Transaktionsverwaltung

Exercise 1

Exercise 1: Explain and compare semantic integrity and runtime integrity

Exercise 2: Explain the concept of transactions.

Exercise 3: Name and explain the components of the ACID-principle! Which targets are pursued with the ACID-principle?

Exercise 4: Explain the elements of a transaction (control) language.

Exercise 5: 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)
   commit;
   abort;

b) T1 T2
   r(K)
   K:=K+1
   W(K)
   r(K)
   B:=B+1
   W(B)
   commit;

Anfangszustand Kontostand (K=1), Integritätsbedingung: (K≥0) (B<K)

c) T1 T2
   r(K)
   K:=K-2
   W(K)
   commit;
   abort;

   T1 T2
   r(K)
   K:=K+1
   W(K)
   commit;

   T1 T2
   r(B)
   B:=B+1
   W(B)
   commit;

   T1 T2
   r(K)
   K:=K+1
   W(K)
   commit;

   T1 T2 1/2

   r(A)
   A:=A+1
   w(A)
   commit;

   r(A)
   A:=A+1
   w(A)
   commit;

   r(A):r(B)
   A:=A+1;B:=B+1
   w(A);w(B)
   commit;

   r(B)
   B:=B+1;1
   w(B)
   commit;

Integritätsbedingung: (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) commit;</td>
</tr>
<tr>
<td>SELECT SUM(Preis) INTO S FROM Artikel;</td>
<td></td>
</tr>
<tr>
<td>INSERT INTO Statistiken VALUE(GETDATE(), S/N) commit;</td>
<td></td>
</tr>
</tbody>
</table>