E6DAB

Efterår 2018

DAB Hand In 2

Gruppe 4
Midtvejsevaluering

Deltagere:

#1	
Stud.nr.: 201509807	Navn: Ali Saleh
#2	
Stud.nr.: 201600057	Navn: Jonas Jul Yde
Dato: 30/09-2018	

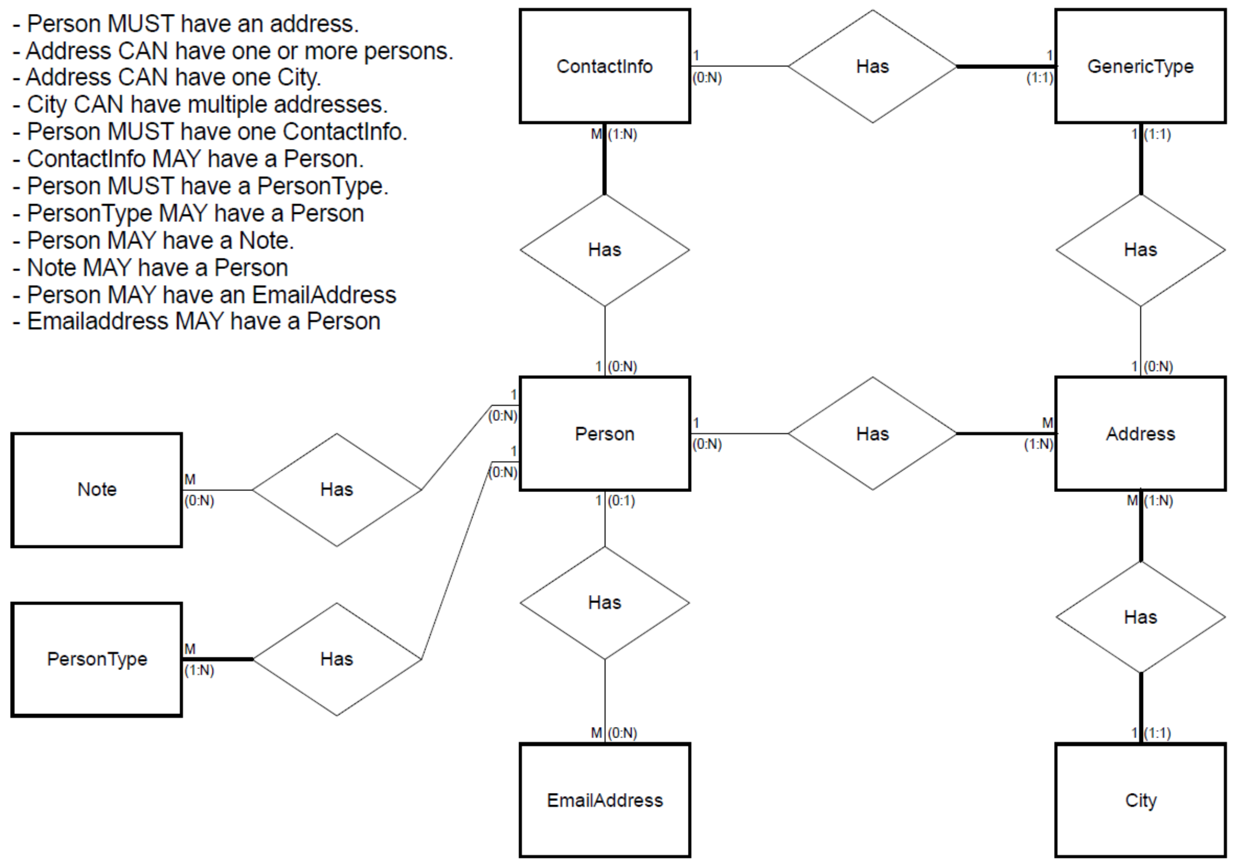
Preface

This paper has been made by Jonas Yde & Ali Saleh. It has been built upon Hand In 1 – Endelig Aflevering and improved to solve the issues given in Hand In 2.

