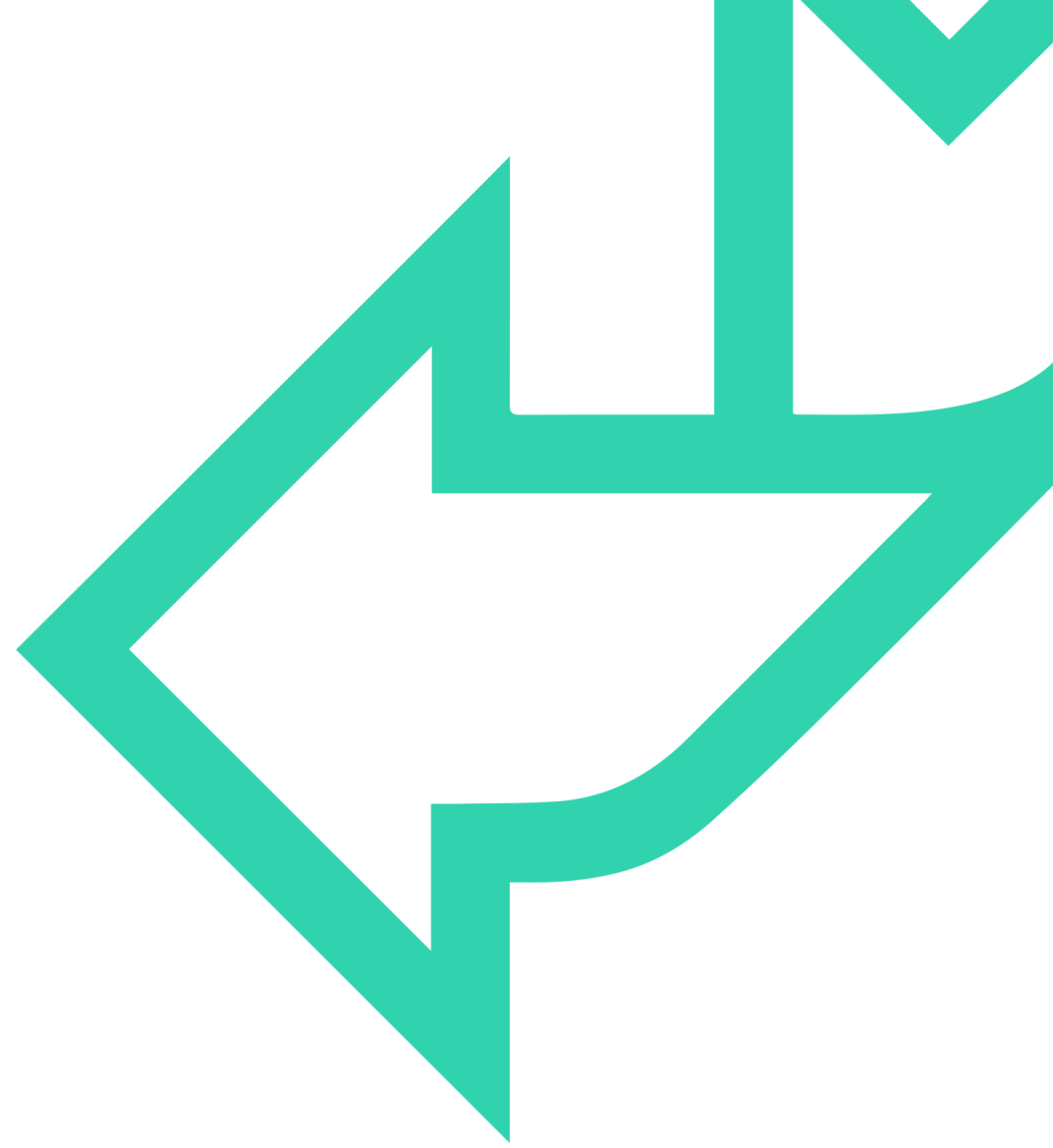
