

# DATABASE

## Assignment 2

Softwareteknologi - 4. semester

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November 2022

# Indhold

<b>1 Consolidation</b>	<b>ii</b>
1.1 Marcin E/R diagram 1.st assignment Review . . . . .	ii
1.2 Christina E/R diagram 1.st assignment Review . . . . .	ii
1.3 Elisabeths E/R diagram 1.st assignment Review . . . . .	iii
1.4 Coherent Joint E/R diagram: . . . . .	v
<b>2 Entity Framework Core</b>	<b>vi</b>
2.1 Get Available facilities and closest adress . . . . .	vi
2.2 Get Reservations: . . . . .	vi
<b>3 New requirements EntityRelation Diagram</b>	<b>vii</b>
<b>4 Part 4: Updated solution</b>	<b>viii</b>

## Introduction

”Entity Framework (EF) Core is a lightweight, extensible, open source and cross-platform version of the popular Entity Framework data access technology.

EF Core can serve as an object-relational mapper (O/RM), which:

Enables .NET developers to work with a database using .NET objects. Eliminates the need for most of the data-access code that typically needs to be written. ”

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

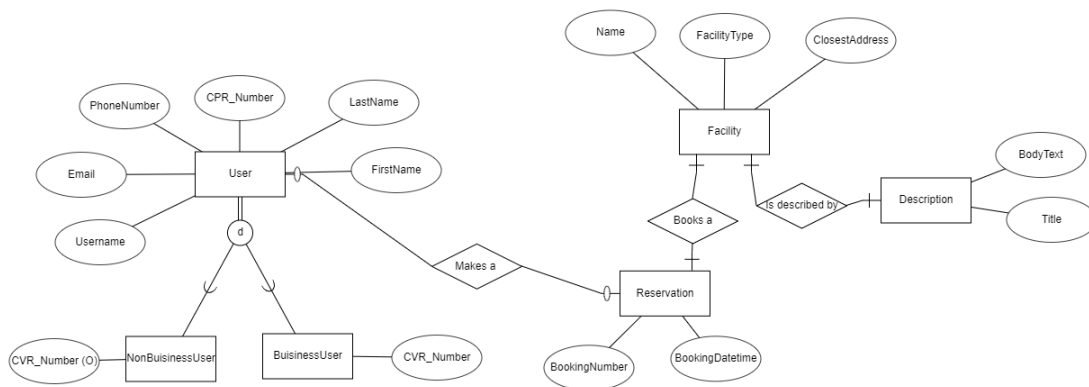
Visited November2022.

# 1 Consolidation

The first part of this assignment is review and consolidation for each others work in assignment1. Below is the three different E/R models we created individually for previous assignment.

## 1.1 Marcin E/R diagram 1.st assignment Review

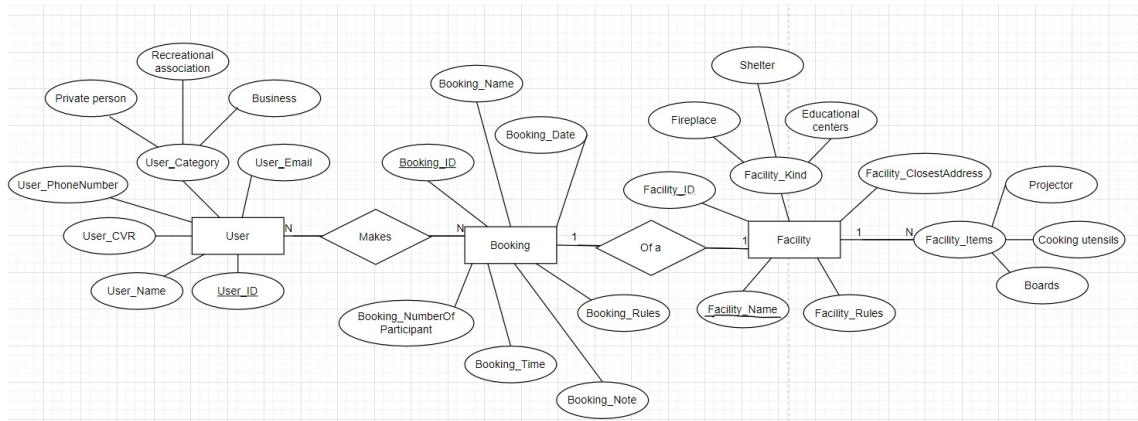
Good, simple structure. Nice illustrated with the disjoint of usertype in the first Userclass relation. Simple with good details. Could have weak entities in the ER diagramme, but nice work with readable structure. Could have marked primary key with underscore to indication.



