Lab 06 – Transactions and Security

# Objectives:

The purpose of this lab is to introduce the student to both transactions and security. In the real-world, databases tasks often involve multiple steps and if any step in the middle fails, the procedure is a failure. This lap walks the student through a couple transactions and lets them learn how various steps have varying consequences that they need to be aware of.

By the end of this lab, the student will be able to:

* Describe the steps of a transaction, how a transaction begins and ends and walk through live scenarios of a variety of transactions
* Understand and act appropriately on what needs to be done in the case of transaction failure
* Grant and revoke permissions to and from other users and public users from the database

# Submission:

***Your submission will be a single WORD file with the query and result screenshot from Oracle SQL developer***

Make sure every SQL statement terminates with a semicolon.

* You will use following data to complete the given tasks:
* ***SET TRANSACTION READ WRITE*** starts a new transaction.
* ***COMMIT*** commits the current transaction, making its changes permanent.
* ***SAVEPOINT <name>***  sets a pointer to a location that can be rolled back to.
* ***ROLLBACK*** rolls back the current transaction, canceling its changes.
* ***SET autocommit*** disables or enables the default ***autocommit*** mode for the current session.

**Tasks:**

It is very important that these tasks/questions be performed in the order presented here for maximum learning.

## PART A - Transactions

1. Execute the following commands.

SET AUTCOMMIT OFF;  
 SET TRANSACTION READ WRITE;

Using SQL, create an **empty** table, that is the same as the RETAILCUSTOMERS table, and name it

***newCustomers***.

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1. Write an INSERT statement to populate the **newCustomers** table with the rows of the sample data. (Write a single INSERT statement to insert all the rows, combine firstname and last name to get full name during insert)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **customerNumber** | **contactLastName** | **contactFirstName** | **Phone** | **addressLine1** | **city** | **country** |
| 100 | Patel | Ralph | 2233355555 | 10 SenecaWay | Paris | France |
| 101 | Denis | Betty | 3344455555 | 110 SenecaWay | Chicago | USA |
| 102 | Biri | Ben | 44555445544 | 13000 SenecaWay | Toronto | Canada |
| 103 | Newman | Chad | 66777332233 | 12 SenecaWay | Mexico city | Mexico |
| 104 | Ropeburn | Audrey | 7788811212 | 15000 SenecaWay | Havana | Cuba |
| 105 | Lucy | Preston | 45555511111 | 12 SenecaWay | Charlotte | USA |

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1. Create a query that shows all the inserted rows from the newCustomers table. How many rows are selected?

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1. Execute the rollback command. Display all rows and columns from the newCustomers table. How many rows are selected?

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1. Repeat Question 2. Make the insertion permanent to the table newCustomers. Display all rows and columns from the newCustomers table. How many rows are selected?

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1. Write an update statement to update the value of column addressLine1 to ‘unknown’ for all the customers in the newCustomers table.

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1. Make your changes permanent.

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1. Execute the rollback command.
   1. Display all customers from the newCustomers table whose address is ‘unknown’. How many rows are still updated?

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* 1. Was the rollback command effective?

If no rows are returned in the query, it means that ROLLBACK works properly, but I used the commit command, so every change still remains until the commit command.

* 1. What was the difference between the result of the rollback execution from Question 6 and the result of the rollback execution of this task?

The main difference between the result of the rollback is the commit command because the rollback execution can not affect the changes before the Commit command

1. Begin a new transaction and then create a statement to delete the customers from the newCustomers table  
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2. Perform a rollback to undo the deletion of the customers

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* 1. How many customers are now in the newCustomers table?

6 tables are in newCustomers.

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* 1. Was the rollback effective and why?

The rollback is effective as long as you do not commit because after using the commit command, the changes become permanent in the tables. If a ROLLBACK is issued before the COMMIT, all changes made in that transaction are undone.

1. Begin a new transaction and rerun the data insertion from Question 2 (copy the code down to Question 11 and run it)

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1. Set a Savepoint, called ***insertion***, after inserting the data

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1. Rerun the update statement from Question 6 and run a query to view the data (copy the code down and run it again)

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1. Roll back the transaction to the Savepoint created in Question 12 above and run a query to view the data.  
   What does the data look like (i.e. describe what happened?

After going back to Savepoint, all the changes that we made via update command can be undone, so we can undo some changes via rollback to save point

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1. Use the rollback statement and again view the data. Describe what the results look like and what happened.

As you can see above in question 14, if any changes are applied after savepoint on the table, all the changes will be undone, so any data inserted, updated or deleted are reverted.

## Part B - Permissions

1. Write a statement that denies all access to the newCustomers table for all public users

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1. Write a statement that allows a person ‘RGNANAOLIVU’ read only access to the newCustomers table.

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1. Write a statement that allows the same person ‘RGNANAOLIVU’ to modify (insert, update and delete) the data of the newCustomers table.

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1. Write a statement the denies all access to the newCustomers table for the same person ‘RGNANAOLIVU’.

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## Part C – Clean up

1. Write statements to permanently remove the view and table created for this lab.

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