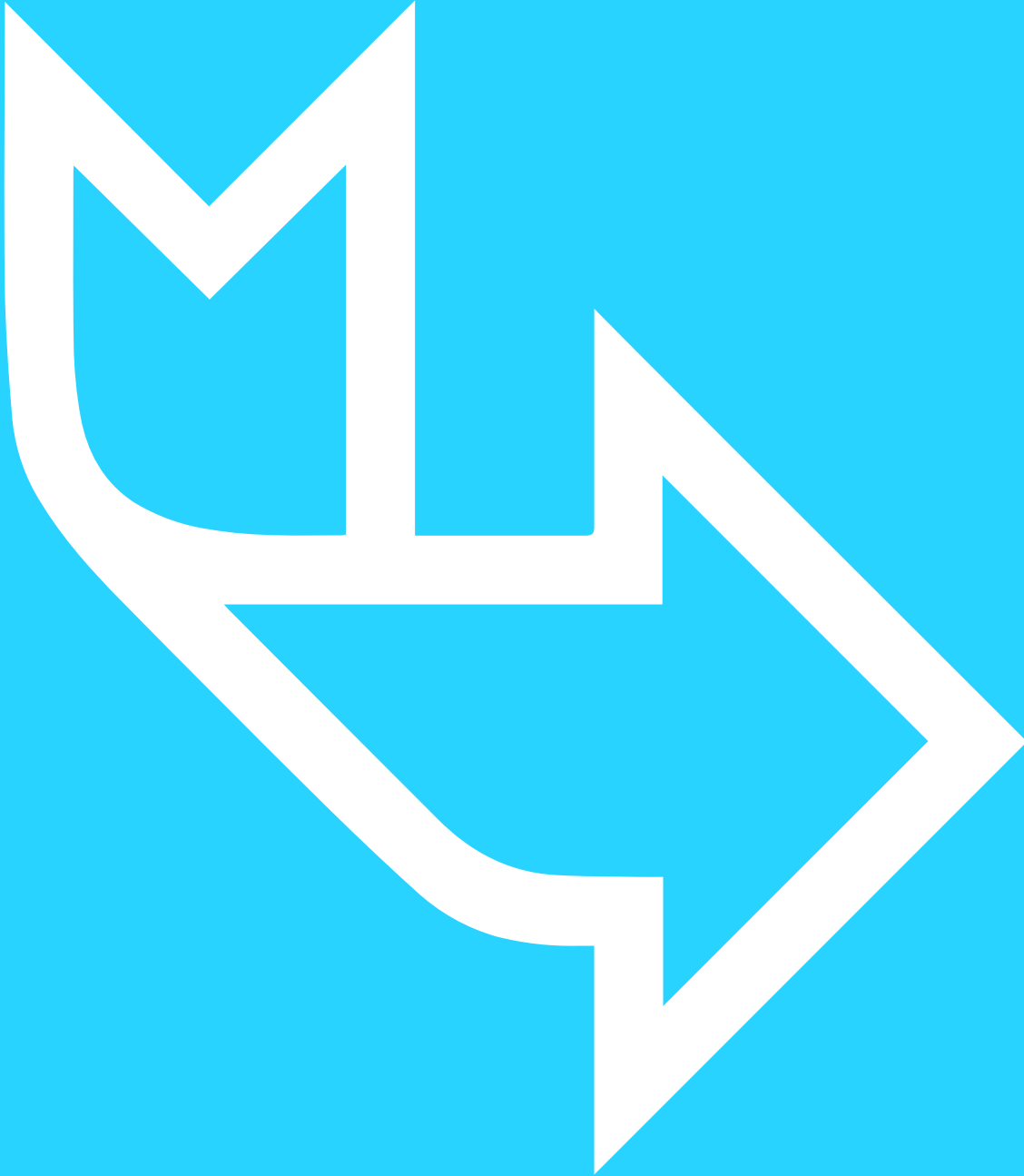




