

# DATA ACCESS LAYER DESIGN

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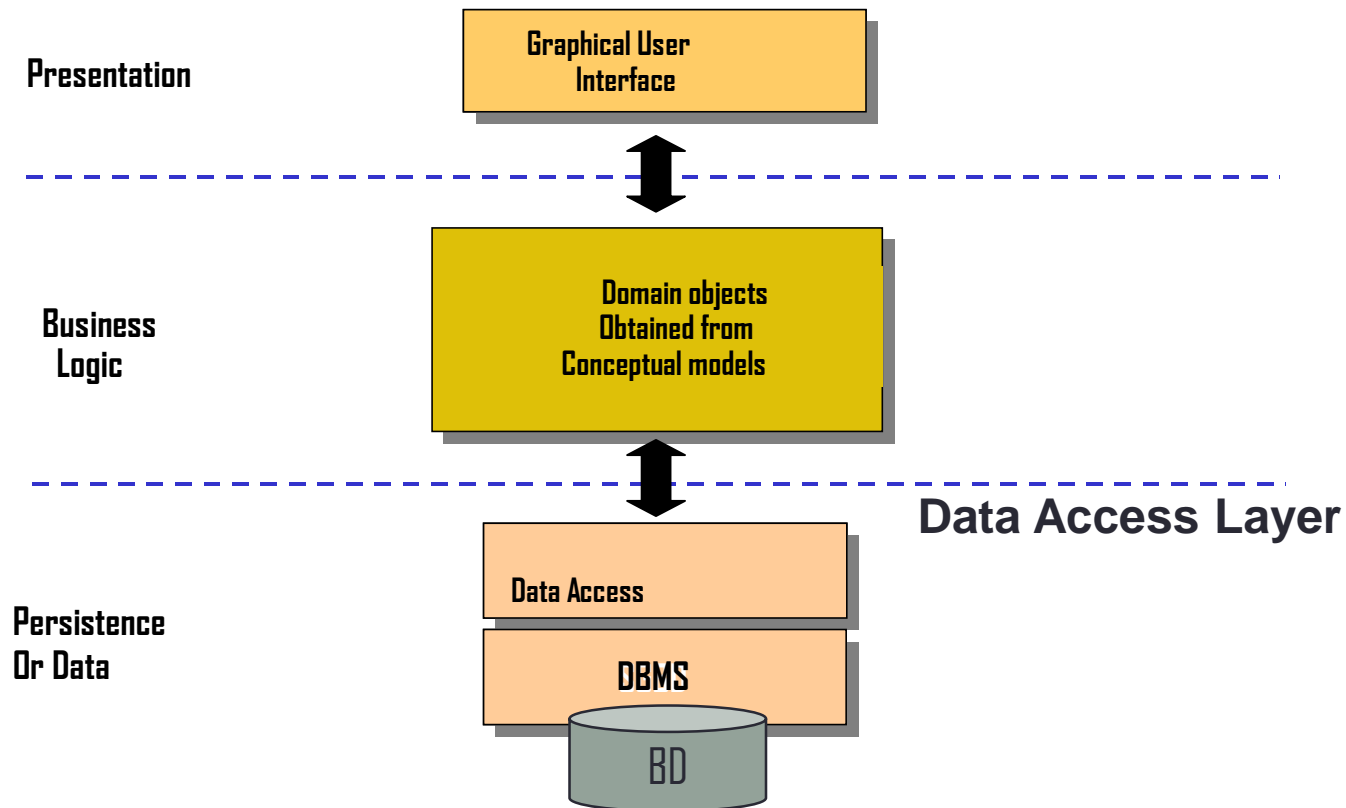
## Seminar 6.2

