**National University of Computer and Emerging Sciences**



In Lab

“Triggers”

Database Systems Lab

**Spring 2023**

Department of Computer Science FAST-NU, Lahore, Pakistan



**Task 1:**

In this task, you will create a trigger that prevents a user from inserting a new row into a table if the value of a certain column is not within a specified range. Follow these steps:

1. Create a new table called products with columns id, name, price, and quantity.
2. Write a trigger that executes before an INSERT statement is executed on the products table.
3. In the trigger, check the value of the price column to make sure it is between 0 and 1000. If it is not, raise an error.
4. Test the trigger by attempting to insert a row with a price outside the specified range. Confirm that the trigger prevents the insertion and raises an error.

**Task 2:**

In this task, you will create a trigger that maintains referential integrity between two tables. Follow these steps:

1. Create two tables called orders and customers.
2. Add a foreign key constraint to the orders table that references the id column of the customers table.
3. Write a trigger that executes before a row is deleted from the customers table.
4. In the trigger, check if there are any orders associated with the customer being deleted. If there are, raise an error and prevent the deletion of the row.
5. Test the trigger by attempting to delete a customer who has orders associated with them. Confirm that the trigger prevents the deletion and raises an error.

**Task 3:**

In this task, you will create a trigger that logs changes made to a table. Follow these steps:

1. Create a new table called log with columns id, table\_name, column\_name, old\_value, new\_value, and timestamp.
2. Write a trigger that executes after an UPDATE statement is executed on any table in the database.
3. In the trigger, insert a new row into the log table that records the name of the updated table, the name of the updated column, the old value, the new value, and the current timestamp.
4. Test the trigger by updating a row in a table and confirming that a new row is inserted into the log table.

**Task 4:**

In this task, you will create a trigger that enforces a business rule related to discounts. Follow these steps:

1. Create a new table called orders with columns id, customer\_id, total, and discount.
2. Write a trigger that executes before an INSERT or UPDATE statement is executed on the orders table.
3. In the trigger, check if the value of the discount column is greater than 10% of the total column. If it is, raise an error.
4. Test the trigger by attempting to insert or update a row with a discount