Physical Data Models

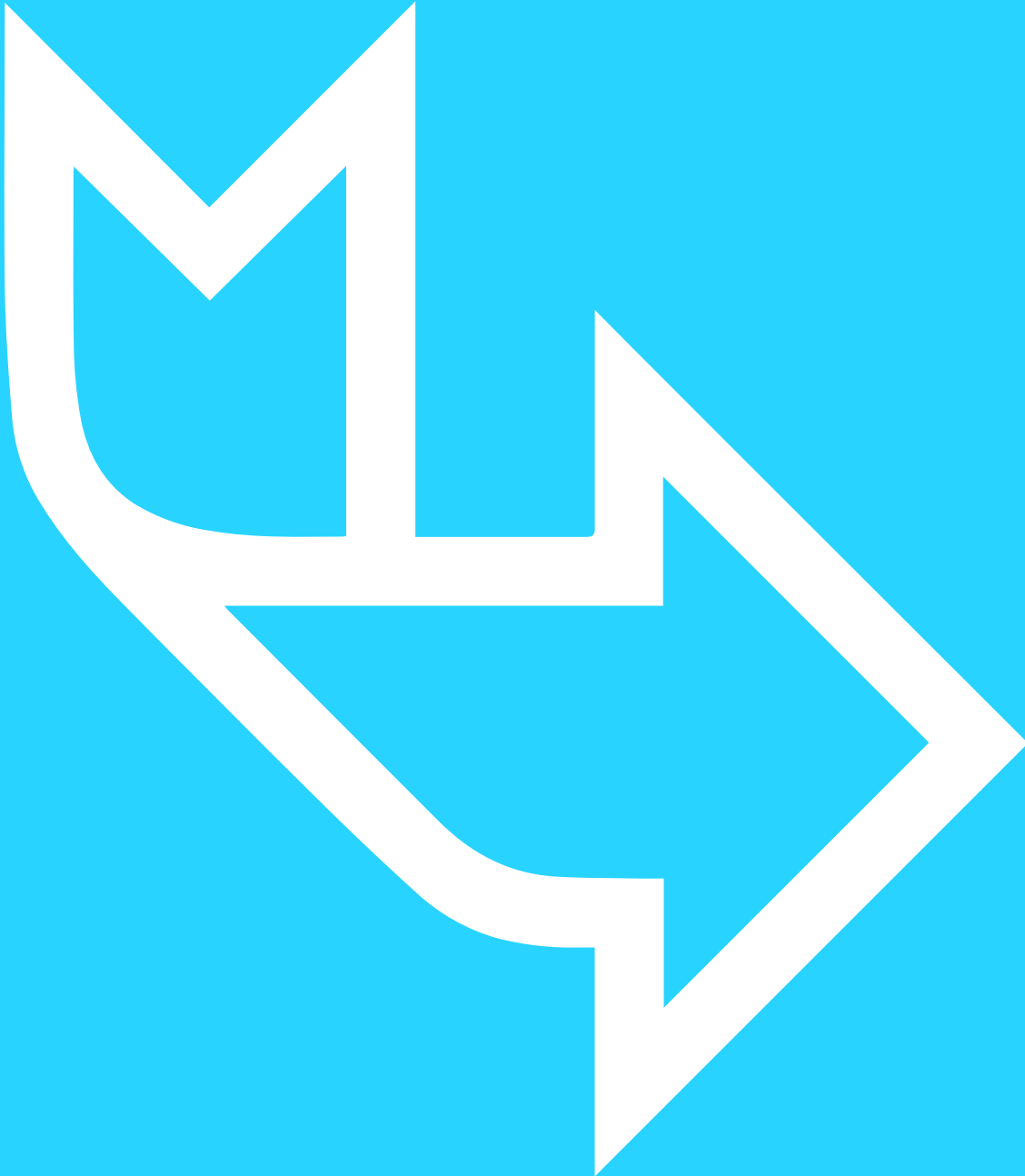




Data Modelling

Lesson Objectives and Contents

→ The Physical Data Model



Data Modelling

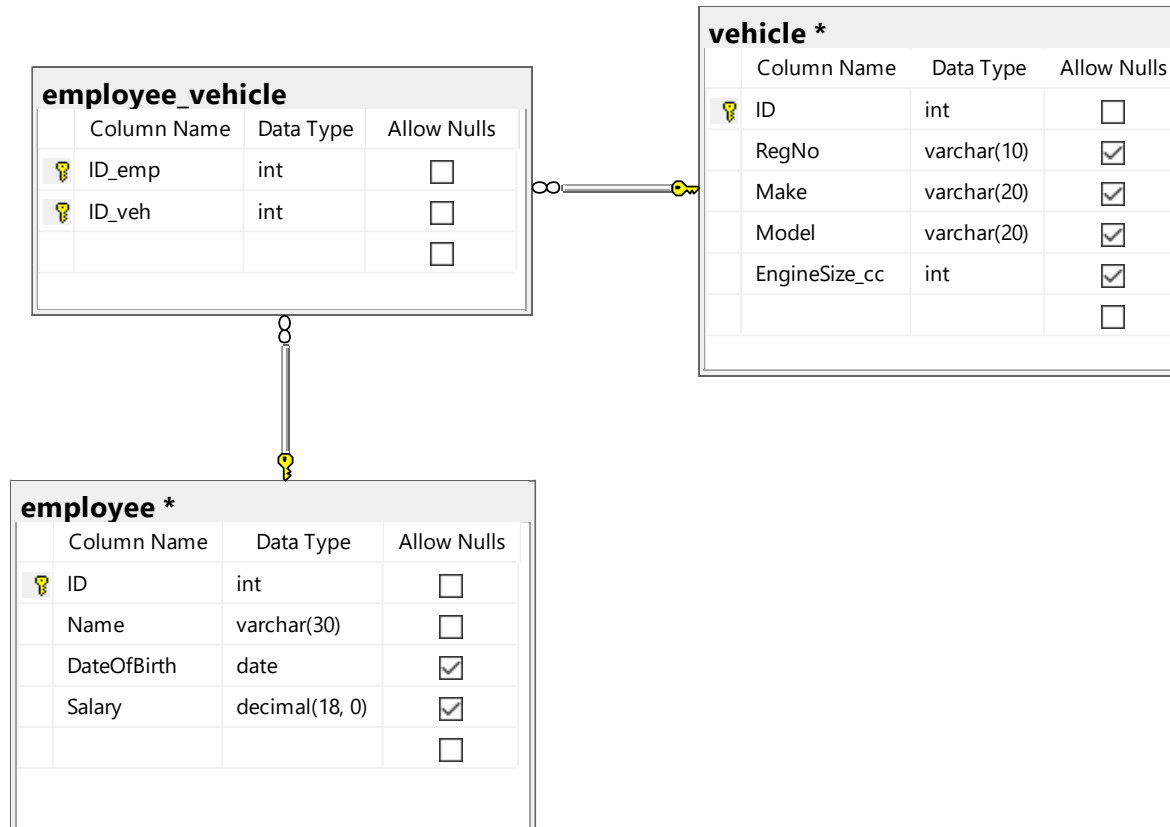
Next Level is ...

