

Hands-on Lab: Stored Procedures



Estimated time needed: 20 minutes

Stored Procedures in SQL are a type of database object that allow you to encapsulate a series of SQL statements into a single routine. They are stored in the database data dictionary and can be invoked from an application program or from the database command interface. Stored procedures can accept input parameters and return multiple values of output parameters. They can also include control-of-flow constructs such as loops and conditional statements. Stored procedures offer several benefits including improved performance, higher productivity, ease of use, and increased scalability. They also provide a mechanism for enforcing business rules and data integrity in the database system.

Objectives

After completing this lab, you will be able to:

- Create stored procedures
- Execute stored procedures

Software Used in this Lab

In this lab, you will use [MySQL](#). MySQL is a Relational Database Management System (RDBMS) designed to efficiently store, manipulate, and retrieve data.



To complete this lab you will utilize MySQL relational database service available as part of IBM Skills Network Labs (SN Labs) Cloud IDE. SN Labs is a virtual lab environment used in this course.

Database Used in this Lab

mysql_learners database has been used in this lab.

Data Used in this Lab

The data used in this lab is internal data. You will be working on the **PETSALE** table.

ID	ANIMAL	SALEPRICE	SALEDATE	QUANTITY
1	Cat	450.09	2018-05-29	9
2	Dog	666.66	2018-06-01	3
3	Parrot	50.00	2018-06-04	2
4	Hamster	60.60	2018-06-11	6
5	Goldfish	48.48	2018-06-14	24

This lab requires you to have the PETSALE table populated with sample data on **mysql** phpadmin interface. You might have created and populated a PETSALE table in a previous lab.

For this lab, you need to create a database **PETS** in the phpMyAdmin interface. Download the **PETSALE-CREATE-v2.sql** script below, upload it to console under the **PETS** database. Upon execution, the script will create a new PETSALE table dropping any previous PETSALE table if exists, and will populate it with the required sample data.

- [PETSALE-CREATE-v2.sql](#)

Stored Procedure: Exercise 1

In this exercise, you will create and execute a stored procedure to read data from a table on **mysql** phpadmin using SQL.

1. You will create a stored procedure routine named **RETRIEVE_ALL**.
 - This **RETRIEVE_ALL** routine will contain an SQL query to retrieve all the records from the PETSALE table, so you don't need to write the same query over and over again. You just call the stored procedure routine to execute the query everytime.
 - To create the stored procedure routine, copy the code below and paste it to the textarea of the **SQL** page. Click **Go**.

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2. To call the RETRIEVE_ALL routine, open another **SQL** tab by clicking **Open in new Tab**

Delete the default line which appears so that you will get a blank window.

Copy the code below and paste it to the textarea of the **SQL** page. Click **Go**.

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```

11 CALL RETRIEVE_ALL;

ClearFormatGet auto-saved query

☐ Bind parameters ⓘ

Delimiter: }

☐ Show this query here again☐ Retain query box☐ Rollback when finished☒ Enable foreign key checks

Go

Hide query box

Showing rows 0 - 4 (5 total, Query took 0.0010 seconds.)

CALL RETRIEVE_ALL

[Edit sql][Edit][Create PHP code]

☐ Show all | Number of rows: 25 | Filter rows: Search this table

Options

	ANIMAL	SALEPRICE	SALEDATE	QUANTITY
1	Cat	450.00	2018-05-29	9
2	Dog	666.66	2018-05-01	3
3	Parrot	50.00	2018-06-04	2
4	Hamster	60.00	2018-06-11	8
5	Goldfish	48.48	2018-06-14	24

3. You can view the created stored procedure routine RETRIEVE_ALL. On the left panel, expand the mysql option. Click on **Procedures** then click on the **RETRIEVE_ALL** and view the procedure.

StructureSQLSearchQueryExportImportOperationsPrivilegesRoutinesEventsTriggers

Routines

Name	Action	Type	Returns
RETRIEVE_ALL	<div>EditExecuteExportDrop</div>	PROCEDURE	

Check all

With selected

Export

Drop

New

Add routine ⓘ

4. If you wish to drop the stored procedure routine RETRIEVE_ALL, copy the code below and paste it to the textarea of the **SQL** page. Click **Go**.

```
1. 1
2. 2
3. 3
1. DROP PROCEDURE RETRIEVE_ALL;
2. CALL RETRIEVE_ALL;
```

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StructureSQLSearchQueryExportImportOperationsPrivilegesRoutinesEventsTriggersDesigner

1
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DROP PROCEDURE RETRIEVE_ALL;
CALL RETRIEVE_ALL;

ClearFormatGet auto-saved query

☐ Bind parameters ⓘ

Delimiter: }

☐ Show this query here again☐ Retain query box☐ Rollback when finished☒ Enable foreign key checks

