

**SATURDAY MORNING
PRODUCTIONS**

Introduction to ORMs

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NAIT Digital Media and IT Students Association.

Demos

Demo Location:

<https://github.com/saturdaymp/IntroductionToOrmsPresentation>

Prerequisites:

- Visual Studio 2017 (free community version for Windows or Mac):
<https://www.visualstudio.com/>
- .NET Core 2.1
<https://www.microsoft.com/net/download>
- Docker (free community version):
<https://www.docker.com/docker-community>

Shameless Self Promotion

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What is Object-Relational Mapping (ORM)?

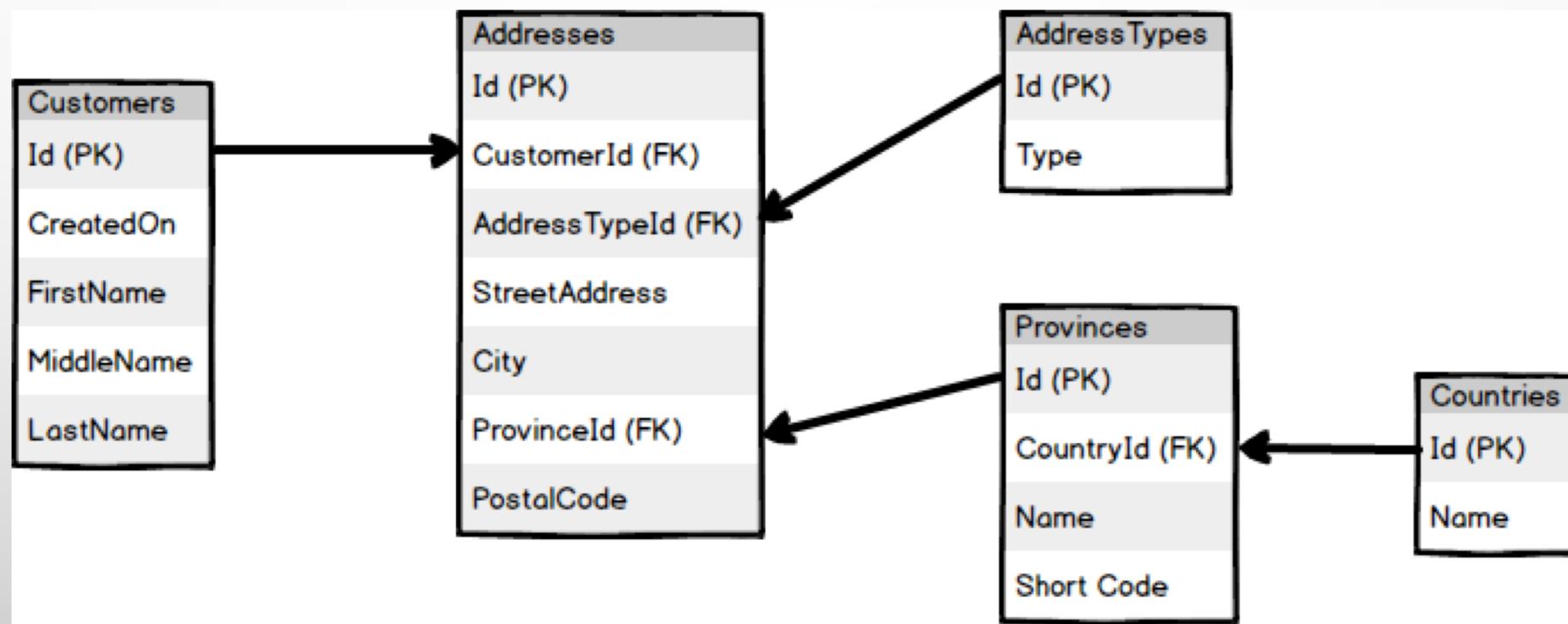
Wikipedia Definition

- Object-relational mapping (ORM, O/RM, and O/R mapping tool) in computer science is a programming technique for converting data between incompatible type systems using object-oriented programming languages. This creates, in effect, a "virtual object database" that can be used from within the programming language. There are both free and commercial packages available that perform object-relational mapping, although some programmers opt to construct their own ORM tools.

My Definition

- Map relational data to objects.

Tables and Fields Look Like Classes and Properties



Popular ORM Frameworks

Hibernate – Java, repository, open source

<http://hibernate.org/orm/>

Nhibernate – C# version of Hibernate

<http://nhibernate.info/>

Active Record – Ruby on Rails, active record

https://guides.rubyonrails.org/active_record_basics.html

Entity Framework – Microsoft, repository

<https://docs.microsoft.com/en-us/ef/>

Active Record vs Repository

Active Record: The model knows how the save it's self.

```
var customer = new Customer();
customer.Name = 'John';
customer.Save();
```

Repository: The model does not know how save it's self.

```
var customer = new Customer();
customer.Name = 'John';
var repo = new CustomerRepo();
repo.SaveCustomer(customer);
```

Code First vs. Database First

Code First: Create the database from the models in the code.

Database First: Create the models from the database.

Migrations

File(s) and/or script(s) to update database schema.

Can also be used to update data.

Migrations can be manually created or auto-magically generated.

Usually run migrations when the software is released.

Database Context

Connection to the database from the code.

Typical pattern:

- Create context and connect to database
- Do work (e.g. query, save, etc)
- Close context

Sometimes called the Unit of Work pattern

Lazy vs Eager Loading

Lazy loading loads the data when needed.

```
var customer = repo.FindCustomer(42);  
Console.WriteLine(customer.Addresses.Frist().Name); // Address is loaded here.
```

Eager Loading loads all the data in the query.

```
var customer = repo.FindCustomer(42); // Address is loaded here.  
Console.WriteLine(customer.Addresses.Frist().Name);
```

Most of the time you want eager loading.

DTOs and Auto-Mappers

DTO: Data transformation object.

Auto-Mappers copy data from one object to another.

Often used when you need to map data from a database or service to your view objects.

Problems with ORMs

Inefficient queries and/or too many queries.

Bringing back unneeded data and/or columns.

Not good for complicated queries and reports.

Fixes:

- Profile the queries.
- Use eager loading and avoid multiple DB requests.
- Write queries manually
- Don't be afraid to ask DBA for help.

Learning More

Slides and Example Code:

<https://github.com/saturdaymp/IntroductionToOrmsPresentation>

Introduction to ORMs for DBAs:

<https://github.com/saturdaymp/IntroductionToORMForDBAs>

<https://nftb.saturdaymp.com/category/software-development/introduction-to-orms-for-dbas/>

Entity Framework Core:

<https://docs.microsoft.com/en-us/ef/core/>

Rails Active Record:

https://guides.rubyonrails.org/active_record_basics.html

Contact Me

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