Physical Data Diagram

- Uses table names
- Column name
- Column data type
- Column constraints
- Primary key, foreign key, and relationships

Physical Data Diagram

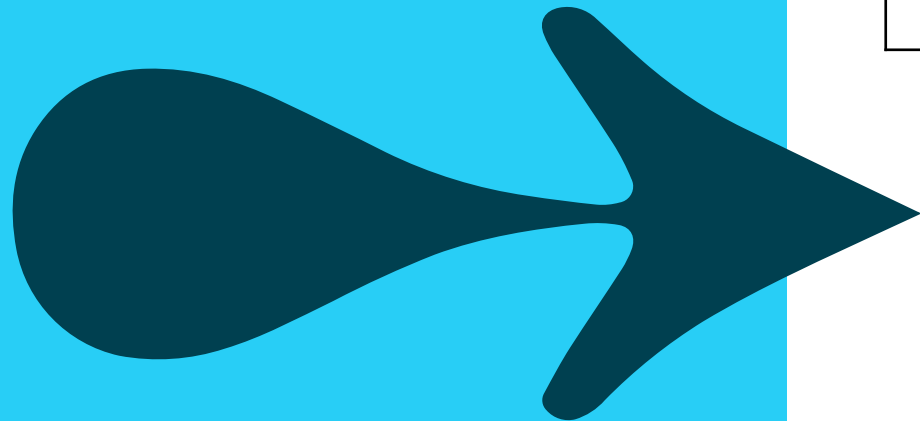
An example of a physical data diagram using the tool in SQL Server.





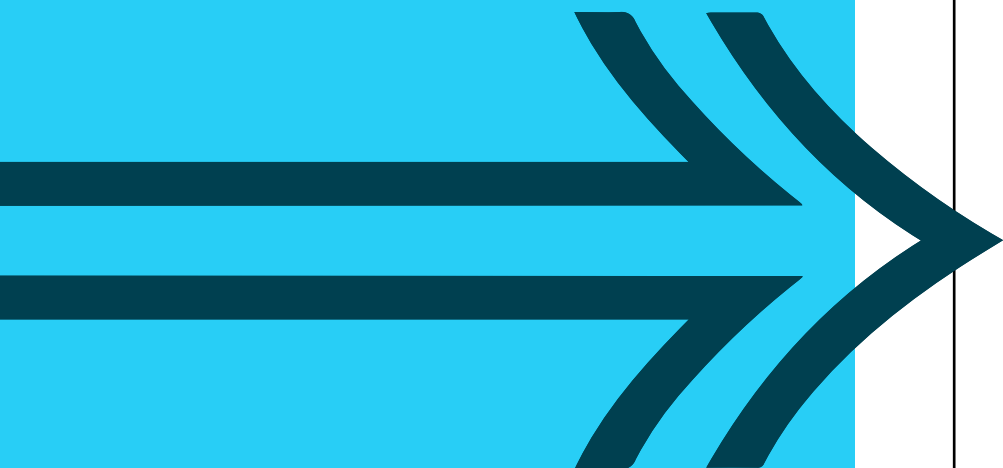
SQL SERVER STRING DATA TYPES

Data type	Description
char(n)	Fixed width character string
varchar(n)	Variable width character string
varchar(max)	Variable width character string
text	Variable width character string
nchar(n)	Fixed width Unicode string
nvarchar(n)	Variable width Unicode string