Table of Contents

Domain Model with Entity Relationship Diagram (ERD)

This is the Entity Relationship Diagram. The figure explains the participation, connectivity, cardinality, degrees and navigation.



- Person MUST have an address.
- Address CAN have one or more persons.
- Address CAN have one City.
- City CAN have multiple addresses.
- Person MUST have one ContactInfo.
- ContactInfo MAY have a Person.
- Person MUST have a PersonType.
- PersonType MAY have a Person
- Person MAY have a Note.
- Note MAY have a Person
- Person MAY have an EmailAddress
- Emailaddress MAY have a Person

Figure 1: Entity Relationship Diagram of Domain Model

Logical Schema from DDS Lite

The following Schema snippets has been generated from DDS-Lite and can be used to implement the Database in Visual Studio.

```
--
-- Target: Microsoft SQL Server
-- Syntax: isql /Uuser /Ppassword /Sserver -i\path\filename.sql
-- Date  : Sep 29 2018 14:22
-- Script Generated by Database Design Studio 2.21.3
--
--
-- Create Table    : 'Person'
-- fullName        :
--
CREATE TABLE Person (
    fullName        CHAR NOT NULL,
CONSTRAINT pk_Person PRIMARY KEY CLUSTERED (fullName))
GO

--
-- Create Table    : 'City'
-- cityName        :
-- zipCode         :
--
CREATE TABLE City (
    cityName        CHAR(1) NOT NULL,
    zipCode         CHAR(1) NOT NULL,
CONSTRAINT pk_City PRIMARY KEY CLUSTERED (cityName,zipCode))
GO

--
-- Create Table    : 'Address'
-- streetAddress   :
-- countryRegion   :
-- cityName        :  (references City.cityName)
-- zipCode         :  (references City.zipCode)
-- fullName        :  (references Person.fullName)
--
CREATE TABLE Address (
    streetAddress   CHAR(1) NOT NULL UNIQUE,
    countryRegion   CHAR(1) NOT NULL,
    cityName        CHAR(1) NOT NULL,
    zipCode         CHAR(1) NOT NULL,
    fullName        CHAR NOT NULL,
CONSTRAINT pk_Address PRIMARY KEY CLUSTERED (streetAddress,countryRegion),
CONSTRAINT fk_Address2 FOREIGN KEY (cityName,zipCode)
    REFERENCES City (cityName,zipCode)
    ON DELETE NO ACTION
    ON UPDATE CASCADE,
CONSTRAINT fk_Address3 FOREIGN KEY (fullName)
    REFERENCES Person (fullName)
    ON DELETE NO ACTION
    ON UPDATE CASCADE)
GO
```

```
-- Create Table     : 'ContactInfo'
-- company          :
-- phoneNumber      :
-- fullName         :  (references Person.fullName)
--
CREATE TABLE ContactInfo (
    company         CHAR NOT NULL,
    phoneNumber     BIGINT NOT NULL UNIQUE,
    fullName        CHAR NOT NULL,
