1. **What database models do you know ?**
   1. **Hierarchical (tree)**
   2. **Network / graph**
   3. **Relational (table)**
   4. **Object-oriented**
2. **Which are the main functions performed by a Relational Database Management System (RDBMS) ?**
   1. **Relational Database Management Systems (RDBMS) manage data stored in tables**
   2. **RDBMS systems typically implement:**
      1. **Creating / altering / deleting tables and relationships between them (database schema)**
      2. **Adding, changing, deleting, searching and retrieving of data stored in the tables**
      3. **Support for the SQL language**
      4. **Transaction management (optional)**
3. **Define what is "table" in database terms - Tables are scopes, that consist data, arranged in rows and columns**
4. **Explain the difference between a primary and a foreign key - Primary key is a column of the table that uniquely identifies its rows, but foreign key is an identifier of a record located in another table**
5. **Explain the different kinds of relationships between tables in relational databases.**
   1. **One-to-many - A single record in the first table has many corresponding records in the second table**
   2. **Many-to-many - Records in the first table have many corresponding records in the second one and vice versa**
   3. **One-to-one - A single record in a table corresponds to a single record in the other table**
6. **When is a certain database schema normalized? What are the advantages of normalized databases ? – There is no repeating data**
7. **What are database integrity constraints and when are they used ?**
   1. **Primary key constraint – To ensure that the primary key of a table has unique value for each table row**
   2. **Unique key constraint – To ensures that all values in a certain column (or a group of columns) are unique**
   3. **Foreign key constraint – To ensures that the value in given column is a key from another table**
   4. **Check constraint – To ensures that values in a certain column meet some predefined condition**
8. **Point out the pros and cons of using indexes in a database.**
   1. **Speed up searching of values in a certain column or group of columns**
   2. **Adding and deleting records in indexed tables is slower!**
9. **What's the main purpose of the SQL language ? - Standardized declarative language for manipulation of relational databases**
10. **What are transactions used for? Give an example - Transactions are used for executing of a sequence of database operations as a single unit: A bank transfer from one account into another (withdrawal + deposit)**
11. **What is a NoSQL database ? – This is a database, where there is no relationships between the data, where data is stored as documents, which don’t have fixed structure.**
12. **Explain the classical non-relational data models.**
    1. **Document model - Set of documents, e.g. JSON strings**
    2. **Key-value model - Set of key-value pairs**
    3. **Hierarchical key-value - Hierarchy of key-value pairs**
    4. **Wide-column model - Key-value model with schema**
    5. **Object model - Set of OOP-style objects**
13. **Give few examples of NoSQL databases and their pros and cons.**
    1. **Redis - Ultra-fast in-memory data structures server**
    2. **MongoDB - Mature and powerful JSON-document database**
    3. **CouchDB - JSON-based document database with REST API**
    4. **Cassandra - Distributed wide-column database**