Go

Error

SQL query: COPY

CALL RETRIEVE_ALL

MySQL said: ⓘ

#1305 - PROCEDURE mysql_learners.RETRIEVE_ALL does not exist

Stored Procedure: Exercise 2

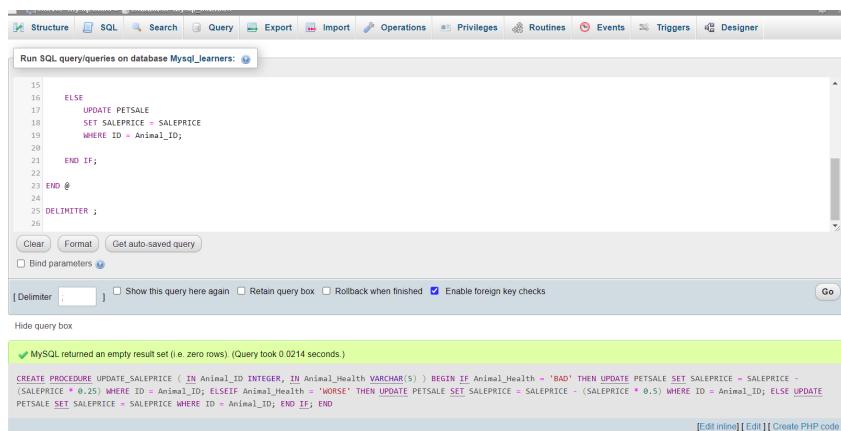
In this exercise, you will create and execute a stored procedure to write/modify data in a table on MySQL using SQL.

You will create a stored procedure routine named **UPDATE_SALEPRICE** with parameters **Animal_ID** and **Animal_Health**.

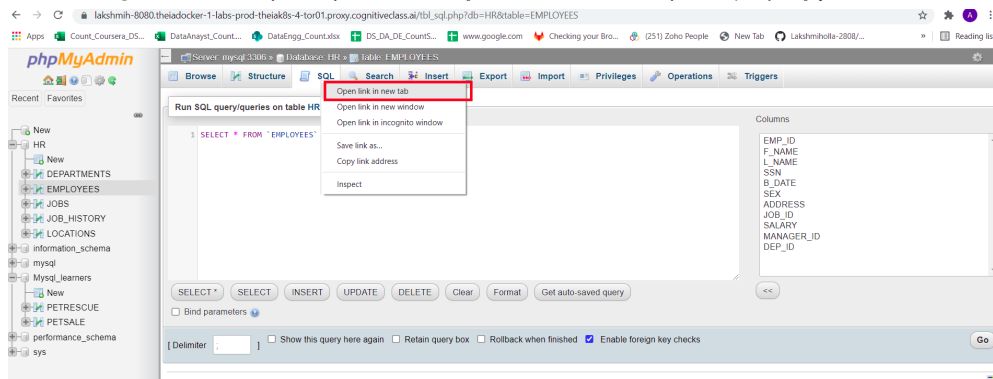
- This **UPDATE_SALEPRICE** routine will contain SQL queries to update the sale price of the animals in the PETSALE table depending on their health conditions, **BAD** or **WORSE**.
- This procedure routine will take animal ID and health condition as parameters which will be used to update the sale price of animal in the PETSALE table by an amount depending on their health condition. Suppose that:
 - For animal with ID XX having BAD health condition, the sale price will be reduced further by 25%.
 - For animal with ID YY having WORSE health condition, the sale price will be reduced further by 50%.
 - For animal with ID ZZ having other health condition, the sale price won't change.
- To create the stored procedure routine, copy the code below and paste it to the textarea of the **SQL** page. Click **Go**.

```
1. 1
2. 2
3. 3
4. 4
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6. 6
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8. 8
9. 9
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1. DELIMITER @
2. CREATE PROCEDURE UPDATE_SALEPRICE (IN Animal_ID INTEGER, IN Animal_Health VARCHAR(5))
3. BEGIN
4.     IF Animal_Health = 'BAD' THEN
5.         UPDATE PETSALE
6.         SET SALEPRICE = SALEPRICE - (SALEPRICE * 0.25)
7.         WHERE ID = Animal_ID
8.     ELSEIF Animal_Health = 'WORSE' THEN
9.         UPDATE PETSALE
10.        SET SALEPRICE = SALEPRICE - (SALEPRICE * 0.5)
11.        WHERE ID = Animal_ID
12.    ELSE
13.        UPDATE PETSALE
14.        SET SALEPRICE = SALEPRICE
15.        WHERE ID = Animal_ID;
16.    END IF;
17. END @
18. DELIMITER ;
```

Copied!



