SQL stored procedure

Server query optimizer

About project

Instead of sending multiple SQL statements from the client to the server, I encapsulate them in a stored procedure on the server and send one statement from the client end to execute them.

Benefits: Stored procedures can be useful if you have an SQL query that you write and execute over and over again. You can save it as a stored procedure, and then just call it to execute it directly in the database server. In stored procedures, you can also pass parameters so that a stored procedure can act based on the passed parameter values.

Project case study: I business dealing on pet sales wants to automate the price update of pets on based on the present health status of the pet(good, bad, worse), they could not keep determining this price manually as that would take a lot of time with their database hosted on the cloud(IBM Db2). The task is-How can this business automate the price update of a particular pet given its health status? That is the question this project aims to answer. I created a stored procedure routine named **UPDATE_SALEPRICE** with parameters **Animal_ID** and **Animal_Health**.

- This **UPDATE_SALEPRICE** routine contains 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 takes 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:

- 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.

Skills utilised

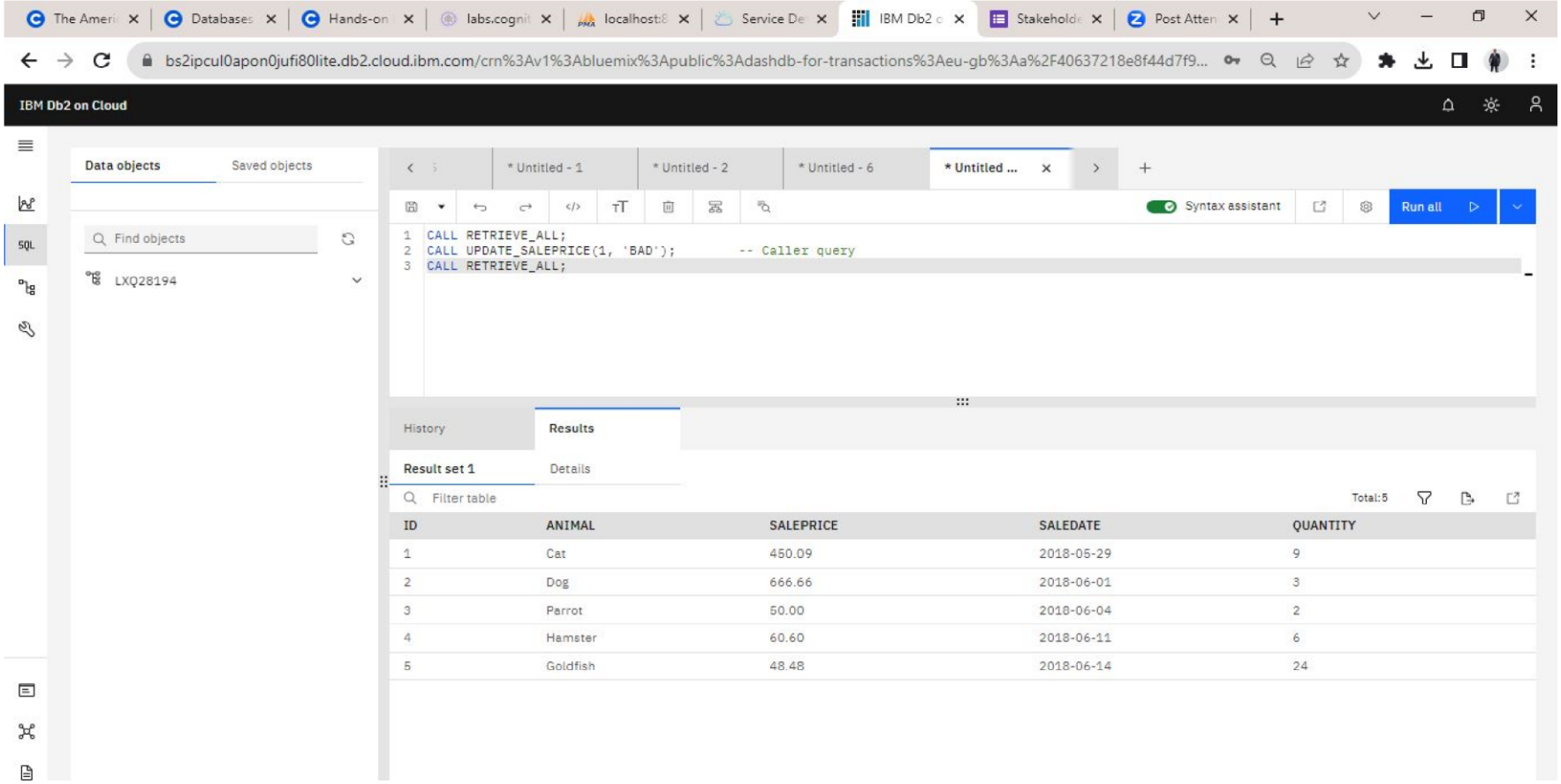
Software used: IBM Db2 cloud database

Project screenshots and explanations

Next five slides

Create database

This was what the database looks like in IBM Db2 database instance. The table shown contains list of different pets with their prices and quantity in stock. I retrieved the table with a VIEW call that retrieves all the the data in the original 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

Create Stored Procedure and save in the server

This is screenshot of the stored procedure and the SQL successfully created, ran and stored in the server

IBM Db2 on Cloud

Data objects | Saved objects

Find objects

LXQ28194

:REAT... | * Untitled - 5 | * Untitled - 1 | * Untitled - 2 | * Untitled ...

Syntax assistant | Run all

```
--#SET TERMINATOR @
CREATE PROCEDURE UPDATE_SALEPRICE (
    IN Animal_ID INTEGER, IN Animal_Health VARCHAR(5) )     -- ( { IN/OUT type } { parameter-name } { data-type }, ... )
LANGUAGE SQL                                                -- Language used in this routine
MODIFIES SQL DATA                                           -- This routine will only write/modify data in the table
