

User's View

Car Administration V4

File Database

add car remove car add owner remove owner update owner(s)

id: 22 name: Fiat 500

schueler

Car Id	Car Name
22	Fiat 500
11	Ford Edsel

Owner Id	Owner Name	Owner From	Owner To
4	Hagen	12.01.2012	15.04.2013
5	Giselher	12.09.2013	15.07.2014
6	Gunther	12.01.2015	25.12.2018

sorted

car 22, Fiat 500 selected

- on selecting a car
- lists all owners

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Car Id	Car Name
22	Fiat 500
11	Ford Edsel

Owner Id	Owner Name	Owner From	Owner To
4	Hagen	12.01.2012	15.04.2013
5	Giselher	12.09.2013	15.07.2014
6	Gunther	12.01.2015	25.12.2018
21	unknown owner	25.12.2018	25.12.2018

owner added

- add new owner in selected car
- owner id generated by Oracle's sequence

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Car Id	Car Name
22	Fiat 500
11	Ford Edsel

Owner Id	Owner Name	Owner From	Owner To
4	Hagen	12.01.2012	15.04.2013
5	Giselher II	12.09.2013	15.07.2014
6	Gunther	12.01.2015	25.12.2018
36	Brunhilde	25.12.1999	25.12.2000

2 owners changed in db

- update all owners in selected car,
- which have at least one attribute changed since last loading in grid

The screenshot shows the 'Car Administration V4' application window. It has a menu bar with 'File' and 'Database'. On the left is a sidebar with buttons: 'add car', 'remove car', 'add owner', 'remove owner', and 'update owner(s)'. The main area contains a form with 'id' (22) and 'name' (Fiat 500) fields, a 'Car Id' and 'Car Name' table, and an 'Owner Id' and 'Owner Name' table. A yellow bar at the bottom says 'saved to XML'. To the right, the XML output is shown, representing the state of the application.

Car Id / Car Name Table:

Car Id	Car Name
22	Fiat 500
11	Ford Edsel

Owner Id / Owner Name Table:

Owner Id	Owner Name	Owner From	Owner To
3	Siegfried II	12.01.2001	15.07.2002
2	Hagen	12.01.2002	15.04.2009
8	Krimhild II	21.12.2003	21.12.2004

XML Output (ArrayOfCar):

```
<ArrayOfCar xmlns:xsi="http://www.w3.org/2001/XMLSchema"
  <Car>
    <CarId>22</CarId>
    <CarName>Fiat 500</CarName>
    <CollOwners>
      <Owner>
        <OwnerId>4</OwnerId>
        <OwnerName>Hagen</OwnerName>
        <OwnerFrom>2012-01-12T00:00:00</OwnerFrom>
        <OwnerTo>2019-04-15T00:00:00</OwnerTo>
      </Owner>
      <Owner>
        <OwnerId>5</OwnerId>
        <OwnerName>Giselher</OwnerName>
        <OwnerFrom>2013-09-12T00:00:00</OwnerFrom>
        <OwnerTo>2014-07-15T00:00:00</OwnerTo>
      </Owner>
      <Owner>
        <OwnerId>6</OwnerId>
        <OwnerName>Gunter</OwnerName>
        <OwnerFrom>2015-01-12T00:00:00</OwnerFrom>
        <OwnerTo>2018-12-25T17:42:42</OwnerTo>
      </Owner>
    </CollOwners>
  </Car>
  <Car>
    <CarId>11</CarId>
    <CarName>Ford Edsel</CarName>
    <CollOwners>
      <Owner>
        <OwnerId>3</OwnerId>
        <OwnerName>Siegfried II</OwnerName>
        <OwnerFrom>2001-01-12T00:00:00</OwnerFrom>
        <OwnerTo>2002-07-15T00:00:00</OwnerTo>
      </Owner>
      <Owner>
        <OwnerId>2</OwnerId>
```

Developer's Hints

- Serialization: read all owners of all cars and then serialize collection of cars (and only relevant attributes)
- Date - Format

XAML

```
<DataGrid x:Name="gridOwners" Grid.Column="2" HorizontalAlignment="Left" Height="126" Margin="165,224,0,-17" VerticalAlignment="Top" Width="411"
  <DataGrid.Columns>
    <DataGridTextColumn Header="Owner Id" Binding="{Binding OwnerId}" Width="2*" />
    <DataGridTextColumn Header="Owner Name" Binding="{Binding OwnerName}" Width="4*" />
    <DataGridTextColumn Header="Owner From" Binding="{Binding OwnerFromFormatted}" Width="2*" />
    <DataGridTextColumn Header="Owner To" Binding="{Binding OwnerToFormatted}" Width="2*" />
  </DataGrid.Columns>
</DataGrid>
```

Data-Object

```
public DateTime OwnerFrom
{
    get
    {
        return ownerFrom;
    }
    set
    {
        ownerFrom = value;
        IsOwnerUpdated = true;
    }
}

[XmlIgnore]
1 reference
public String OwnerFromFormatted
{
    get
    {
        return OwnerFrom.ToString("dd.MM.yyyy");
    }
    set
    {
        OwnerFrom = DateTime.ParseExact(value, "dd.MM.yyyy", null);
    }
}
```