**Software Engineering**  
ETS Software Engineering  
DSIC – UPV

# Goals

- To learn the design of the Data Access Layer

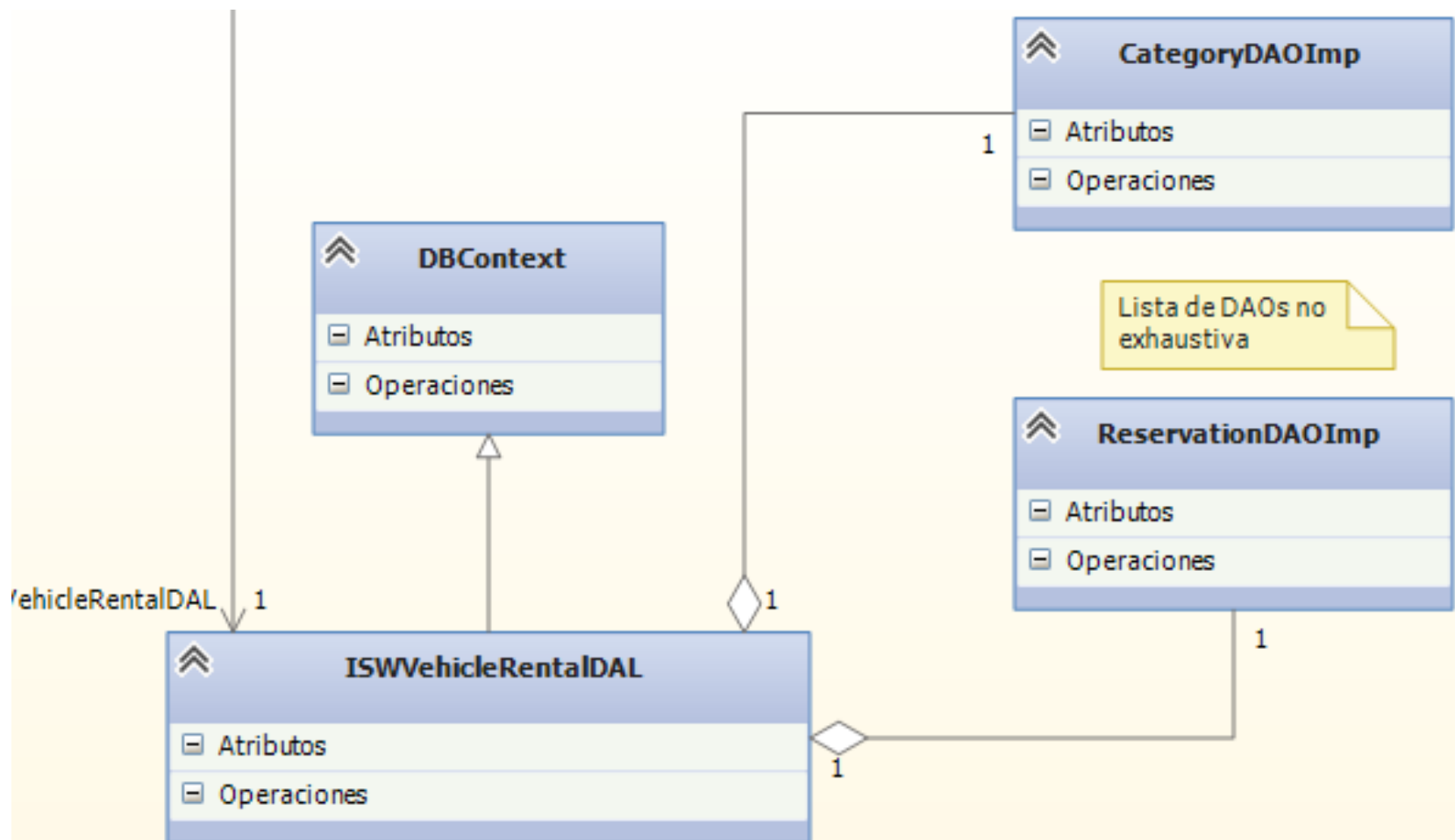
# Architecture revisited



# Data Access Layer Design

- The DAL services are provided by a class with the following design features
  - Implements singleton pattern
  - Extends DbContext (Entity Framework)
  - Encapsulates all Data Access Objects (DAOs)