BEGIN
    IF Animal_Health = 'BAD' THEN                           -- Start of conditional statement
        UPDATE PETSALE
        SET SALEPRICE = SALEPRICE - (SALEPRICE * 0.25)
        WHERE ID = Animal_ID;

    ELSEIF Animal_Health = 'WORSE' THEN
        UPDATE PETSALE
        SET SALEPRICE = SALEPRICE - (SALEPRICE * 0.5)
        WHERE ID = Animal_ID;

    ELSE
        UPDATE PETSALE
        SET SALEPRICE = SALEPRICE
        WHERE ID = Animal_ID;
```

History | Results

Find by statement or status

Script	Date	Status	Runtime
Untitled - 6	Aug 18, 2023 2:03:40 PM	1	0.071 s
CREATE PROCEDURE UPDATE_SALEPRICE (IN Animal_ID INTEGER, IN Animal_Health VARCHAR(5)) …			0.071 s
Untitled - 1	Aug 18, 2023 1:32:32 PM	1	0.189 s
CALL RETRIEVE_ALL			0.189 s
Untitled - 5	Aug 18, 2023 1:30:26 PM	1	0.050 s

Confirm the stored procedure is saved on the server

This screenshot shows on the left hand side that the UPDATE_SALESPRICE Procedure now exists in the database server and ready to run when called

The Ameri | Databases | Hands-on | labs.cognit | localhost:8 | Service De | IBM Db2 c | Stakeholde | Post Atten

bs2ipcul0apon0jufi80lite.db2.cloud.ibm.com/crn%3Av1%3Abluemix%3Apublic%3Adashdb-for-transactions%3Aeu-gb%3Aa%2F40637218e8f44d7f9...

IBM Db2 on Cloud

Load Data | Load History | Tables | Views | Indexes | Aliases | MQTs | Sequences | **Application objects**

Stored procedures | User-defined Types | User-defined Functions

Find schemas or procedures

Refresh

Schemas

Procedures

New procedure +

Name	Schema	Language	Properties
RETRIEVE_ALL	LXQ28194	SQL	···
UPDATE_SALEPRI...	LXQ28194	SQL	···

Total: 2, selected: 0

Procedure parameters

RETRIEVE_ALL

```
CREATE PROCEDURE RETRIEVE_ALL        -- Name of this stored procedure routine
LANGUAGE SQL                         -- Language used in this routine
READS SQL DATA                       -- This routine will only read data from the table
DYNAMIC RESULT SETS 1                -- Maximum possible number of result-sets to be retu
rned to the caller query
BEGIN
    DECLARE C1 CURSOR                -- CURSOR C1 will handle the result-set by retrievin
g records row by row from the table
    WITH RETURN FOR                  -- This routine will return retrieved records as a r
esult-set to the caller query

    SELECT * FROM PETSALE;           -- Query to retrieve all the records from the table

    OPEN C1;                         -- Keeping the CURSOR C1 open so that result-set can
be returned to the caller query
```

