

Inheritance in the Entity Data Model

Mapping and Using Inherited Entities in Entity Framework



Objectives

- Adding Table Per Hierarchy Inheritance to a Database First Model
- Adding Table Per Type Inheritance to a Database First Model
- Working with Inherited Entities in Code
- Inheritance in Model First Models
- Less Commonly Used Inheritance

Table per Hierarchy

Single DB Table Contains Complete Hierarchy

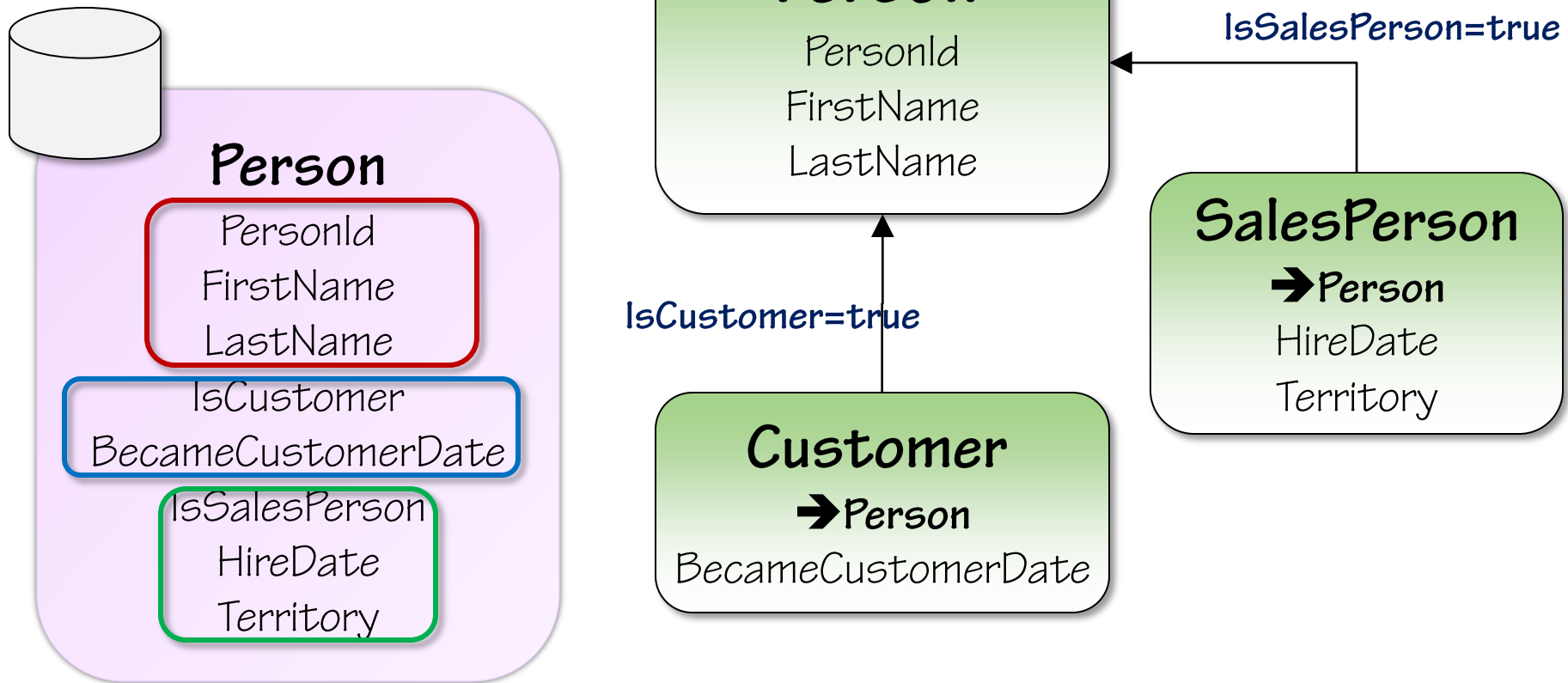
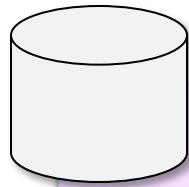


