: Server socket opened successfully in 13 ms.
[Server@56a499]: Database [index=0, id=0, db=file:trainingdb, alias=trainingdb]
opened successfully in 396 ms.
[Server@56a499]: Startup sequence completed in 410 ms.
[Server@56a499]: 2009-06-03 18:40:04.724 HSQLDB server 1.8.0 is online
[Server@56a499]: To close normally, connect and execute SHUTDOWN SQL
[Server@56a499]: From command line, use [Ctrl]+[C] to abort abruptly
```

Then, start the database manager by double-clicking on **runManagerSwing.bat** in the same directory.



Recent Setting:	trainingdb
Setting Name:	trainingdb
Type:	HSQL Database Engine In-Memory
Driver:	org.hsqldb.jdbcDriver
URL:	jdbc:hsqldb:hsq://localhost:9003/trainingdb
User:	SA
Password:	

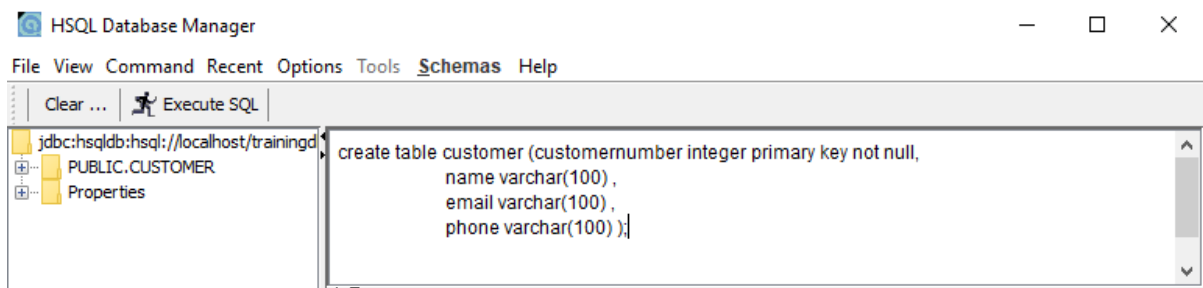
Clear Names Ok Cancel

When the manager asks for connection settings, and if this is the first time you start the database manager, then fill in the following information:

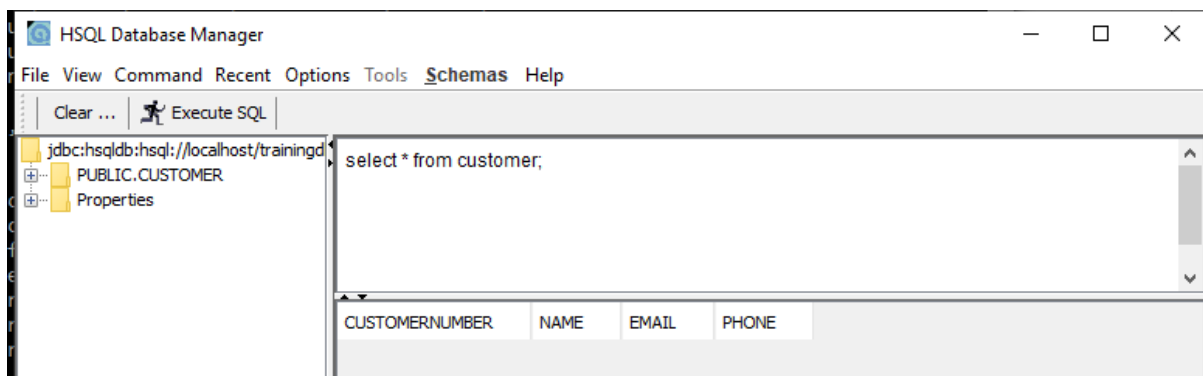
Setting Name: **trainingdb**  
Type: **HSQL Database Engine Standalone**  
Driver: **org.hsqldb.jdbcDriver**  
URL: **jdbc:hsqldb:hsq://localhost:9003/trainingdb**  
User: **SA**  
Password:  
And click the **OK** button.

Once the manager is open, enter the following SQL, and then click the **Execute SQL** button to create a product table:

**create table customer (customernumber integer primary key not null,  
name varchar(100) ,  
email varchar(100) ,  
phone varchar(100) );**



A customer table is created. You can now enter SQL statements to see the content of the customer table:

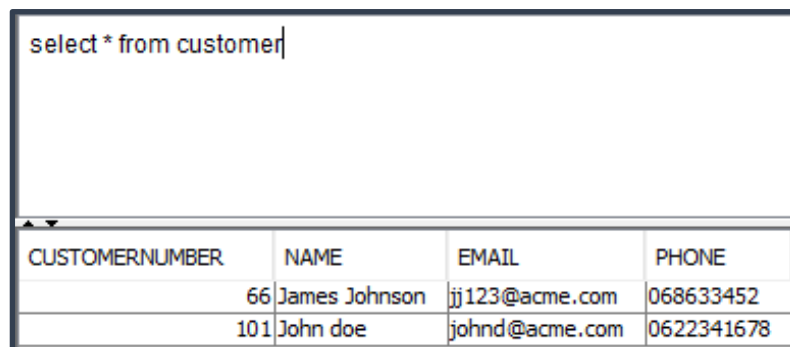


In the same way create the creditcard table:

```
create table creditcard (cardnumber varchar(100) primary key not null,
                        type varchar(100) ,
                        validationDate varchar(100),
                        customernumber int
                        );
```

Now open the given project **Lesson3SpringBootJDBCCustomerWithCreditCard** that is given in the demo code into your favorite Java IDE and run the file Application.java.

The code inserts 2 customers with a corresponding credit card in the database.



select * from creditcard			
CARDNUMBER	TYPE	VALIDATIONDATE	CUSTOMERNUMBER
12324564321	Visa	11/23	101
99876549876	MasterCard	01/24	66

Check the database.

Study the code and now write the Java code to save products in the database.

A product has the following attributes: productNumber, name, price

Make sure to create a new table in the database first.

Write a ProductDAO with the following methods:

save()	Saves a product in the database
findByProductNumber()	Return the product with this productNumber
getAllProducts()	Return the list with all products
findByProductName()	Return the list with products with this name
removeProduct	Remove the product with the given productNumber

In your application test if your methods work.

Now add a new class Supplier with the attributes name and phone. Assume a 1 to 1 relation between product and supplier.

Modify your code so that every product also has a supplier. Modify all the methods in the ProductDAO so that they work properly with the new Supplier class.

## Part B: JPA

Open the given application **Lesson3SpringJPACustomer** that is given in the demo code. The application inserts a number of customers in the database, and then performs some queries on the customers in the database.

In the same project, create the following entity class

```
public class Book {
    private int id;
```

```
    private String title;  
    private String ISBN;  
    private String author;  
    private double price;  
}
```

Annotate the class with the correct JPA annotations, and write a Book repository.

Save some books, and retrieve all books from the database.

- Create 3 books, and save them in the database
- Retrieve all books from the database and display them in the console
- Update a book
- Delete a book (not the book that was just updated)
- Retrieve all books from the database again and display them in the console

### What to hand in:

1. A separate zip file with the solution of part A
2. A separate zip file with the solution of part B