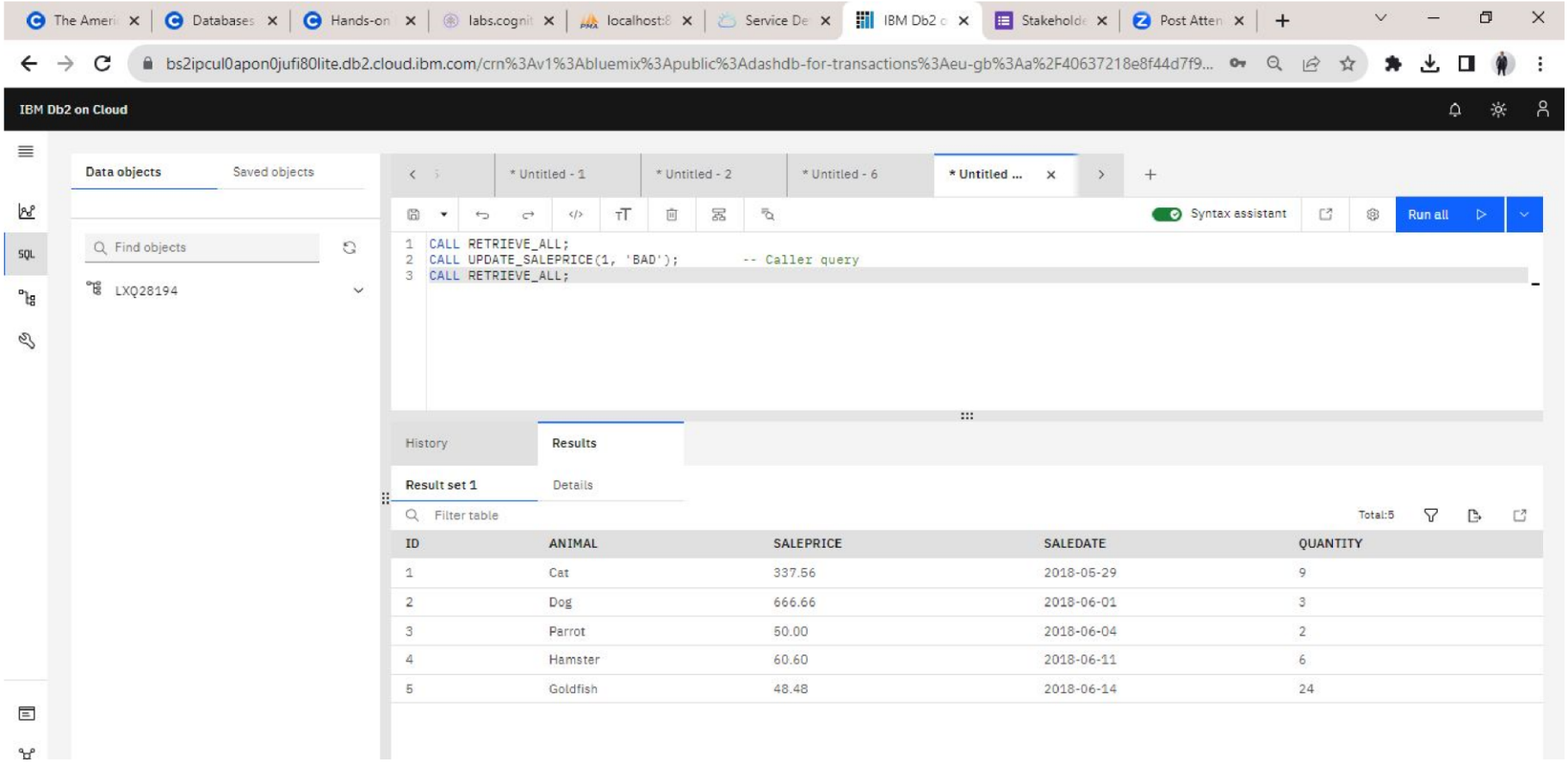
Show more

Name	Data type	Mode	Length	Scale	Locator

You don't have any data currently

Call stored Procedure for PET ID ‘1’ and health condition ‘BAD’