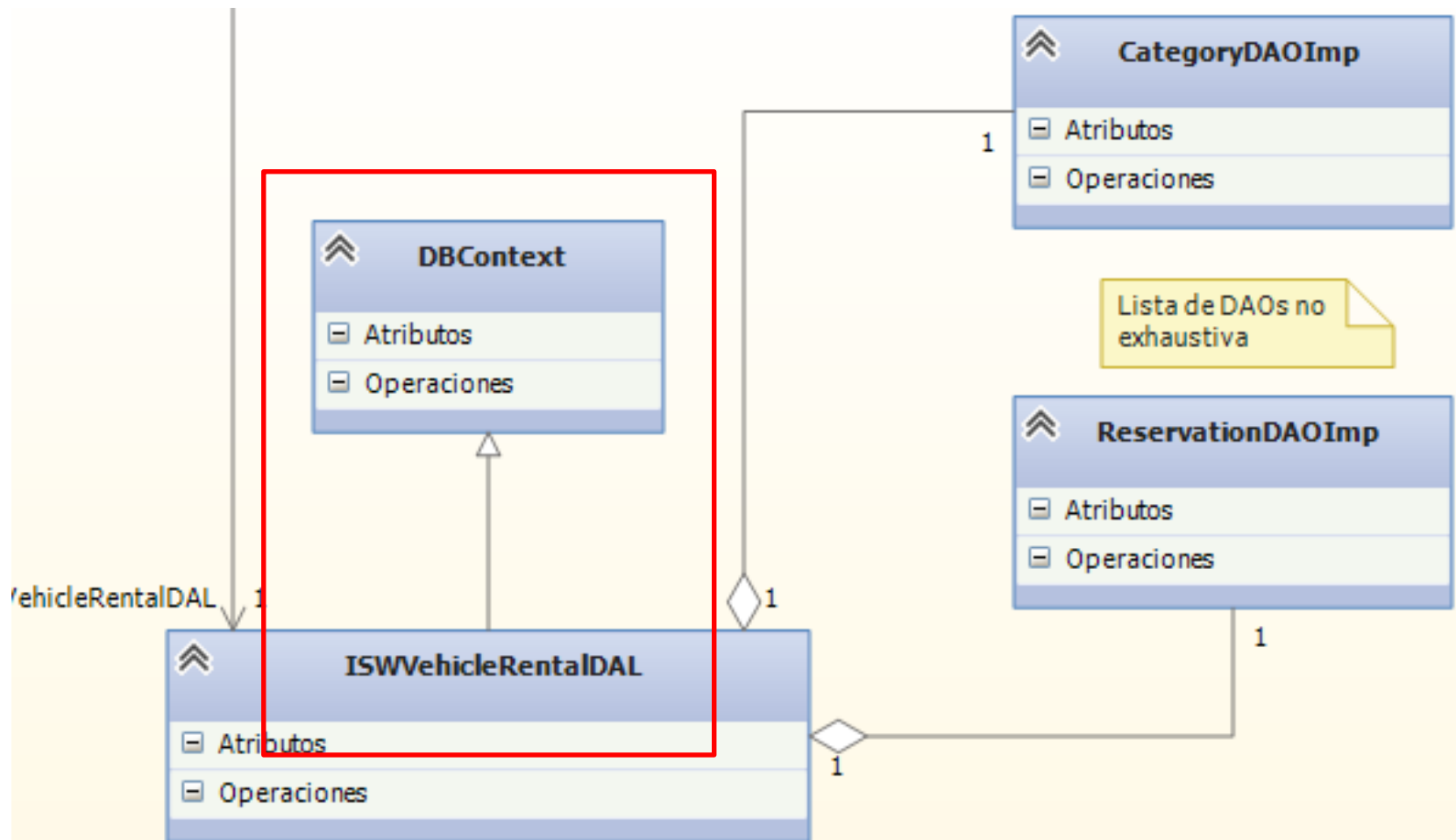
# Data Access Layer Design (Example)



# DAL (Singleton Pattern)

```
58
59 // DAL Implements Singleton Pattern
60 private static VehicleRentalDAL instance = null;
61 1 referencia | museion10, Hace 187 días | 1 autor, 1 cambio public static VehicleRentalDAL getVehicleRentalDAL()
62 {
63     if (instance == null)
64         instance = new VehicleRentalDAL();
65     return instance;
66 }
67
--
```

# DAL (DbContext Extension)



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```
public class VehicleRentalDAL:DbContext  
{
```

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```
public DbSet<Customer> customers { get; set; }
```

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```
public DbSet<Person> persons { get; set; }
```

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```
public DbSet<Reservation> reservations { get; set; }
```