Table per Type

Separate DB Tables Contain Complete Hierarchy



People

PersonId
FirstName
LastName

Customers

PersonId
BecameCustomerDate

SalesPeople

PersonId
HireDate
Territory

Person

PersonId
FirstName
LastName

SalesPerson

→ Person
HireDate
Territory

Customer

→ Person
BecameCustomerDate

Querying Hierarchies

`context.People`



Results

- Person
- Person
- SalesPerson
- Customer
- SalesPerson

```
from p in  
context.People.OfType<Customer>  
where StartsWith("LastName")=="S"  
select p
```



Results

- Customer
- Customer
- Customer

Modifying Hierarchies

```
context.People.AddObject(newCustomer)
```

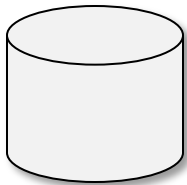


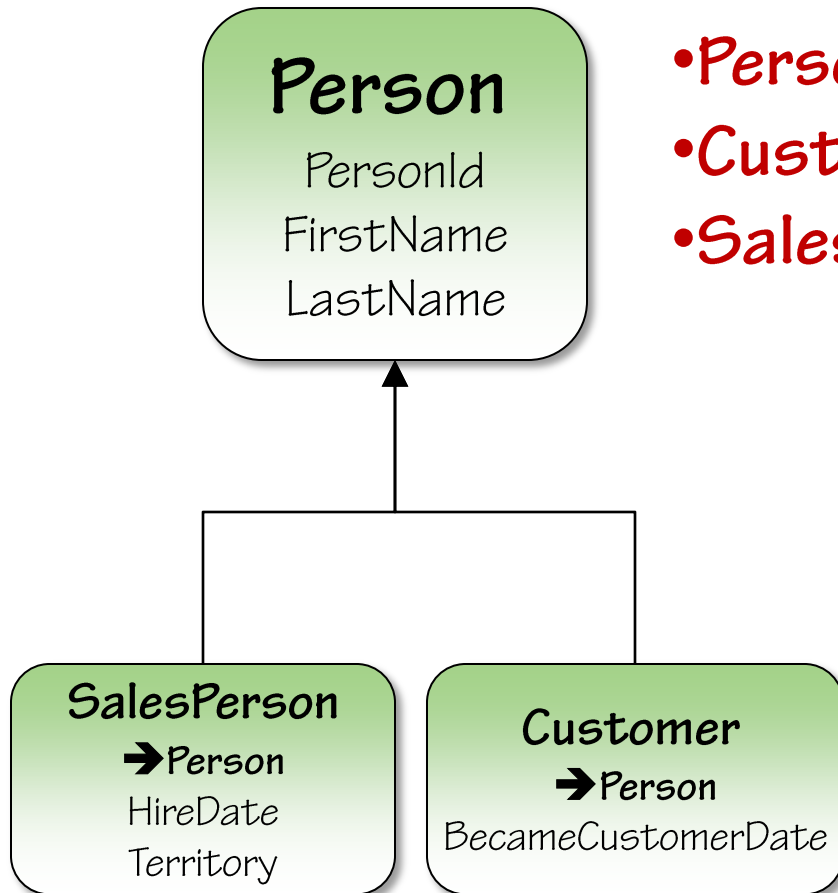
Table per Hierarchy:

```
insert into People values ( ... ) ← IsCustomer=true
```

