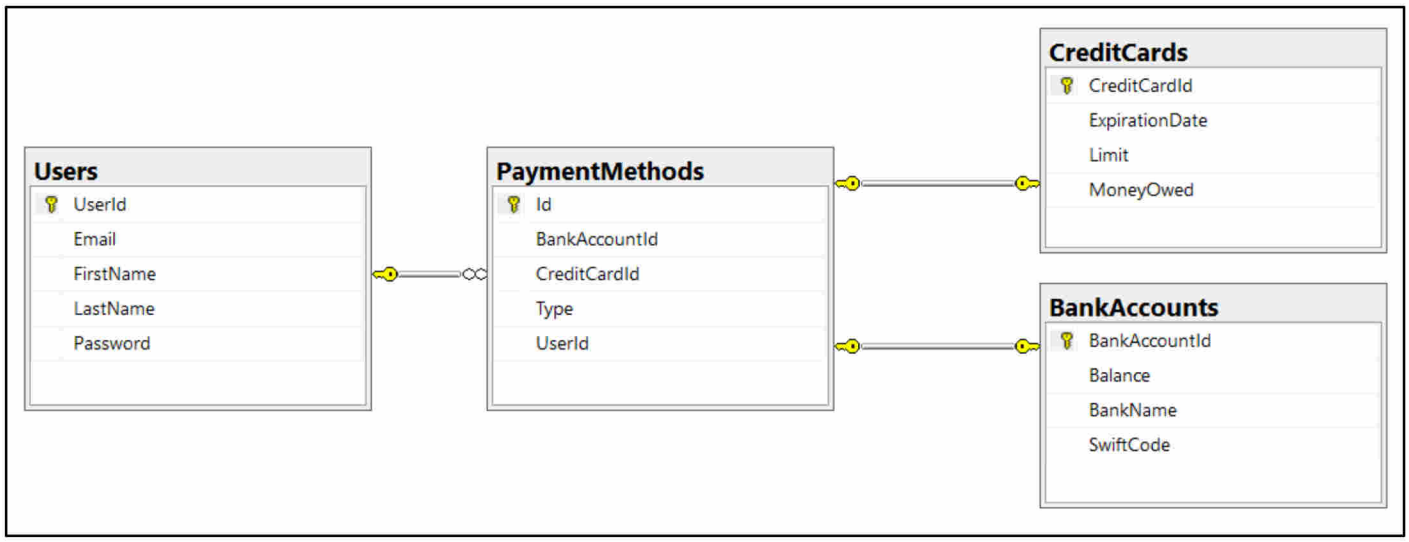
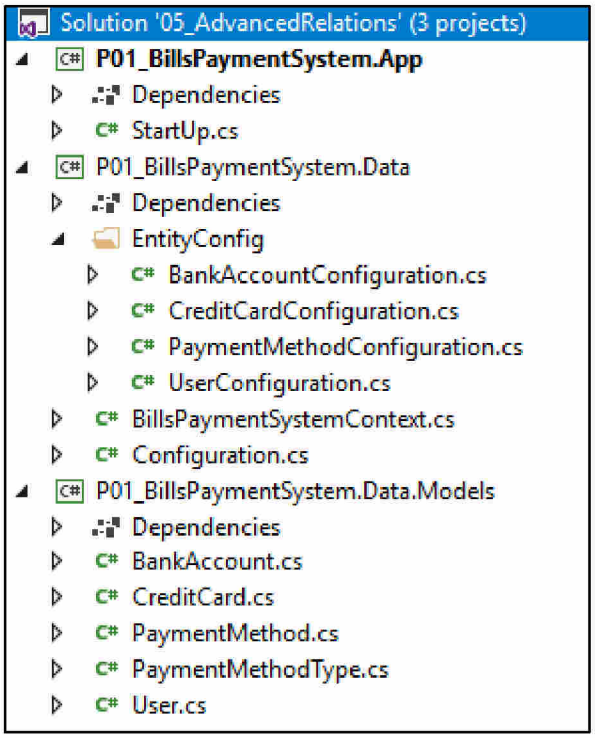
LAB EF-03: Advanced Relations

1. Bills Payment System

Your task is to create a database for **Bills Payment System**, using the **Code First** approach. In the database, we should keep information about the **users** (**first name, last name, email, password, payment methods**). Every **payment method** should have an **id**, an **owner**, a **type** and a **credit card** or a **bank account** connected to it. There are **two types** of billing details – **credit card** and **bank account**. The credit card has **expiration date**, a **limit** and an amount of **money owed**. The **bank account** has a **balance**, a **bank name** and a **SWIFT code**.



Create the configuration of each model in a new class, implementing the `IEntityTypeConfiguration` interface. Your solution should look similar to this:



Constraints

Your **namespaces** should be:

- **P01_BillsPaymentSystem** – for your Startup class, if you have one
- **P01_BillsPaymentSystem.Data** – for your DbContext
- **P01_BillsPaymentSystem.Data.Models** – for your models

Your **models** should be:

- **BillsPaymentSystemContext** – your DbContext
- **User**:
  - UserId
  - FirstName (up to 50 characters, unicode)
  - LastName (up to 50 characters, unicode)
  - Email (up to 80 characters, non-unicode)
  - Password (up to 25 characters, non-unicode)
- **CreditCard**:
  - CreditCardId
  - Limit
  - MoneyOwed
  - LimitLeft (calculated property, not included in the database)
  - ExpirationDate
- **BankAccount**:
  - BankAccountId
  - Balance
  - BankName (up to 50 characters, unicode)
  - SWIFT Code (up to 20 characters, non-unicode)
- **PaymentMethod**:
  - Id - PK
  - Type – enum (BankAccount, CreditCard)
  - UserId
  - BankAccountId
  - CreditCardId

Everything is required! Only **PaymentMethod**'s **BankAccountId** and **CreditCardId** should be **nullable**, and you should make sure that always **one** of them **is null** and the **other one** is **not** (add a **CHECK** constraint).

Make sure that **every record** in the **PaymentMethods** table has a unique combination of **UserId**, **BankAccountId** and **CreditCardId**!

2. Seed Some Data

Make a **Seed**() method to seed some data into the **BillsPaymentSystem** database.

3. User Details

Create a **console app** that retrieves from the database a **user** and all of his **payment methods** by a given **user id**, and prints them on the console in the format:

```
User: Guy Gilbert
Bank Accounts:
-- ID: 1
--- Balance: 2000.00
--- Bank: Unicredit Bulbank
```

```
--- SWIFT: UNCRBGSF
-- ID: 2
--- Balance: 1000.00
--- Bank: First Investment Bank
--- SWIFT: FINVBGSF
Credit Cards:
-- ID: 1
--- Limit: 800.00
--- Money Owed: 100.00
--- Limit Left:: 700.00
--- Expiration Date: 2020/03
```

First, list the user's **bank accounts** and then – his **credit cards**. If **no** such **user** exist, print "User with id {**userId**} not found!" instead.

4. Pay Bills

Add **Withdraw**() and **Deposit**() methods to the **BankAccount** and **CreditCard** classes, and make sure they are the only way you can change the **Balance**, **MoneyOwed** and **Limit** properties. Then create a **PayBills**(int userId, decimal amount) method that uses all of a user's payment methods to pay his bills. Start with his **bank accounts**, ordered by id, and then his **credit cards**, ordered by **id**. If the user doesn't have enough money available, don't withdraw anything and print "Insufficient funds!" to the console.