CONSTRAINT pk_ContactInfo PRIMARY KEY CLUSTERED (company,phoneNumber),
CONSTRAINT fk_ContactInfo FOREIGN KEY (fullName)
    REFERENCES Person (fullName)
    ON DELETE NO ACTION
    ON UPDATE CASCADE)
GO

--
-- Create Table     : 'EmailAddress'
-- email            :
-- fullName         :  (references Person.fullName)
--
CREATE TABLE EmailAddress (
    email           CHAR(1) NOT NULL UNIQUE,
    fullName        CHAR NULL,
CONSTRAINT pk_EmailAddress PRIMARY KEY CLUSTERED (email),
CONSTRAINT fk_EmailAddress FOREIGN KEY (fullName)
    REFERENCES Person (fullName)
    ON UPDATE CASCADE)
GO

--
-- Create Table     : 'Note'
-- noteId           :
-- fullName         :  (references Person.fullName)
--
CREATE TABLE Note (
    noteId          BIGINT NOT NULL,
    fullName        CHAR NULL,
CONSTRAINT pk_Note PRIMARY KEY CLUSTERED (noteId),
CONSTRAINT fk_Note FOREIGN KEY (fullName)
    REFERENCES Person (fullName)
    ON UPDATE CASCADE)
GO
```

```
--
-- Create Table    : 'PersonType'
-- type            :
-- fullName        :  (references Person.fullName)
--
CREATE TABLE PersonType (
    type            CHAR NOT NULL,
    fullName        CHAR NOT NULL,
CONSTRAINT pk_PersonType PRIMARY KEY CLUSTERED (type),
CONSTRAINT fk_PersonType FOREIGN KEY (fullName)
    REFERENCES Person (fullName)
    ON DELETE NO ACTION
    ON UPDATE CASCADE)
GO

-- Create Table    : 'GenericType'
-- type            :
-- streetAddress   :  (references Address.streetAddress)
-- countryRegion   :  (references Address.countryRegion)
-- company         :  (references ContactInfo.company)
-- phoneNumber     :  (references ContactInfo.phoneNumber)
--
CREATE TABLE GenericType (
    type            CHAR NOT NULL,
    streetAddress   CHAR(1) NULL,
    countryRegion   CHAR(1) NULL,
    company         CHAR NULL,
    phoneNumber     BIGINT NULL,
CONSTRAINT pk_GenericType PRIMARY KEY CLUSTERED (type),
CONSTRAINT fk_GenericType FOREIGN KEY (streetAddress,countryRegion)
    REFERENCES Address (streetAddress,countryRegion)
    ON UPDATE CASCADE,
CONSTRAINT fk_GenericType2 FOREIGN KEY (company,phoneNumber)
    REFERENCES ContactInfo (company,phoneNumber)
    ON UPDATE CASCADE)
GO

--
-- Permissions for: 'public'
--
GRANT ALL ON Person TO public
GO
GRANT ALL ON City TO public
GO
GRANT ALL ON Address TO public
GO
GRANT ALL ON ContactInfo TO public
GO
GRANT ALL ON EmailAddress TO public
GO
GRANT ALL ON Note TO public
GO
GRANT ALL ON PersonType TO public
GO
GRANT ALL ON GenericType TO public
GO
```

