CSI 2132 Lab2

Basic SQL Programming
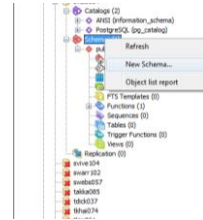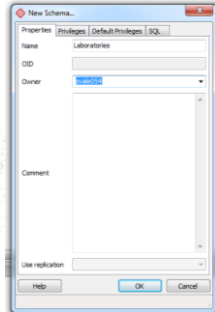
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Outline

- Review the syntax of
  - *Create a new Schema*
  - *CREATE TABLE*
  - *INSERT*
  - *SELECT*
  - *UPDATE*
  - *DELETE*

- Exercise:
  - *Create a new schema to work on it and set it as default*
  - *Creating tables from ER Diagrams*
  - *Inserting Data to tables*
  - *Querying the database*
  - *Updating Specific Data*
  - *Deleting Specific Data*

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Create a new Schema and set it as default

Right Click over Schemas Section

and Select "New Schema"

Name the new schema ("laboratories") and owner (your username).

- **In order to use this new created schema as the default one for the queries instead the "public" schema, first we need to execute the next sentence in the SQL tool**

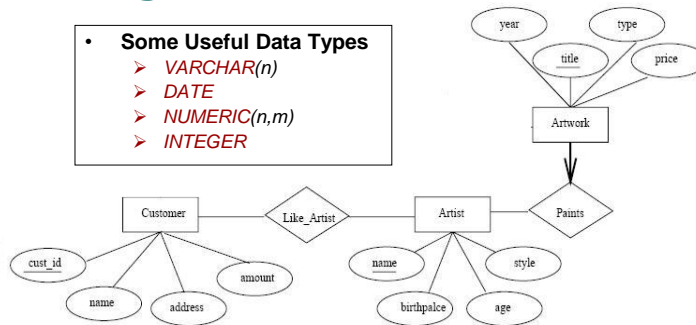 - ➤ *SET search_path = "new_schema"*

- This sentence has to be executed everytime we start the SQL tool   3

ER Diagram

- **Some Useful Data Types**
  - ➤ *VARCHAR(n)*
  - ➤ *DATE*
  - ➤ *NUMERIC(n,m)*
  - ➤ *INTEGER*

- **Tables Artist, Artwork, Customer, LikeArtist (Many to Many Relationship)**

- **Remember the Primary key and Foreign key constraints.**

- **A good convention is declaring the Primary Key(s) as the first attribute(s) in the tables**

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CREATE TABLE

- **Syntax:**

CREATE TABLE TableName
(
    attributeName1 type1,
    attributeName2 type2,
    …
    attributeNameN typeN,
    Constraint1, Constraint2, …, ConstraintM
)

- **Example**

CREATE TABLE Artist
(
    AName VARCHAR(20),
    Birthplace VARCHAR(20),
    Style VARCHAR(20),
    DateOfBirth DATE,
    PRIMARY KEY (AName)
);

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Tables to be Created

Artist

AName	Varchar(20)	Primary Key
Birthplace	Varchar(20)	
Style	Varchar(20)	
DateOfBirth	Date	

Customer

CustId	Integer	Primary Key
Name	Varchar(20)	
Address	Varchar(20)	
Amount	Numeric(8,2)	

Artwork

Title	Varchar(20)	Primary Key
Year	Integer	
Type	Varchar(20)	
Price	Numeric(8,2)	
Aname	Varchar(20)	Foreign Key