Figur 1: Marcins ER diagramme

## 1.2 Christina E/R diagram 1.st assignment Review

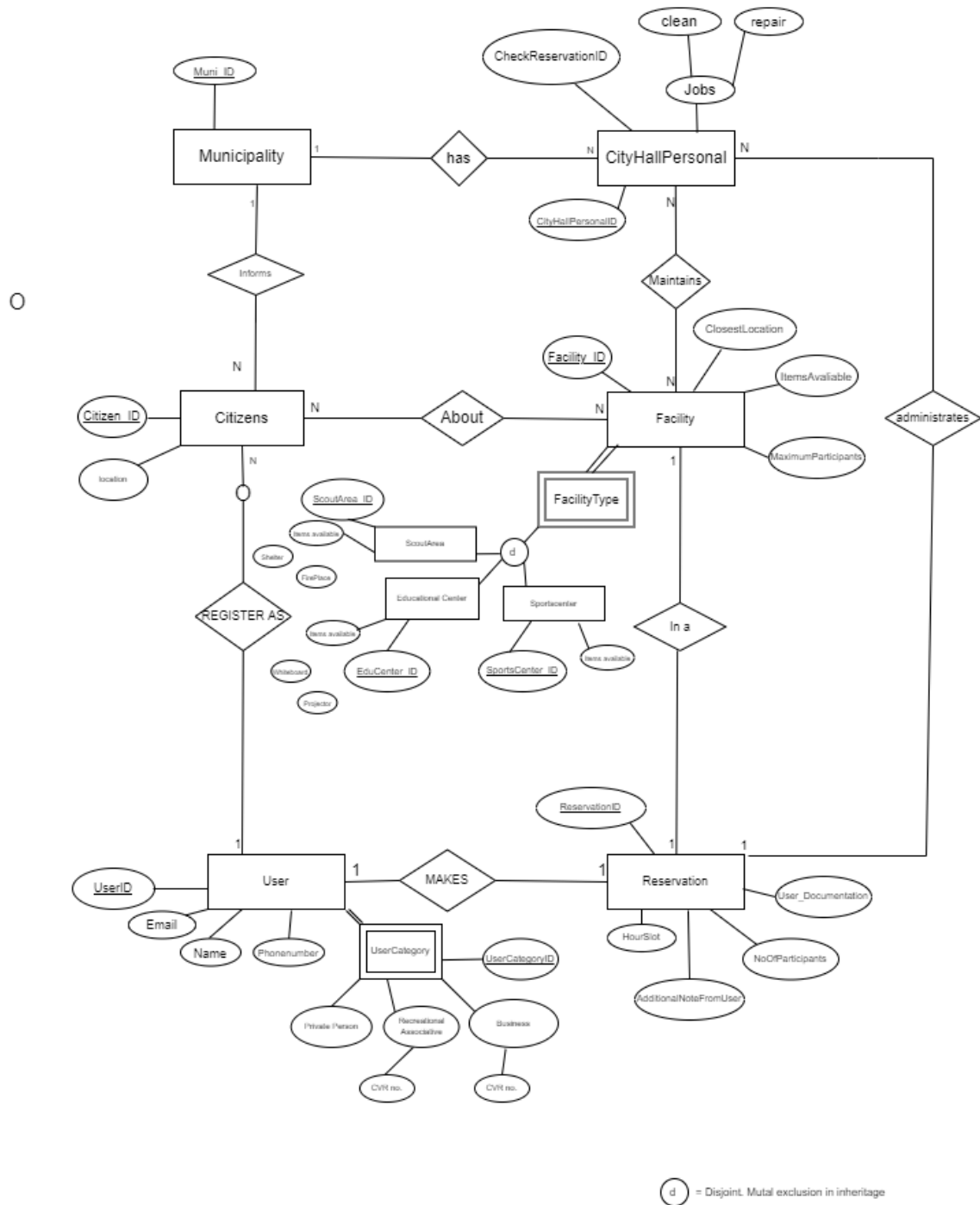
Good structure with the linear flow easy readability, good and quick overviews of the system. PrimaryKeys is easy to locate and she choose to implement the user category in first assignment as an under attributes within the class.