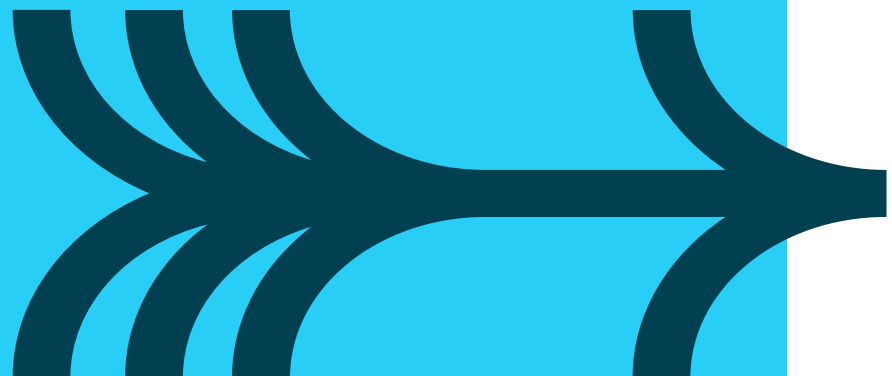
SQL SERVER NUMERIC DATA TYPES



Data type	Description
bit	Integer that can be 0, 1, or NULL
tinyint	Allows whole numbers from 0 to 255
smallint	Allows whole numbers between -32,768 and 32,767
int	Allows whole numbers between -2,147,483,648 and 2,147,483,647
bigint	Allows whole numbers between -9,223,372,036,854,775,808 and 9,223,372,036,854,775,807
numeric(p,s)	<p>Fixed precision and scale numbers.</p> <p>Allows numbers from $-10^{38} + 1$ to $10^{38} - 1$.</p> <p>The p parameter indicates the maximum total number of digits that can be stored (both to the left and to the right of the decimal point). p must be a value from 1 to 38. Default is 18.</p> <p>The s parameter indicates the maximum number of digits stored to the right of the decimal point. s must be a value from 0 to p. Default value is 0</p>



SQL SERVER DATE DATA TYPES



Data type	Description
datetime	From January 1, 1753 to December 31, 9999 with an accuracy of 3.33 milliseconds
datetime2	From January 1, 0001 to December 31, 9999 with an accuracy of 100 nanoseconds
date	Store a date only. From January 1, 0001 to December 31, 9999
time	Store a time only to an accuracy of 100 nanoseconds



PRIMARY KEY SPECIFICATION

Object Explorer

Connect

(local) (SQL Server 15.0.2080.9 - DESKTOP-9VGI4R.QA)

- Databases
 - System Databases
 - Database Snapshots
 - AdventureWorksDW2019
 - SALES
 - QA
 - Database Diagrams
 - Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Driver
 - dbo.Licence
 - Views
 - External Resources
 - Synonyms
 - Programmability
 - Service Broker
 - Storage
 - Security
 - Server Objects
 - Replication
 - PolyBase
 - Always On High Availability
 - Management
 - Integration Services Catalogs
 - SQL Server Agent (Agent XPs disabled)
 - XEvent Profiler

DESKTOP-9VGI4R.QA - dbo.Driver*

Column Name	Data Type	Allow Nulls
DriverID	int	<input type="checkbox"/>
DriverName	nvarchar(50)	<input checked="" type="checkbox"/>
LicenceID	int	<input checked="" type="checkbox"/>

DESKTOP-9VGI4R.QA - dbo.Licence*

Column Properties

(General)

(Name) DriverID

Allow Nulls No

Data Type int

Default Value or Binding

Table Designer

Collation <database default>

Computed Column Specification

Condensed Data Type int

Description

Deterministic Yes

DTS-published No

Full-text Specification No

Has Non-SQL Server Subscriber No

Identity Specification Yes

(Is Identity) Yes

Identity Increment 1

Identity Seed 1

Indexable Yes

Is Columnset No

Is Sparse No

Merge-published No

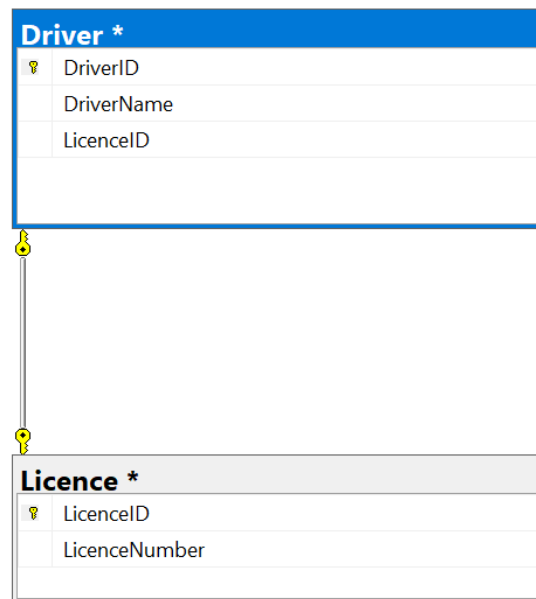
Not For Replication No

Replicated No

RowGuid No

Identity Specification

FOREIGN KEYS



Tables and Columns

Relationship name:
FK_Driver_Licence

Primary key table: Licence
Foreign key table: Driver

Primary key table	Foreign key table
LicenceID	LicenceID

OK Cancel



DEFAULT VALUES

DESKTOP-9VGII4R.SalesDW - dbo.dimCountry - Microsoft SQL Server Management Studio

