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.
a) T1 | T2  
---|---
r(K) |  
K:=K+1 |  
w(K) |  
r(K) |  
K:=K-2 |  
w(K) |  
commit; |  
abort; | 

b) T1 | T2  
---|---
r(B) |  
r(K) |  
r(B) |  
r(K) |  
K:=K+1 |  
B:=B+1 |  
w(K) |  
w(B) |  
commit; |  

Begin: (K=1, B=0), Constraint: (K≥0) (B<K)

c) T1 | T2  
---|---
r(K) |  
r(B) |  
r(K) |  
r(B) |  
K:=K+1 |  
B:=B+1 |  
w(K) |  
w(B) |  
commit; |  


d) T1 | T2  
---|---
r(A) |  
r(A) |  
A:=A+1 |  
A:=A+1 |  
w(A) |  
w(A) |  
commit; |  
commit; |  

commit;


e) T1 | T2  
---|---
r(A) |  
r(A) |  
r(A);r(B) |  
r(A);r(B) |  
w(A);w(B) |  
w(A);w(B) |  
commit; |  
commit; |  

Constraint: (A=B)


g) T1 | T2  
---|---

Position cursor on tuple A
Process tuple
Constraint: (A=B)
<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(&quot;Fernseher&quot;, 1000)</td>
</tr>
<tr>
<td></td>
<td>commit;</td>
</tr>
<tr>
<td>SELECT SUM(Preis) INTO S FROM Artikel;</td>
<td></td>
</tr>
<tr>
<td>INSERT Statistiken INTO Statistiken</td>
<td>VALUE(GETDATE(), S/N)</td>
</tr>
<tr>
<td>commit;</td>
<td></td>
</tr>
</tbody>
</table>