Figur 2: Christinas ER diagramme

### 1.3 Elisabeths E/R diagram 1.st assignment Review

Quite confusing and many more classes and info than necessary for the assignment. But if we only look at the relevant classes for the assignment: User, Facility and reservation as superclasses, the diagram shows both primary keys, weak entities and disjointed mutual exclusion in FacilityType eg.

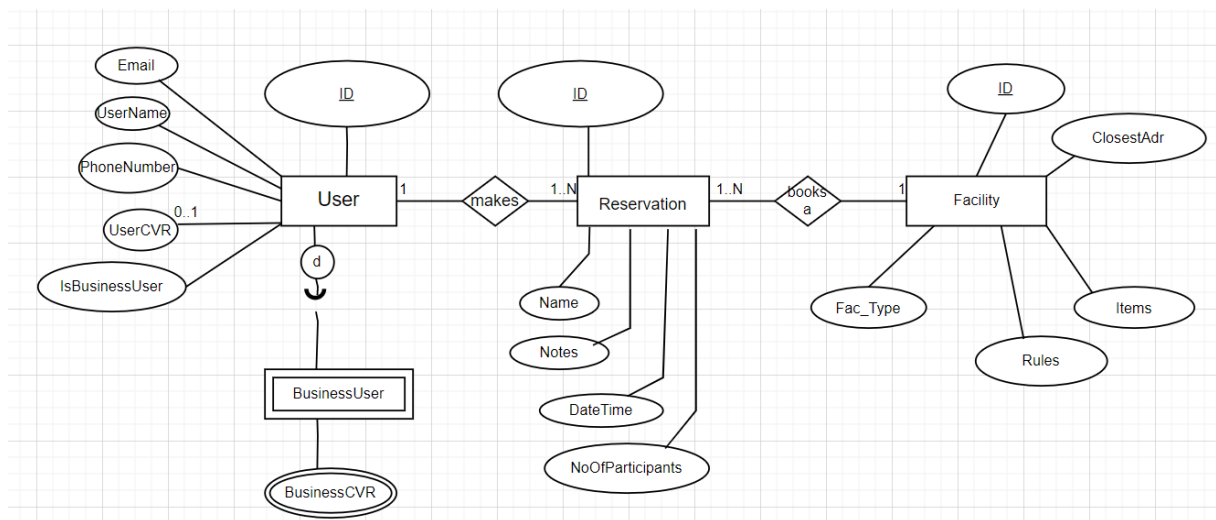


Figur 3: Elisabeths diagramme

## 1.4 Coherent Joint E/R diagram:

For the new diagram we agreed on Chen Notation for at mutual agreement for the diagram. The new diagram consists of three superclasses : User, Facility and reservation. Each class has a primary key identified by underlining. Double lined classed indicate weak entities and weak attributes within working as a 'feeder' for the class. The new diagram is simple, informative and with relevant information in notation.

We have discarded many things from Elisabeths diagram (too complicated), taken her notation in Chen in the new, taken Christinas structure in readability and simplicity and least but not last Marcins diagram looks alot lot like the new diagram in information and structure only needing some notation.