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```
public DbSet<CreditCard> creditcards { get; set; }
```

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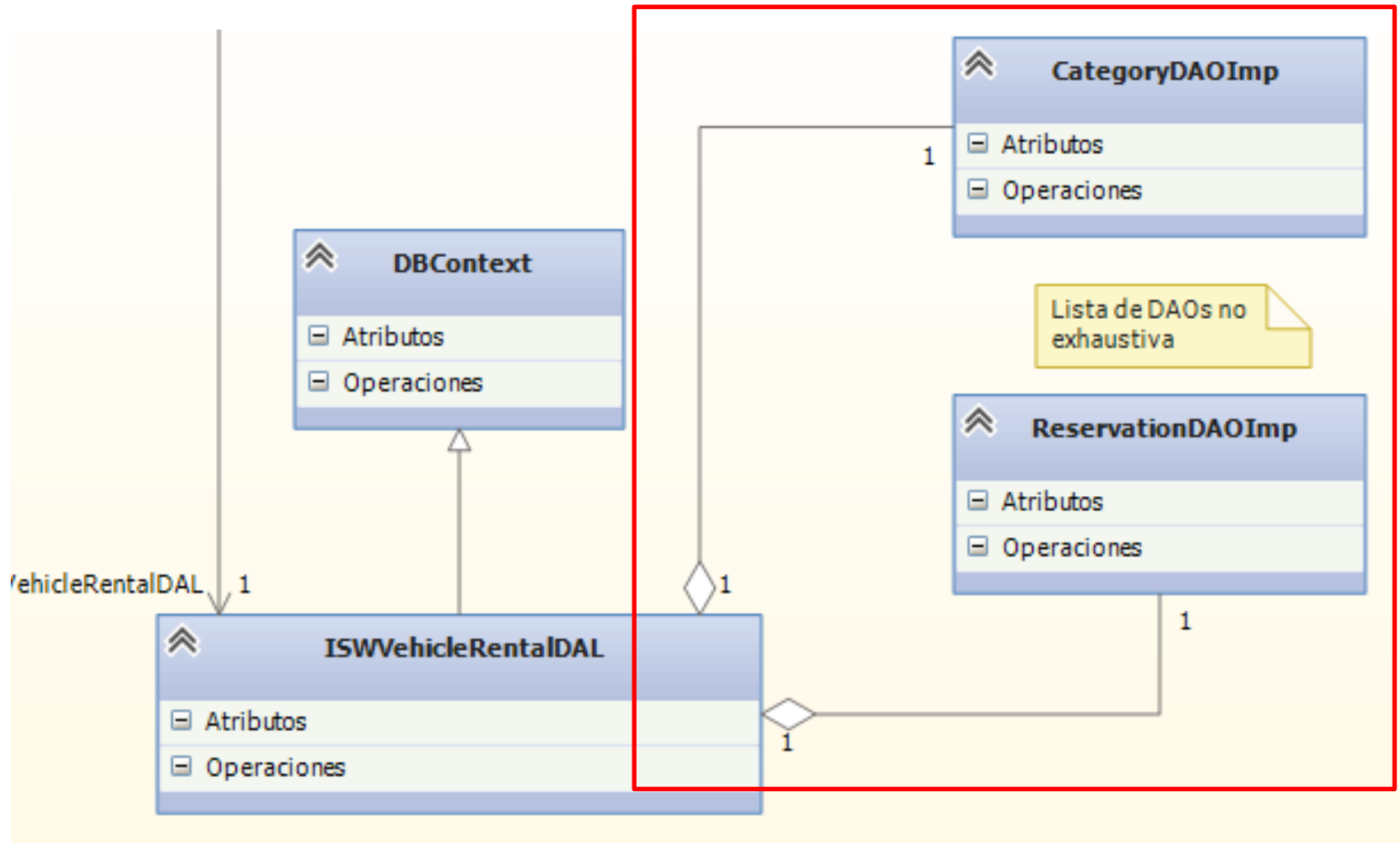
```
public DbSet<BranchOffice> offices { get; set; }
```

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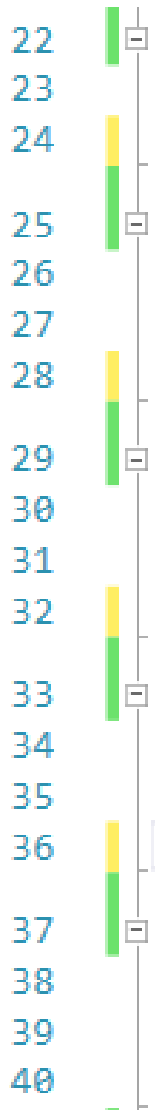
```
public DbSet<Category> categories { get; set; }
```



# DAL (DAOs Encapsulation)




# DAL (DAOs Encapsulation)



```
22 public IBranchOfficeDAO branchofficeDAO {
23     get;
24 }
25 3 referencias
26 public ICategoryDAO categoryDAO
27 {
28     get;
29 }
30 4 referencias
31 public ICustomerDAO customerDAO
32 {
33     get;
34 }
35 8 referencias
36 public IPersonDAO personDAO
37 {
38     get;
39 }
40 4 referencias
41 public IReservationDAO reservationDAO
42 {
43     get;
44 }
```

# DAL (DAOs Creation)

```
50 1 referencia  
51 private VehicleRentalDAL():base("DBConnectionString"){  
52     branchofficeDAO = new BranchOfficeDAOImp(this);  
53     categoryDAO = new CategoryDAOImp(this);  
54     customerDAO = new CustomerDAOImp(this);  
55     personDAO = new PersonDAOImp(this);  
56     reservationDAO = new ReservationDAOImp(this);  
57     creditcardDAO = new CreditCardDAOImp(this);  
58     Database.Initialize(true);  
59 }  
60
```



DAOs have a reference to the DAL (DbContext) object (bi-directional association)