Domain Model with Domain Driven Design (DDD)

Following figure shows the Domain Model with DDD implemented in Visual Studio 2017.

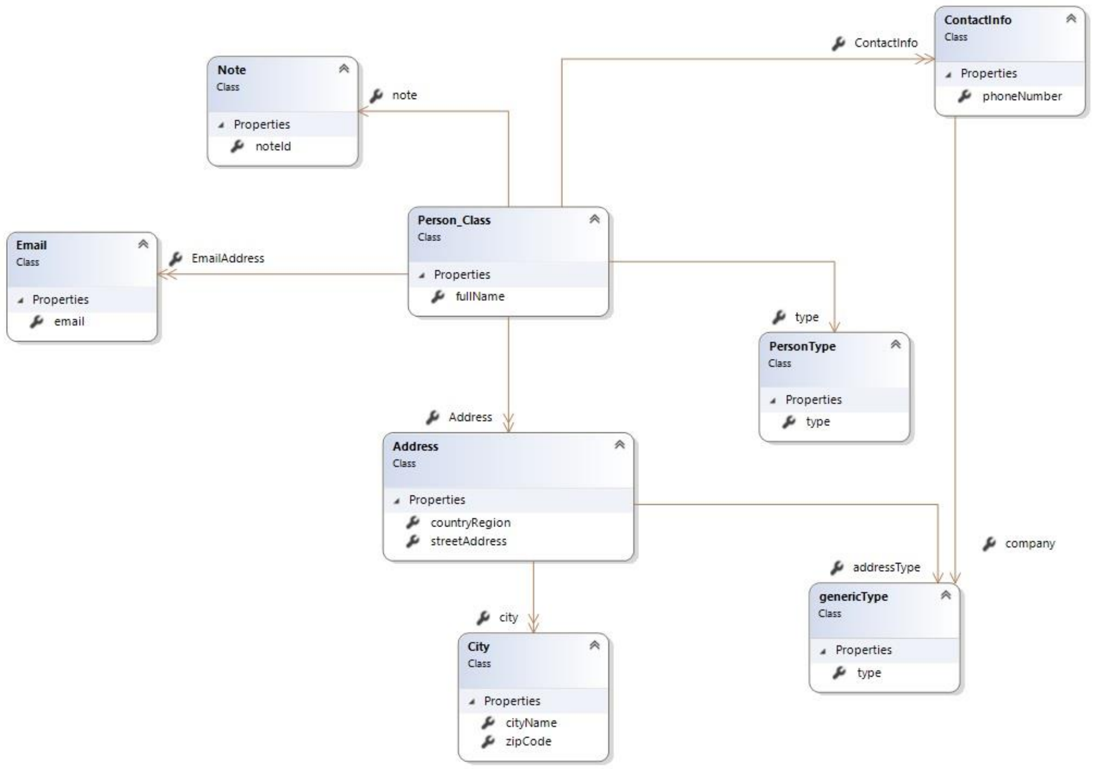


Figure 2: Doman Driven Design of Domain Model in UML

Person is the main object of interest; hence it would be defined as the primary entity. The person remains through all the states of the system and defines the lifetime.

JSON Structure of Domain Model

This section explains the JSON structure of the domain model. The Main object in the root is Person and we have chosen EmailAddress, ContactInfo and Address to be array object.

Furthermore, we have a coded example of this model in the following snippet.

```
{
  "Personkartotek": {
    "Person": {
      "fullName": "Ed Edd Eddy",
      "PersonType": { "type": "One" },
      "Note": { "noteId": 1 },
      "EmailAddress": [
        {
          "email": "main_email"
        },
        {
          "email": "secondary_email"
        }
      ],
      "ContactInfo": [
        {
          "phoneNumber": 11223344,
          "GenericType": { "company": "Telenor" }
        },
        {
          "phoneNumber": 55667788,
          "GenericType": {"company": "TDC"}
        }
      ],
      "Address": [
        {
          "City": {
            "cityName": "Aarhus",
            "zipCode": "8200"
          },
          "countryRegion": "Danmark",
          "GenericType": { "addressType": "Lejlighed" },
          "streetAddress": "Kylling alle 11"
        },
        {
          "City": {
            "cityName": "Aarhus",
            "zipCode": "8200"
          },
          "countryRegion": "Danmark",
          "GenericType": { "addressType": "Sommerhus" },
          "streetAddress": "Kylling alle 12"
        }
      ]
    }
  }
}
```

Snippet 1: JSON Code Model of Domain Model

XML Model of Domain Model

This section XML model of the Domain Model. We have defined person as the main element node. Attribute node with fullName and type has been attached to the person directly while EmailAddress, ContactInfo and Address has been designed as Meta Information to the person.

Following snippet shows an example of coded XML version of the model, it follows the same annotations from the JSON version.

```xml
<?xml version="1.0" encoding="utf-8"?>
<Person>
  <fullName>Ed Edd Eddy</fullName>
  <PersonType type="One"/>
  <Note noteId="1"/>
  <EmailAddress email="main_email"/>
  <EmailAddress email="secondary_email"/>'
  <ContactInfo
    phoneNumber="11223344">
    <GenericType company="Telenor"/>
  </ContactInfo>
  <ContactInfo
    phoneNumber="55667788">
    <GenericType company="TDC"/>
  </ContactInfo>
  <Address
    streetAddress="Kylling Alle 11"
    countryRegion="Danmark">
    <City cityName="Aarhus" zipCode="8200"/>
    <GenericType addressType="Lejlighed"/>
  </Address>
  <Address
    streetAddress="Kylling Alle 12"
    countryRegion="Danmark">
    <City cityName="Aarhus" zipCode="8200"/>
    <GenericType addressType="Sommerhus"/>
  </Address>
</Person>
```