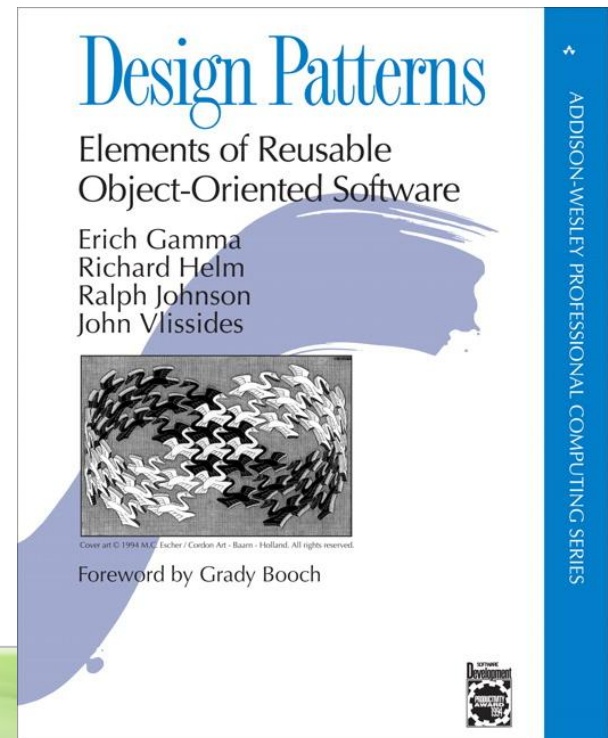
Table per Type:

```
insert into People values ( ... )  
Select PersonID from People ...  
Insert into Customer values(....)
```

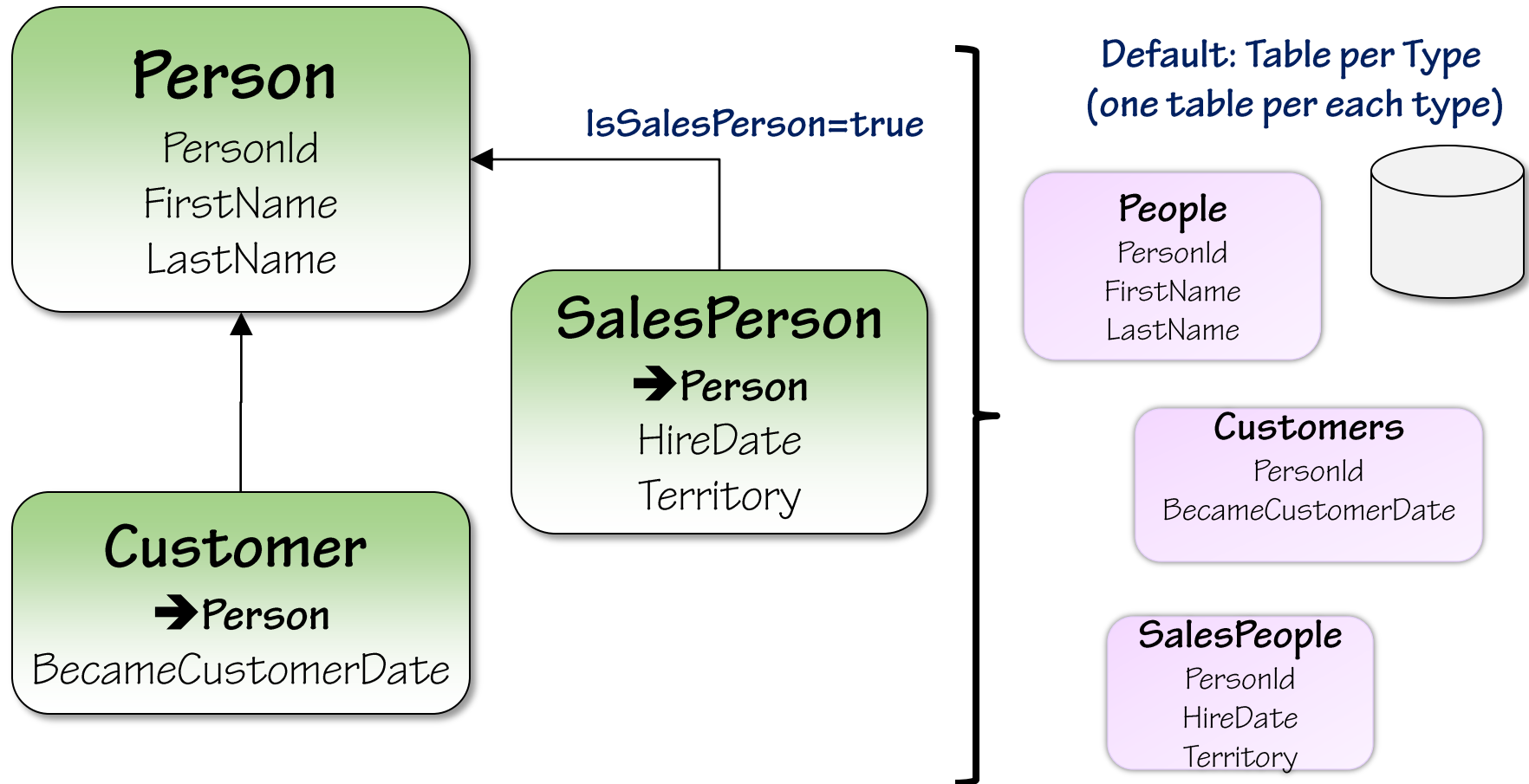
What if....?




