CSI 2132 Lab #2

- Basic SQL Programming

Outline

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

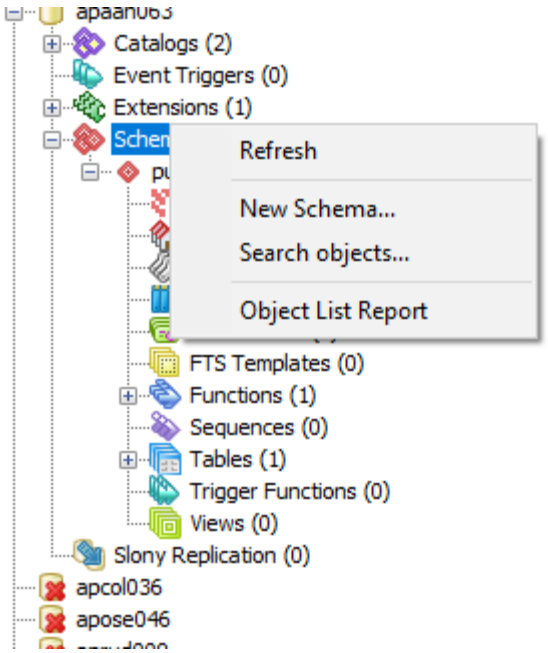
Exercises

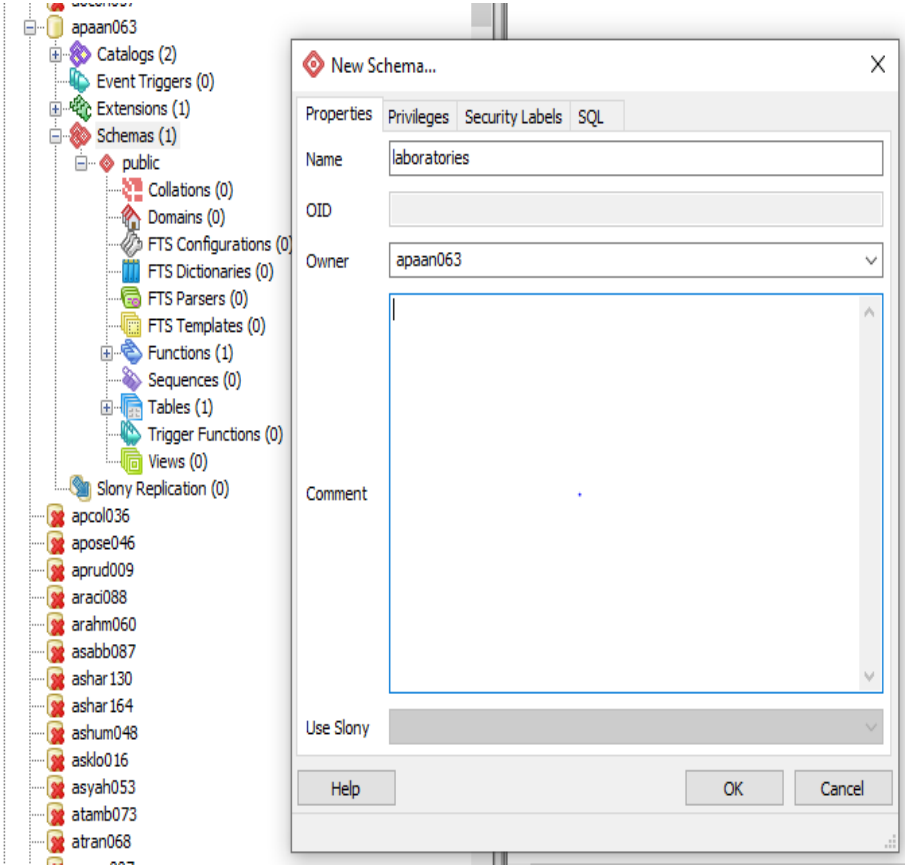
- Create a new schema to work on it and set it as default
- Creating tables from ER Diagrams
- Inserting Data to tables
- Querying the database
- Updating Specific Data
- Deleting Specific Data

How to create schema

- A **schema** is a collection of database objects associated with one particular database username.
- Right Click over Schemas Section and Select "New Schema"
- Name the new schema ("laboratories") and set the 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 searchpath = "new schema"
- This sentence has to be executed every time we start the SQL tool

