# Live Assignment Elements of Computer Science – Database Systems (as far as I know similar to Datenbanksysteme I)

Time: 45 minutes total points: 45 points to pass: 15

**Family**: {[FNr:String, placeOfResidence:String, numOfPets:Integer]}

**Person**: {[PNr:String, surname:String, forename:String, birthYear:Integer]}

**Belongs\_to** {[PNr:String, FNr:String, fromYear:Integer, toYear:Integer]} (*PNr* references *PNr* in relation *person*; *FNr* references *FNr* in relation *family*; *fromYear* determines, from which year a person belonged to a family; *toYear* determines to which year a person belonged to a family)

**Reltions**: {[P1:String, P2:String, description:String]} (*P1* and *P2* reference each *PNr* in relation *person*; the relation is not symmetrical; description is either *siblings* or *parents*; if the description is parents *P1* is mother/father of *P2*)

Formulate the following queries using SQL expressions. Only use relations and restrictions that are necessary for the query (e.g. distinct). Only use the information given in the task.

1. Output PNrs and surnames of persons whose forename starts with an *H*. - 1 point
2. Output the total number of pets from all families in the database. – 1 point
3. Output the duplicate-free surnames of persons who belong to families whose residence is *Trier*. – 2 points
4. Output PNr and birth year of the three oldest persons. – 2 points
5. Output a code for all families (FNr): If the residence is *Bitburg* or *Trier* the code is *RLP*, of the residence is *Saarlouis* the code is *SLD*. Other cases are undefined, here *D* should be output as code. – 4 points
6. Output PNr, forename and surname of persons who belong(ed) to all families. – 4 points
7. Use **windows queries**: Output the total number of pets in the same place of residence for all families (FNR). – 4 points
8. Construct a **view** *onlyChild*: It should contain the PNrs of persons who have no siblings. – 5 points
9. Output the PNrs of persons who belong(ed) to the most (even the same) families. – 6 points
10. Use **window queries**: Output the PNr and FNr for all persons with children, the number of their children and the average year of birth of members of the same family who have children. – 7 points
11. Use **recursion**: Output the person with PNr *P4* and the degree of relationship (parents are first-degree relatives, grandparents are second-degree relatives, etc.) of all direct ancestors. – 9 points