Exercise 3 - Foundations

1. Distributed, Parallel, Federated DBS

In three separate departments of the university three different database systems are used to store information about students, each in simply structured tables as follows:

```
Examination office CS (MS Access):
     StudentsDKE(matrNr, name, firstname, sex)
     StudentsCS(matrNr, name, firstname, sex)
     StudentsWIF(matrNr, name, firstname, sex)

Central student registration (MS SQL Server:
     Students(matrNr, fullname, dayOfBirth, sex, courseOfStudies)

University library (Oracle 10g):
     Students(cardID, firstname, lastname, memberSince)
```

Now, a new application for the Student Union needs to query (only read accesses) all this data.

1. Should this problem be solved by a distributed, parallel, or federated DBS? Why?

2. What partial problems need to be solved for this purpose?

2. Schema Architecture for DDBS

1. What are the components of the 5-level Schema Architecture for Distributed Database Systems?

2. How are the following properties granted by the architecture:

   - Logical data independence
   - Physical data independence
   - Location transparency
   - Fragmentation transparency
   - Replication transparency