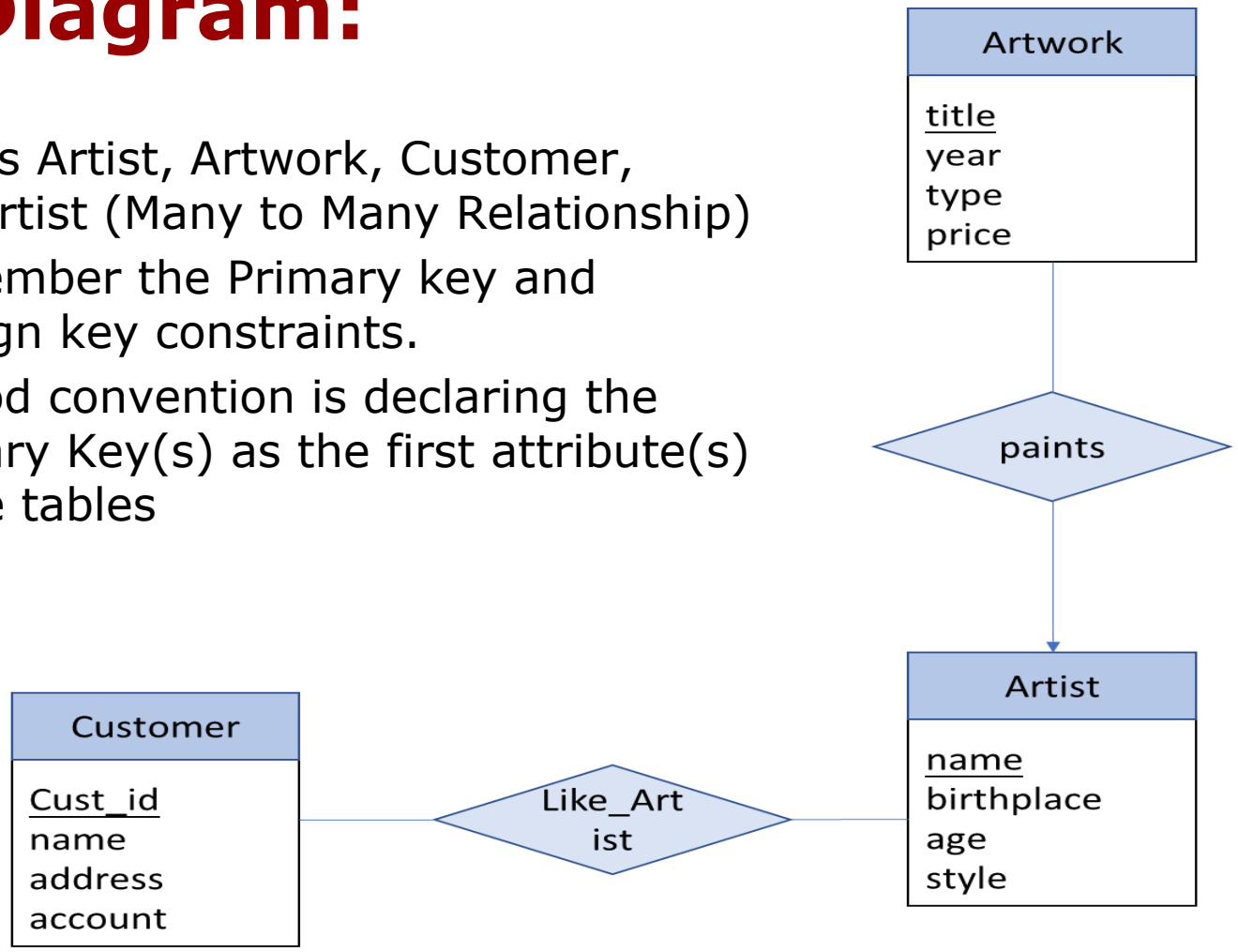
Create schema and set it to default





ER Diagram:

- 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



Data Types

- INTEGER
- VARCHAR(n)
- DATE
- TEXT
- CHAR(n)
- BOOLEAN

- Refer to: https://www.postgresql.org/docs/9.5/datatype.html

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)
);
```

Tables to be created

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

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

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

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

Queries to create tables

```
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));
```

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

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.

Insert the following data

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

  Note: AName is a foreign key, value should exist in Artist

Selection

Syntax:

```
SELECT attr1,att2,…,attrN
FROM tableName
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';
```

Create the following queries

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

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

Create the following queries

- 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.

Deletion

- 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'

Create the following queries

- 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)

Reference

- About SQL Syntax:

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