



## **EPL342 –Databases**

### **Lab 10**

## **SQL-DML 3**

(Views, Triggers, Functions)

**Panayiotis Andreou**

<http://www.cs.ucy.ac.cy/courses/EPL342>



# Before We Begin

- Start the SQL Server Management Studio
  - Start →
    - All Programs →
      - Microsoft SQL Server →
        - SQL Server Management Studio

**Server: APOLLO**

**Authentication: SQL Server Authentication**

**Username: <your username>**

**Password: <your password>**



# Northwind Database Queries

## Create the following views:

1. **view\_EmployeeFullNames**: Displays the ID and Full Name (Last name + Firstname) of each employee
2. **view\_NumberOfEmployeesByCity**: create a view that displays the city and number of employees that live in
3. **view\_TotalSalesByCustomerCity**: create a view that displays the total number of sales and total number of orders for all customer's cities
4. Execute the following sql statement  

```
sp_helptext 'view_TotalSalesByCustomerCity'
```
5. To avoid displaying the sql text of view 3, enforce encryption and execute `sp_helptext` again to see that you have done it properly



# TRIGGERS

Whenever a trigger is executed two tables are utilized:

- The **inserted** table:  
used for INSERT and UPDATE triggers
- The **deleted** table  
used for DELETE and UPDATE triggers

Both tables are valid only for the duration of the trigger

# TRIGGERS (inserted, deleted tables) - Example

ID	Name
1	John
2	Anne
3	Marius
4	Steven



INSERT INTO table  
VALUES(5,'Potter')

**inserted**

**deleted**

ID	Name
5	Potter

ID	Name

DELETE FROM table  
WHERE ID = 1

**inserted**

**deleted**

ID	Name

ID	Name
1	John

UPDATE table  
SET Name='Harry'  
WHERE ID = 5

**inserted**

**deleted**

ID	Name
5	Harry

ID	Name
5	Potter

ID	Name
1	John
2	Anne
3	Marius
4	Steven
5	Potter

ID	Name
2	Anne
3	Marius
4	Steven
5	Potter

ID	Name
2	Anne
3	Marius
4	Steven
5	Harry



# Northwind Database Queries

## Create the following triggers:

- 1. tr\_AUDIT\_Employees** - We need to track down **when** and by **who** a new employee is inserted to the database or a current employee is updated.
  - Create 4 new columns to the Employee table (CREATE\_ID, CREATE\_DATE, UPDATE\_ID, UPDATE\_DATE)
  - To get the current date use the GetDate() function
  - To get the current user logged in use (SELECT **USER**)
  - After you finish the trigger, test it by adding new employees and by changing employee names.
- 2. tr\_ORDER\_TOTAL** - We need to update the total amount for each order automatically.
  - Create a new column (TOTAL type: money) to the **Orders** table
  - This column must update the total amount for each order (Lab 10-Query 9) whenever an order detail is inserted or updated



# Northwind Database Queries

## Create the following functions:

1. **fn\_ABS** - input: int, output: positive int
2. **fn\_DATE\_ONLY** - input: datetime, output: string (10 chars) with the format dd/mm/yyyy
3. **fn\_LEFT** - input: string A, int B, output: substring of string A, from char 0 to B  
(e.g., `fn_LEFT('Harry Potter', 5)='Harry'`)
4. **fn\_REVERSE** – input: string A, output: reverse string A  
(e.g., `fn_REVERSE('Avada Kedavra')`='arvadeK adavA')