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SQL Fundamentals

LEARN TO DESIGN & BUILD A WINDOWS SQL DATABASE

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Database

CRUD create read update delete
What is a database?
A file structured for the repository of data.
Organized for easy retrieval, sorting, grouping, relating to other data and
Example: Customer database
Storing Customer Data
Why not use a simple text file
Not easily manageable

Why not use an Excel spreadsheet file?
No easy way to relate sales data to customer information

Relational Database Management System RDBMS
Relational Database Theory – Organizing data into tables that can be related together, this reducing redundancy and increasing the integrity of the data
Normalization – the process
SQL Server
A high end relational database management system
SQL server 2013 Express Edition
Similar power, but intended for smaller projects.

Database Objects

- Tables contain
  - Columns
  - Rows or records

The value of a single column and a single row is a called a "field"
The data type for each column in a table
The maximum size of data that will be stores In the column
The nullability of a column

Primary Key
A field or combination of fields that make a given row unique in the database. A way of differentiating each row in a table when all other rows in the same

Foreign key
Relate one or more rows in one table to a record in another table that shares the same value in its primary key.
Adding a FK constraint prevents deletions in the customer table to create orphaned rows in the order table.

FK constraints enforce "Referential Integrity"

Order	
KEY	orderID
	orderDate
	orderAmount
	paymentType
FK	customerID

Customer			
KEY	customerID	int (11)	
	firstName	varchar(50)	
	lastName	varchar(50)	
	address	varchar(200)	Null
	city	varchar(200)	Null
	county	char(2)	Null
	zip	char(2)	Null
	creditLimit	currency	
	customerSince	datetime	

```
sqlite>../sqlite3.exe PatsClothesShop.db
Customer     Order
```

```
sqlite> CREATE TABLE Customer(
   costumerID INT PRIMARY KEY     NOT NULL,
   firstName           CHAR(50),NOT NULL,
   lastName            CHAR(50),     NOT NULL,
   address             VARCHAR(200),
   city                CHAR(2),
   county              CHAR(2),
   creditLimit…….      REAL,
   costomerSince       DATETIME
);
```

```
sqlite> CREATE TABLE Order(
   orderID INT PRIMARY KEY      NOT NULL,
   orderDate         DATETIME NOT NULL,
   orderAmount       REAL,
   paymentType       INT,
   customerID        INT      NOT NULL
);
```

```
sqlite>.tables
Customer     Order
```

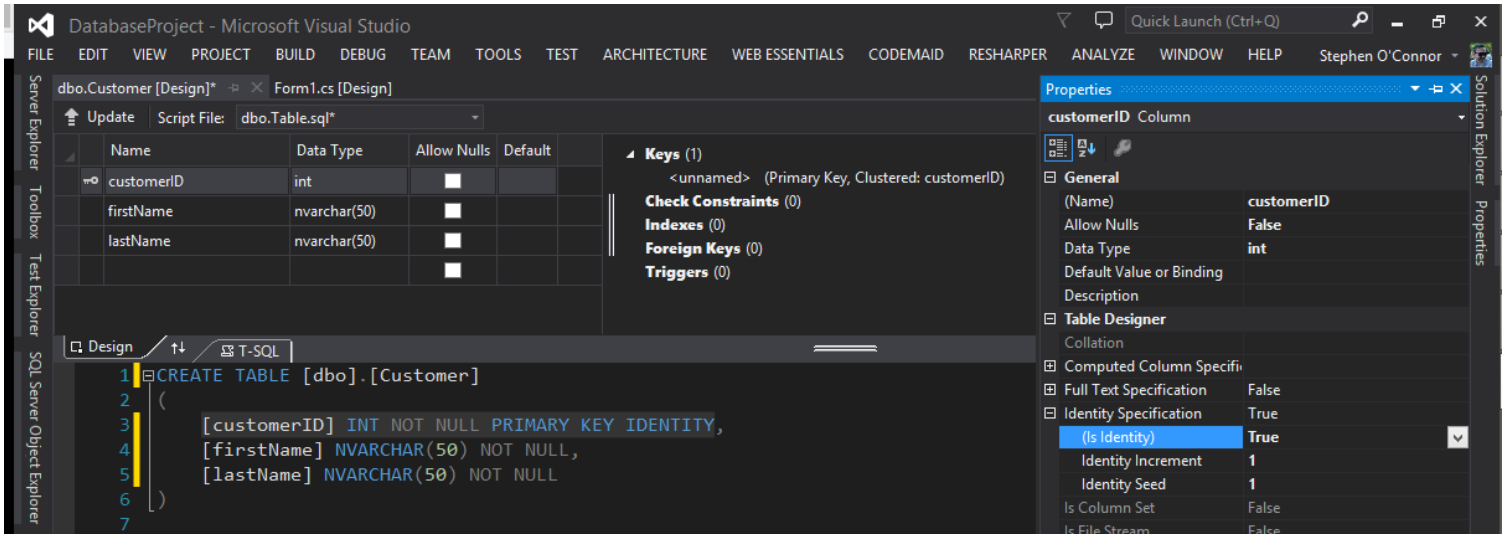
```
sqlite>.header on
sqlite>.mode column
sqlite>.timer on
```

Insert 5 customers like below

```
INSERT INTO COMPANY (firstName, lastName, address, city, county, creditLimit,
costomerSince)
VALUES (1, 'Paul', 'Murphy' 32, 'Apt 1', 'Dublin', 'Dublin', 15000.00, '2007-01-01
10:00:00' );
```

Data Integrity
Keeping data valid, of the correct data type, ect, so that it is usable for its intended purpose. Customer moves separate tables

Utilizing Databinding in our C# Win forms Apps
What are data sets?
Working with the System.Data Namespace
(aka ADO.NET)
Working with the IDE's tools, windows, etc.
Databinding
User interface controls must be data binding "aware"
ADO.NET(System.Data) classes support data binding
ADO.NET creates a connection to a data source (database)
ADO.NET manages the conversation (requests and responses) between your application and the database.
Ado.net manages the data that is retrieved forum the response to the database query.
BindingSource manages the connection between the user interface controls and the underlying data set retrieved from the database.
Provides an application interface to reduce learning curve for the end user
Restrict access to the database to maintain security
To control the presentation of the data
Maintain the integrity of the data
Practice



When user interface controls retrieve and display data from a data source without requiring the programmer to worry about all the programmatic details of this process.

Each user interface control has different properties that can be bound to a data source.

```
EXEC sp_rename 'Table', 'Folder'
```

I