File Edit View Project Table Designer Tools Window Help

Quick Launch (Ctrl+Q)

Object Explorer

Connect

SalesDW

- Database Diagrams
- Tables
 - System Tables
 - FileTables
 - External Tables
 - Graph Tables
 - dbo.Customer
 - dbo.dimCountry
 - dbo.dimCountry_mr
 - dbo.dimCustomer
 - dbo.dimCustomer_mr
 - dbo.dimProduct
 - dbo.dimProduct_mr
 - dbo.dimRegion
 - dbo.dimRegion_mr
 - dbo.dimSalesChannel
 - dbo.dimSalesChannel_mr
 - dbo.factSale
 - dbo.factSale_mr
 - dbo.Lookup
 - dbo.ProductSales

DESKTOP-9VGII4R.S...- dbo.dimCountry

Column Name	Data Type	Allow Nulls
CountryID	int	<input type="checkbox"/>
CountryName	varchar(50)	<input checked="" type="checkbox"/>
RegionID	int	<input checked="" type="checkbox"/>
CreateTimestamp	datetime	<input checked="" type="checkbox"/>
UpdateTimestamp	datetime	<input checked="" type="checkbox"/>

Column Properties

(General)

(Name)	CreateTimestamp
Allow Nulls	Yes
Data Type	datetime
Default Value or Binding	(getdate())

Table Designer

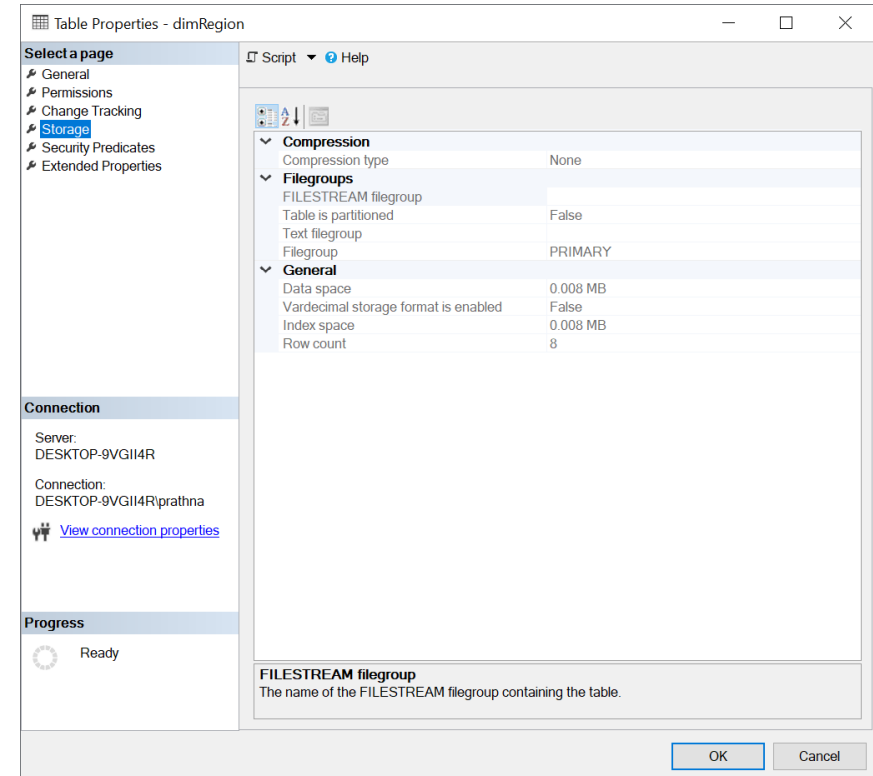
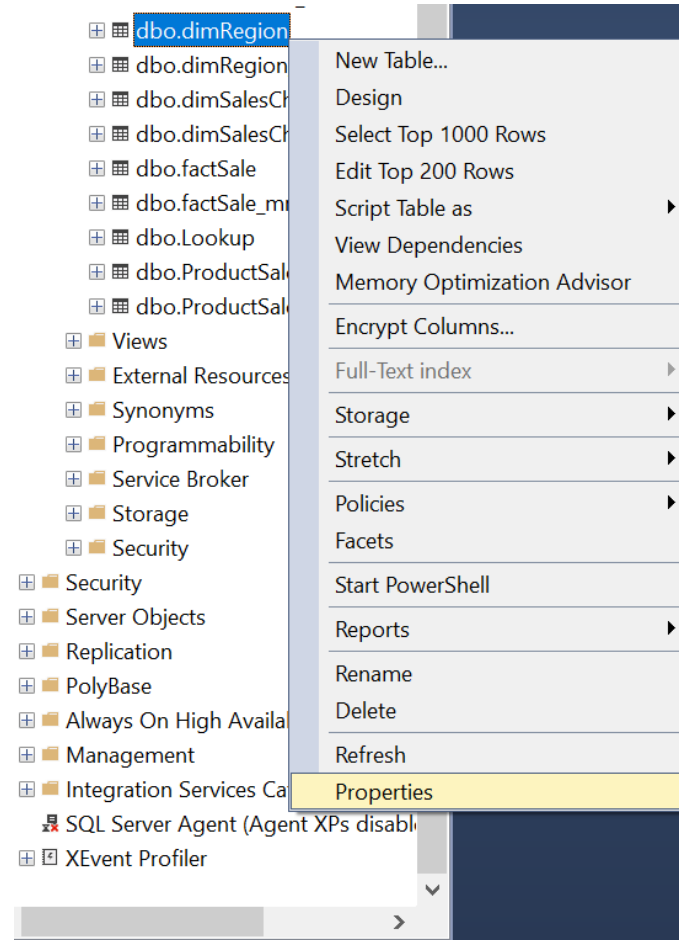
Collation	<database default>
Computed Column Specification	
Condensed Data Type	datetime