LikeArtist

CustId	Integer	Primary Key	Foreign Key
AName	Varchar(20)	Primary Key	Foreign Key

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The Code for All the Tables

```
CREATE TABLE Artist
(
    AName VARCHAR(20),
    Birthplace VARCHAR(20),
    Style VARCHAR(20),
    DateOfBirth DATE,
    PRIMARY KEY (AName)

);
```

```
CREATE TABLE Artwork
(
    Title VARCHAR(20),
    Year INTEGER,
    Type VARCHAR(20),
    Price NUMERIC(8,2),
    AName VARCHAR(20),
    PRIMARY KEY (Title),
    FOREIGN KEY(AName)
     REFERENCES Artist);
```

```
CREATE TABLE LikeArtist
(
    CustId  INTEGER,
    AName VARCHAR(20),
    PRIMARY KEY(Aname, CustId),
    FOREIGN KEY (Aname)
        REFERENCES Artist,
    FOREIGN KEY (CustId)
        REFERENCES Customer);
```

```
CREATE TABLE Customer
(
    CustId INTEGER,
    Name VARCHAR(20),
    Address VARCHAR(20),
    Amount NUMERIC(8,2),
    PRIMARY KEY (CustId)
);
```

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Insertion

- **Syntax:**

INSERT INTO TableName(attrName1,…,attrNameN)
        VALUES (Value1,…, ValueN);

- **Example:**

INSERT INTO Artist(AName,BirthPlace,Style,DateOfBirth)
        VALUES ('Caravaggio','Milan','Baroque','1571-09-28');

- Character values are quoted by ' ', and numerical values are unquoted when inserting.

- Several inserts can be done consecutively in Query Tool.

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Insert the following values

- InTo Table Customer(CustId,Name,Address,Amount)
  - (1,'John','Ottawa',8.5)
  - (2,'Amy','Orleans',9.0)
  - (3,'Peter','Gatineau',6.3)

- InTo Table Artist(AName,Birthplace, Style, DateOfBirth)
  - ('Caravaggio','Milan','Baroque','1571-09-28')
  - ('Smith', 'Ottawa', 'Modern', '1977-12-12')
  - ('Picasso','Malaga','Cubism','1881-10-25')

- InTo Table Artwork(Title,Year,Type,Price,AName):

  (Note that AName is a foreign key, value should exist in Artist)

  - ('Blue', 2000,'Modern',10000.00,'Smith')
  - ('The Cardsharps', 1594,'Baroque',40000.00,'Caravaggio') 9

Simple SELECT query

- **Syntax**

  SELECT attr1,att2,…,attrN
  FROM table1,table2,…,tableM
  WHERE <conditions>

- **Example**

  SELECT Style FROM Artist WHERE AName = 'Smith';
  or
  SELECT A.Style FROM Artist AS A WHERE A.AName = 'Smith';
  or
  SELECT A.Style FROM Artist A WHERE A.AName = 'Smith';

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Create the following Queries

- List all artists that are born in Ottawa
- List the titles and prices of all artworks painted in 2000.

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Updating Data

- We can also modify certain data satisfying a condition from a table with UPDATE command. Condition is the same as WHERE clause of a SELECT query. If you omit the WHERE clause, **all records will be updated permanently**.

- **Syntax**

  UPDATE TableName SET Att1 = NewValueAtt1, Att2 = NewValueAtt2 WHERE Condition

- **Example**

  UPDATE Customer SET Name = 'Bruce' WHERE CustId = 1

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Update the Following Data

- Update Customer Name John to Bruce.

- Update the Amount value for all the Customers in the Database to be 9.8 and the address to be Gatineau.

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Deleting rows

- We can delete certain rows satisfying a condition from a table with DELETE command. Condition is the same as WHERE clause of a SELECT query. If you omit the WHERE clause, **all records will be deleted permanently**.

- **Syntax**

DELETE FROM TableName WHERE Condition

- **Example**

- DELETE FROM Artist WHERE AName = 'Smith'

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Deleting the Following Rows

- Remove Customer Bruce from our Database.

- Remove all the remaining Customers from the Database.

- Suppose the artist 'Smith' moved to another gallery, and we have to remove him from our database. (**Note that Artwork table has a foreign key to Artist table**)

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For Detailed Information

- About SQL Syntax:

  ➤ *http://www.faqs.org/docs/ppbook/c22759.htm*

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