Transaction Processing
Exercise 1

Assignment 1: Why does a database management system need transaction management?

Assignment 2: Explain the nine functions by Codd. Which of these rules are in particular relevant for the transaction management?

Assignment 3: Which components of a database management are relevant for the transaction management?

Assignment 4: Which storage media are relevant for the transaction management? In which storage media would you store the following data:

1. archives
2. logs
3. database data
4. metadata

Assignment 5: Explain and compare semantic integrity and runtime integrity

Assignment 6: Explain the concept of transactions.

Assignment 7: Name and explain the components of the ACID-principle! Which targets are pursued with the ACID-principle?

Assignment 8: Explain the elements of a transaction (control) language. What causes transactions aborts? Which connection exists between internal operations and the transaction management?

Assignment 9: Which problems occur during multi-user operation? Explain the different problems based on the following examples.
Anfangszustand Kontostand (K=1), Integritätsbedingung: (K \geq 0) (B < K)
g)

<table>
<thead>
<tr>
<th>T1</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SELECT COUNT(*) INTO N FROM Artikel;</td>
<td>INSERT Artikel INTO Artikel VALUE(“Fernseher”, 1000) commit;</td>
</tr>
<tr>
<td>SELECT SUM(Preis) INTO S FROM Artikel;</td>
<td></td>
</tr>
<tr>
<td>INSERT Statistiken INTO Statistiken VALUE(GETDATE(), S/N) commit;</td>
<td></td>
</tr>
</tbody>
</table>

Exercise 1 3/3 Good Luck!