(General)

Ready



ROW COUNT



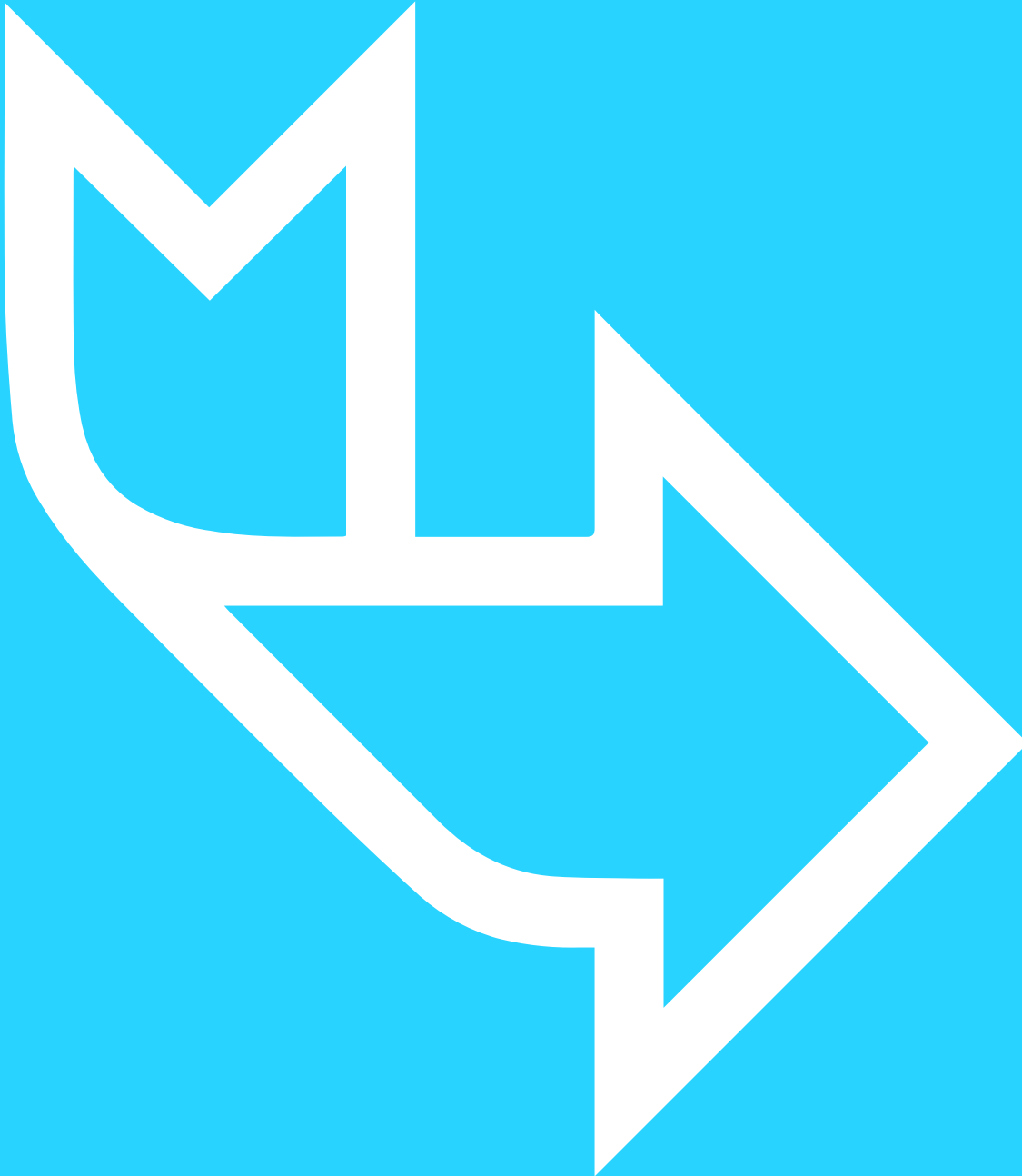


LAUNCHING SSMS

If you are using SQL Server Management Studio, first complete these steps:

1. Launch the virtual machine.
2. Log on as Administrator.
3. Launch SQL Server Management Studio.
4. Connect to the server.