1. Let's call the UPDATE_PETSALE routine. We want to update the sale price of animal with ID 1 having BAD health condition in the PETSale table. open another SQL tab by clicking **Open in new Tab**

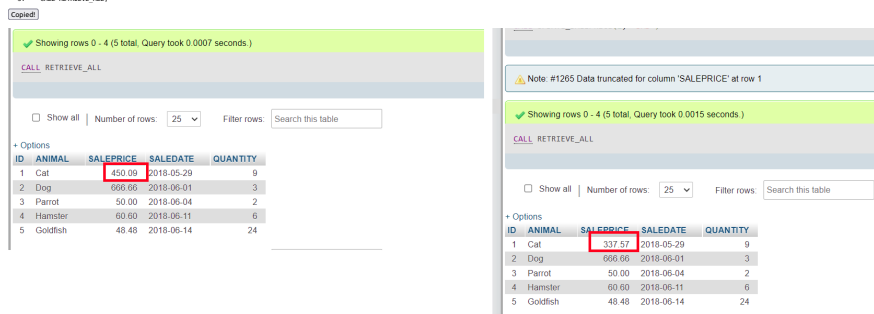


Delete the default line which appears so that you will get a blank window.

Copy the code below and paste it to the textareas of the SQL page. Click **Go**.

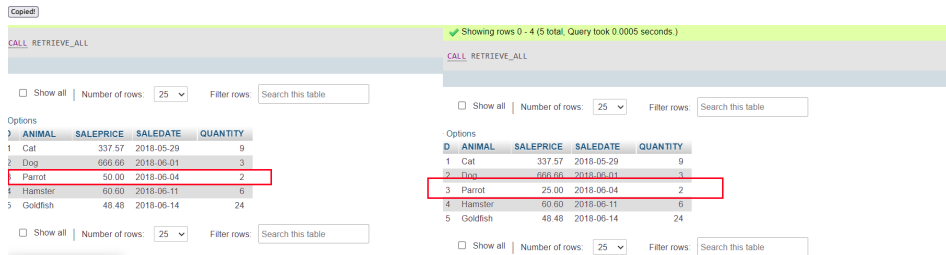
Note if you have dropped RETREIVE_ALL procedure rerun the creation script of that procedure before executing these lines.

```
1. 1
2. 2
3. 3
4. 4
5. 5
1. CALL RETREIVE_ALL;
2. CALL UPDATE_PETSALE(1, 'BAD');
3. CALL RETREIVE_ALL;
```



2. Let's call the UPDATE_PETSALE routine once again. We want to update the sale price of animal with ID 3 having WORSE health condition in the PETSale table. copy the code below and paste it to the textareas of the SQL page. Click **Go**. You will have all the records retrieved from the PETSale table.

```
1. 1
2. 2
3. 3
4. 4
5. 5
1. CALL RETREIVE_ALL;
2. CALL UPDATE_PETSALE(3, 'WORSE');
3. CALL RETREIVE_ALL;
```



3. You can view the created stored procedure routine UPDATE_PETSALE. Click on the **Routines** and view the procedure.

StructureSQLSearchQueryExportImportOperationsPrivilegesRoutinesEventsTriggersDesigner

Routines

Name	Action	Type	Returns
<input type="checkbox"/> RETRIEVE_ALL	Edit Execute Export Drop	PROCEDURE	
<input type="checkbox"/> UPDATE_SALEPRICE	Edit Execute Export Drop	PROCEDURE	

[Check all](#) [With selected](#) [Export](#) [Drop](#)

New

[Add routine](#)

4. If you wish to drop the stored procedure routine UPDATE_SALEPRICE, copy the code below and paste it to the textarea of the **SQL** page. Click **Go**.

```
1. 1
2. 2
3. 3
1. DROP PROCEDURE UPDATE_SALEPRICE;
2.
3. CALL UPDATE_SALEPRICE;
```

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7
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9 DROP PROCEDURE UPDATE_SALEPRICE;
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11 CALL UPDATE_SALEPRICE;

ClearFormatGet auto-saved query

☐ Bind parameters

☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks

Go

Hide query box

Error

SQL query: [Copy](#)

DROP PROCEDURE UPDATE_SALEPRICE

MySQL said: [?](#)

#1305 - PROCEDURE mysql_learners.UPDATE_SALEPRICE does not exist

Conclusion

Congratulations! You have completed this lab on creating stored procedures in MySQL.

You are now able to:

- Write a stored procedure as per requirement
- Call or Execute a stored procedure
- Drop a stored procedure once its utility is over

Author(s)

[Lakshmi Holla](#)

[Malika Sinoria](#)

[Abhishek Gagneja](#)

Changelog

Date	Version	Changed by	Change Description
2023-10-31	0.4	Mercedes Schneider	QA Edits
2023-10-16	0.3	Abhishek Gagneja	Updated the instructions
2021-08-09	0.2	Sathya Priya	Updated HTML tags and SQL link
2021-11-01	0.1	Lakshmi Holla, Malika Singla	Initial Version

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