SQL

1. Continuing from the last exercise, analogous to the table `pdb` also load the tables `pdb_pfamA_reg` and `pfamA` into your database (ignore all warnings).
   - List all PDB IDs and chain identifiers which are part of the pfam family 'G-alpha'. First, identify the relevant column in pfamA, then get the information about the pdb_ids and chains. Don't use a cross-product but explicitly write the JOIN statement. Which types of JOINs can you use here?
   - Extend your query to also include the resolution for these entries.
   - Think about which parts of the statement is computationally cheap to execute and which aren’t.

2. Also execute the above commands from python3, for example by using PyMySQL.

3. Implement (i.e. write the respective SQL statements) the following entity-relationship diagram in SQL. There is more than one way to solve this. We are aware that this has not been covered yet: If you know how to do this or want to learn yourself you can work on it, otherwise we will discuss the solution in detail in the exercise session.
No-SQL

1. Name and explain in one sentence three different NoSQL data storage approaches.
2. Discuss the differences between relational databases and NoSQL approaches in terms of: Scalability, structure of the data and changes thereof.
3. Explain what the CAP theorem is.
4. Database consistency models differ between NoSQL and relational database systems. Explain what ACID and BASE are and think of the trade-offs between both models.

Good luck,
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