Exercise

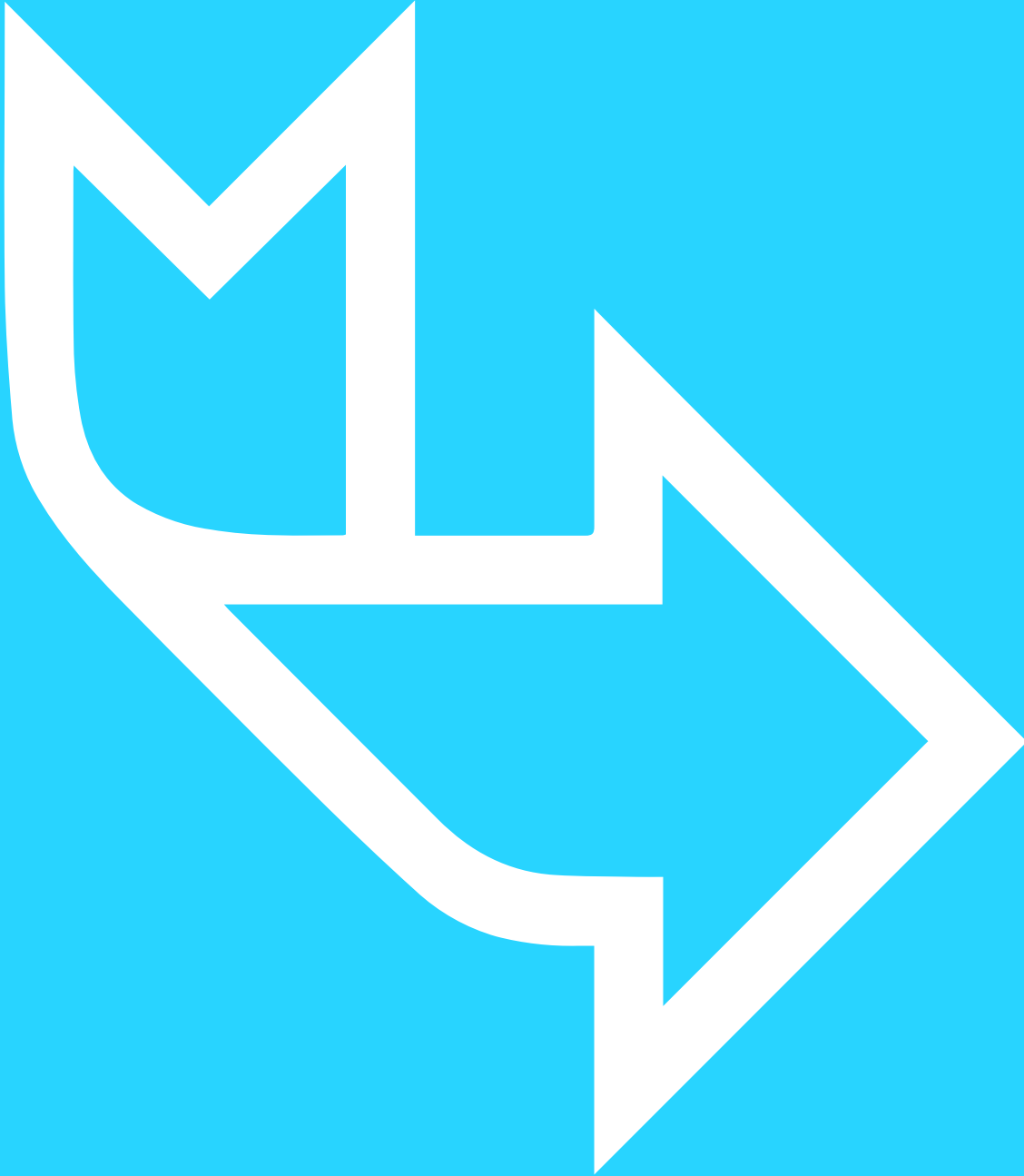
**Exercise EG_03_Physical Data
Diagram**

AdventureWorks Game

Part 1 – Conceptual Diagram

Part 2 – Logical Diagram

Part 3 – Physical Diagram



Data Modelling

In this lesson, we have covered...

→ The Physical Data Model