

Practical 5 - NF^2 , eNF^2 and Type Constructors

1. NF^2

The following NF^2 schema for a car retailer is given:

```
CarSales (  
  Model,  
  Manufacturer,  
  Car (  
    BuildYear,  
    Kilometers,  
    ListPrice,  
    InterestedCustomers (  
      Name,  
      LastOffer,  
      Telephones (Telephone)  
    )  
  )  
)
```

- Give an example relation with 2 tuples!
- What is the fully unnested relation? I this relation in PNF?
- What could be an equivalent relational schema?
- What would the following queries be in an extended relational algebra and SQL:2003?
 - What are the list prices of Citroen's?
 - What were the offers for a VW Beetle?
 - What are the phone numbers of Mr. Stuart, who was interested in the Ford Fiesta?

2. eNF^2 and Type Constructors

Design a relational and an eNF^2 schema of a database for an on-line auction:

Items are sold in an auction (title, description, startprice) by members (name, email). For each auction there is a possibly infinite number of bids (price) by other members. A member may take part in many auctions as an seller or buyer. For each member, there are ratings (date, score, comment) by other members. Furthermore, for each auction there may be up to 3 images depicting the offered item.

How could the eNF^2 schema be implemented using a SQL:2003 database or Oracle 10g.