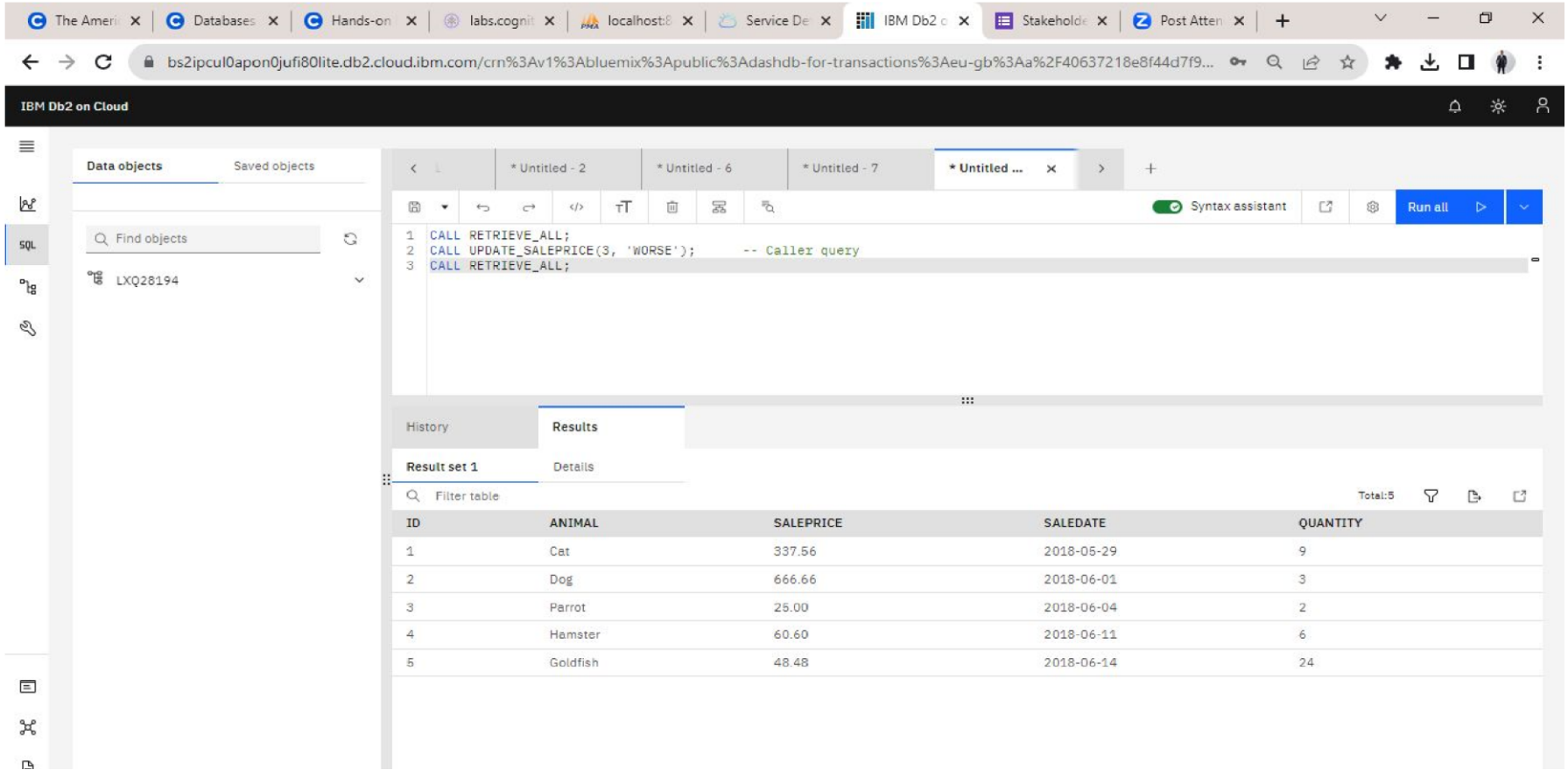
I called the stored procedure with input **parameters 1 and BAD** and the price of **Cat** changed from 450 to 337, returning a 25% decrease in price as stipulated earlier



ID	ANIMAL	SALEPRICE	SALEDATE	QUANTITY
1	Cat	337.56	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

Call stored Procedure for PET ID ‘3’ and health condition ‘WORSE’

I called the stored procedure with input **parameters 3 and WORSE** and the price of **Parrot** changed from 50 to 25, returning a 50% decrease in price as stipulated.



ID	ANIMAL	SALEPRICE	SALEDATE	QUANTITY
1	Cat	337.56	2018-05-29	9
2	Dog	666.66	2018-06-01	3
3	Parrot	25.00	2018-06-04	2
4	Hamster	60.60	2018-06-11	6
5	Goldfish	48.48	2018-06-14	24

Conclusion

Stored procedure is a key server query optimisation method for increased transaction speed and database performance, enabling a high degree of security and automation and reducing query redundancy. With this, businesses can automate inventory updates faster.

Contact

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