Developing SQL Databases

Lab 3 – Ensuring Data Integrity through Constraints

Overview

A table named Opportunity has recently been added to the DirectMarketing schema within the database, but it has no constraints in place. In this lab, you will implement the required constraints to ensure data integrity and, if you have time, test that constraints work as specified.

Before starting this lab, you should view **Module 3 – Implementing Entity and Referential Integrity** in the course *Developing SQL Databases*. Then, if you have not already done so, follow the instructions in the **Getting Started** document for this course to set up the lab environment.

If you find some of the challenges difficult, don't worry – you can find suggested solutions for all of the challenges in the **Lab Solution** folder for this module.

What You'll Need

To complete the labs, you will need the following:

- An Azure SQL Database instance with the AdventureWorksLT sample database. Review the Getting Started document for information about how to provision this.
- The lab files for this course

Setup

1. Using SQL Server Management Studio, connect to the AdventureWorksLT database.
2. Open Lab3Setup.sql from the Setup folder for this course and run the following Transact-SQL:

```
CREATE SCHEMA DirectMarketing

GO

CREATE TABLE [DirectMarketing].[Opportunity](

        [OpportunityID] [int] NULL,

        [ProspectID] [int] NOT NULL,

        [DateRaised] [datetime] NULL,

        [Likelihood] [tinyint] NULL,

        [Rating] [char](1) NULL,

        [EstimatedClosingDate] [date] NULL,

        [EstimatedRevenue] [decimal](10, 2) NULL
)
```

Challenge 1: Add Constraints

You have been given the design for a table called DirectMarketing.Opportunity. You must alter the table with the appropriate constraints based upon the provided specifications.

Review the Design

Review the following table design specifications:

Column Name	Data Type	Required	Validation Rule
OpportunityID	Int	Yes	Part of the Primary key
ProspectID	Int	Yes	Part of the Primary key
DateRaised	datetime	Yes	Must be today's date
Likelihood	tinyint	Yes	
Rating	char(1)	Yes	
EstimatedClosingDate	date	Yes	
EstimatedRevenue	decimal(10,2)	Yes	

Alter the Direct Marketing Table

1. Work through the list of requirements and alter the DirectMarketing.Opportunity table to make columns required based on the requirements.
2. Work through the list of requirements and alter the DirectMarketing.Opportunity table to make columns the primary key based on the requirements.
3. Work through the list of requirements and alter the DirectMarketing.Opportunity table to add DEFAULT constraints to columns based on the requirements.

Challenge 2: Test the Constraints

You should now test each of the constraints that you designed to ensure that they work as expected.

Test the Data Types and Default Constraints

Create a new query file for the solution called ConstraintTesting.sql. Use this new connection to AdventureworksLT to insert a row into the Opportunity table using the values below, which are organized by the columns as found within the table, except for **DateRaised** which should be automatically generated.

[1,1,8,'A','12/12/2013',123000.00]

Test the Primary Key

Try to add the same row again to confirm that the primary key constraint is working to ensure entity integrity—only unique rows are to be added to the table