- **Person becomes a Customer**
- **Customer reverts to Person?**
- **Salesperson is also a Customer?**




Inheritance when using Model First



Customizing Model First Inheritance DB Generation



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CREATED BY

Adi Unnithan (Microsoft)

LAST UPDATED

2/13/2010

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VERSION

1.1

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TAGS

ADO.NET, edmx, Entity Framework, EDM, entity

DescriptionReviews (4)Q and A (18)

02/11/2010: Visual Studio 2010 RC Update (v1.1) released

Known issues:

1) When cloning a workflow into the project, you will need to set the 'Build Action' to 'None' and clear out the Custom Tool to pr

A schema/data migration walkthrough is here: <http://blogs.msdn.com/adonet/archive/2010/02/08/entity-designer-database-ge>

This "Entity Designer Database Generation Power Pack" is a standalone download which includes some new database generatic original Database Generation feature in the Entity Designer is extensible via Windows Workflows and T4 Templates. This Powe extensibility mechanisms - introducing a new UI to help manage database generation strategies as well as six new workflow op database. Both the UI and workflows are discussed below.

Team System Data Workflows:

1. "Generate Migration T4" and "Deploy": This workflow uses T4Data to generate the deployment scripts to generate a script the

Less Common Hierarchies

- **Table per Concrete Type (TPC)**

- Variation on TPT
- For tables with overlapping fields
- Not supported by EDM Designer
- See: <http://blogs.msdn.com/b/adonet/archive/2007/03/15/inheritance-in-the-entity-framework.aspx>

- **Multiple Entity Sets per Type (MEST)**

- See: <http://blogs.msdn.com/b/alexj/archive/2008/05/16/mest-what-is-it-and-how-does-it-work.aspx>

Summary

- **Table Per Type (TPT)**
 - Each type stored in a separate database table
- **Table Per Hierarchy (TPH)**
 - All types stored in a single database table
- **Customize DB first model to add inheritance**
- **Model first inheritance defaults to TPT in database**
- **Multiple Entities Sets per Type (MEST)**
- **Table per Concrete Type (TPC) must be hand-coded in XML**

Resources

- **Pluralsight On Demand**
 - <http://www.pluralsight.com>
- **Programming Entity Framework, 2nd Edition, Julie Lerman**
 - O'Reilly Media, August 2010
 - <http://www.learnentityframework.com>
- **Microsoft Data Developer Center**
 - <http://msdn.com/data>
- **Tool to Modify Model First Database Generation**
 - www.VisualStudioGallery.com, Entity Designer Database Generation Power Pack
 - Or via Tools/Extension Manager in Visual Studio