Snippet 2: XML Code Model of Domain Model

Application Software Architecture

Following figure shows how the user can access the Personkartotek. The User must access it from the User Interface where the client connects to a server that contains the Personkartotek. Here the server has a Database which contains the given information of a Person from the Personkartotek.

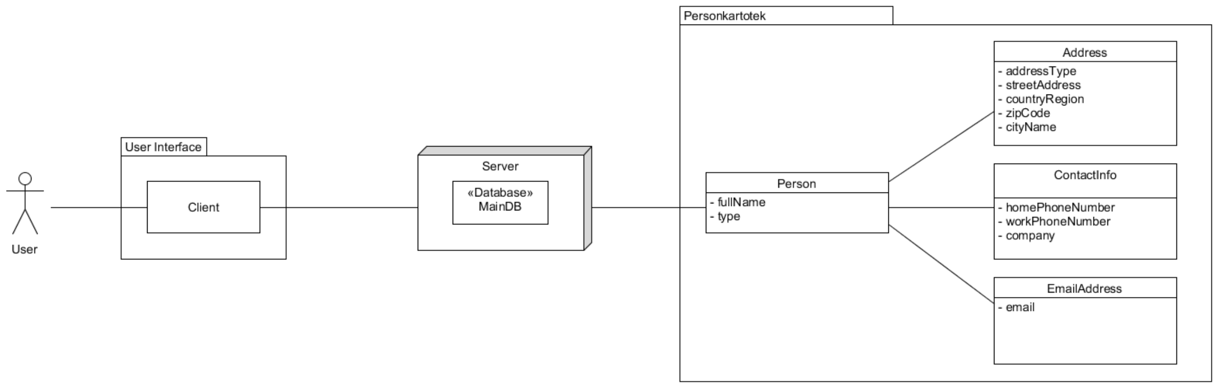


Figure 3: Application Software Architecture

Scaffolding model

The scaffolding model shows the root and its objects in collections/containers, and they end with the triangular shaped objects.