Figur 4: NEW E/R diagramme

## 2 Entity Framework Core

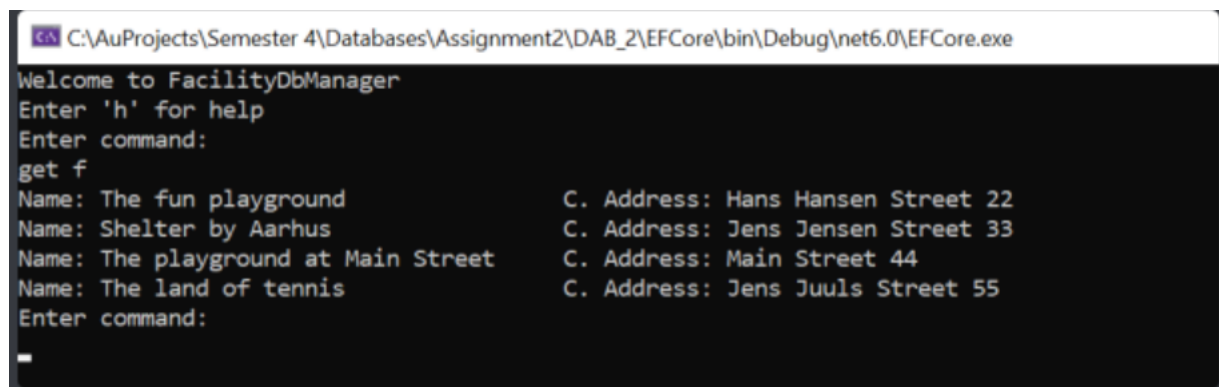
This step in the assignment involves implementing the E/R-diagram we all agreed was best, based on our three previous individual E/R diagrams. The implementation was done in Visual Studio 2022 with an Entity Framework Core in a .NET 6.0 solution.

Splitting the design of the framework in folders categorized by: - Data, model, controllers, migrations and UI for the application.

The result from different commands is documented from a screendump in the console:

### 2.1 Get Available facilities and closest adress

Get all facilities as a table of names, address and kind ordered by their kind. (Alternatively: Get the number of facilities grouped by their kind)

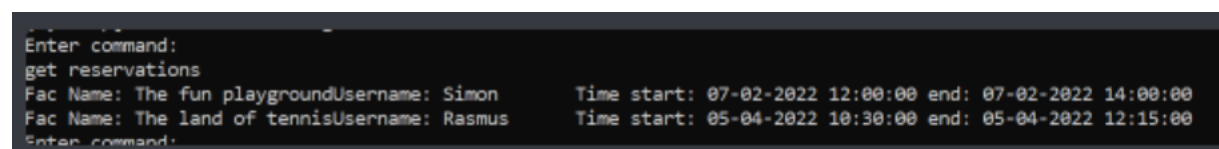


```
C:\AuProjects\Semester 4\Databases\Assignment2\DAB_2\EFCore\bin\Debug\net6.0\EFCore.exe
Welcome to FacilityDbManager
Enter 'h' for help
Enter command:
get f
Name: The fun playground          C. Address: Hans Hansen Street 22
Name: Shelter by Aarhus          C. Address: Jens Jensen Street 33
Name: The playground at Main Street C. Address: Main Street 44
Name: The land of tennis         C. Address: Jens Juuls Street 55
Enter command:
_
```

Figur 5: get facility and closest adress

### 2.2 Get Reservations:

Get a list of booked facilities name with the booking user (and possibly business) and the timeslot it is booked in:



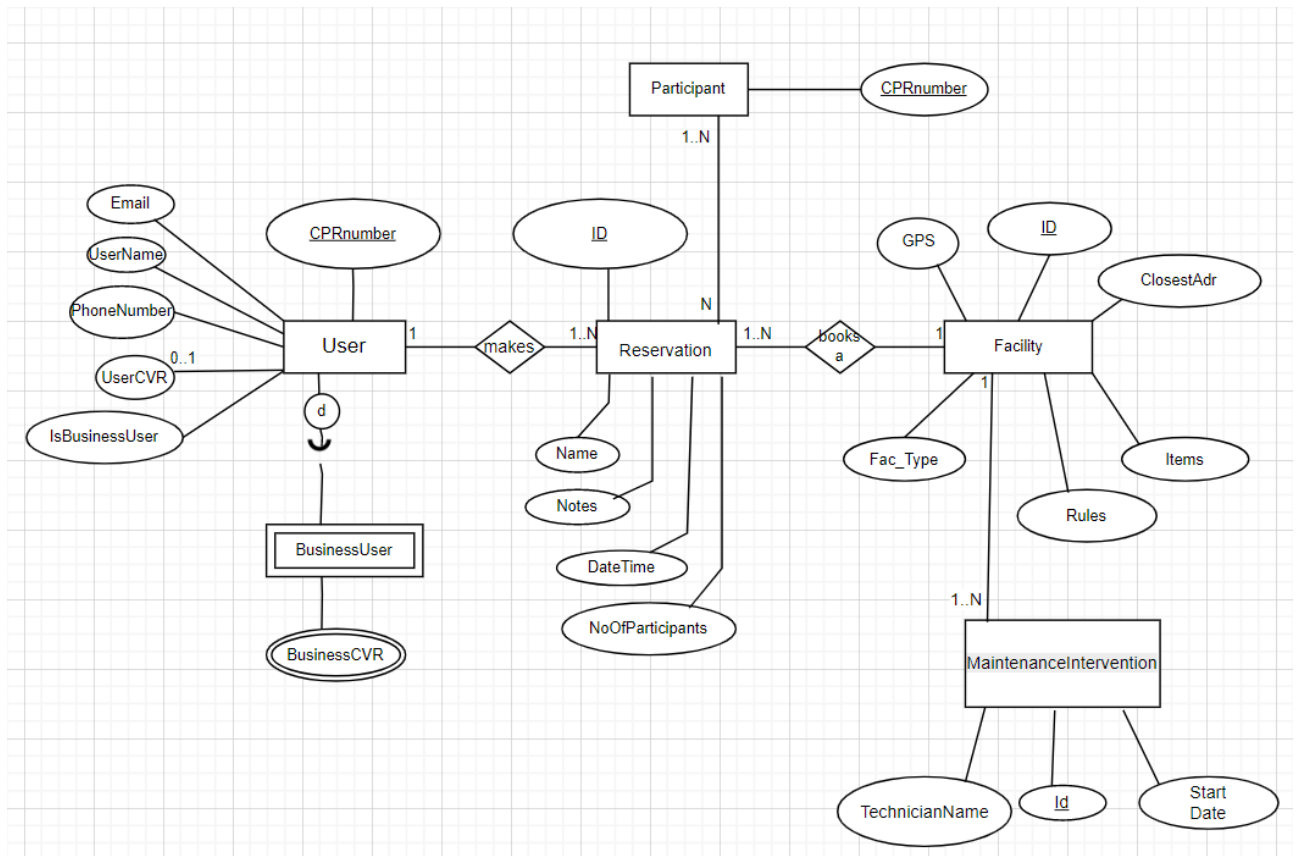
```
Enter command:
get reservations
Fac Name: The fun playgroundUsername: Simon      Time start: 07-02-2022 12:00:00 end: 07-02-2022 14:00:00
Fac Name: The land of tennisUsername: Rasmus     Time start: 05-04-2022 10:30:00 end: 05-04-2022 12:15:00
Enter command:
```

Figur 6: Get Reservations console

### 3 New requirements EntityRelation Diagram

The client asked for a new feature.

The new municipalities want to replace the "nærmest address" with an actual GPS coordinates for the Facility The new municipalities are more strict and require every participant CPR to be included in a booking. in 7



Figur 7: New E/R with new features



## 4 Part 4: Updated solution

See migrations in .zip