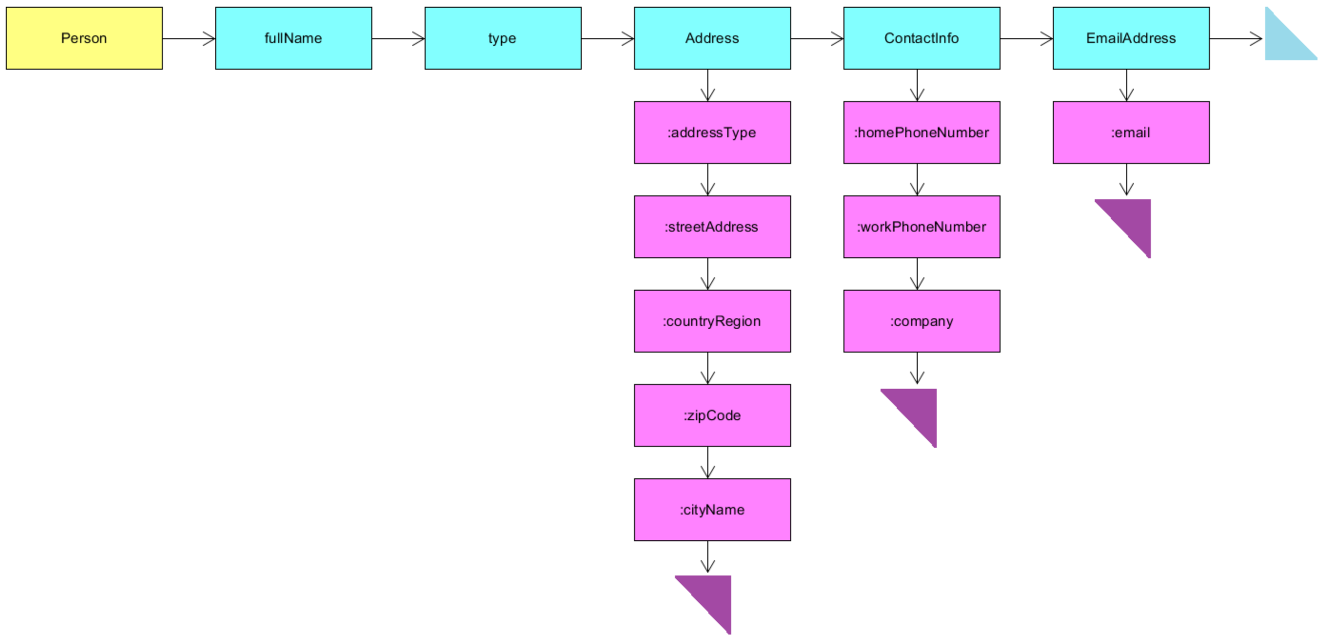


Figure 4: Scaffolding Model

Graph-tree model

This is a Graph-Tree Model given from the Scaffolding Model.

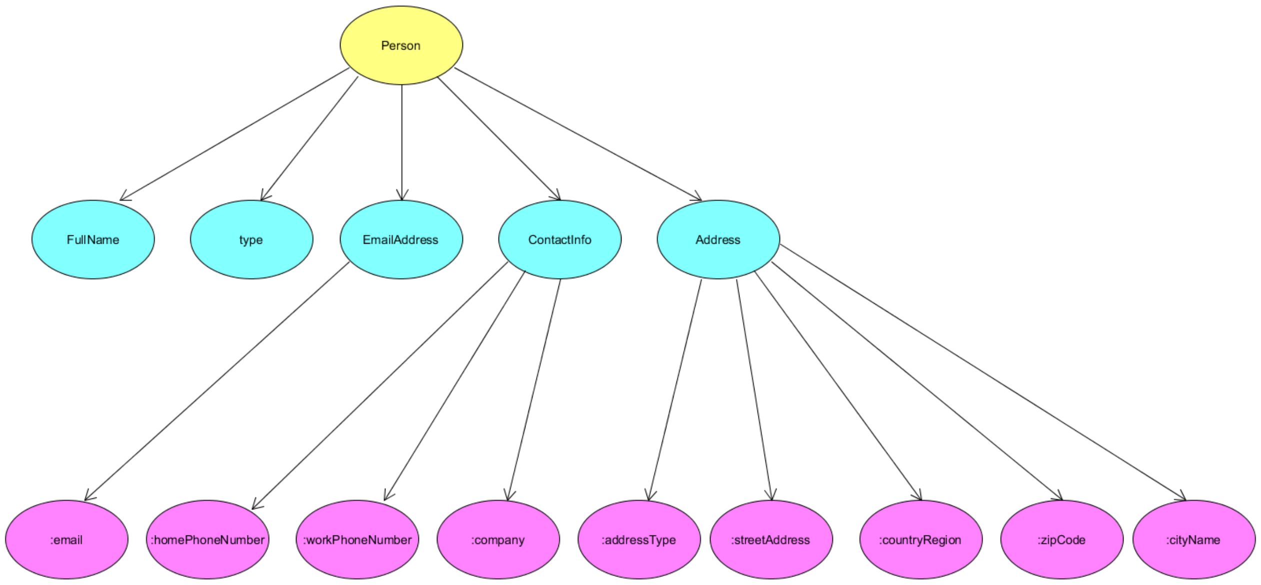


Figure 5: Graph-Tree Model