1. **Diketahui Schedule sebagaiberikut**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S7** | | | | |
| **T1** | **T2** | **T3** | **T4** | **T5** |
| Read[A] |  |  |  |  |
| Write[A] |  |  |  |  |
|  |  | Read[B] |  |  |
|  |  |  |  | Write[B] |
|  |  | Read[A] |  |  |
|  |  | Write[B] |  |  |
|  |  | Write[A] |  |  |
|  |  |  |  | Write[D] |
|  | Read[C] |  |  |  |
|  | Read[D] |  |  |  |
|  |  |  | Read[B] |  |
|  |  |  | Write[B] |  |
| Read[C] |  |  |  |  |
|  |  |  | Write[C] |  |
|  |  |  | Read[D] |  |

1. Buatlahprecendence graph dari schedule diatas
2. Apakah schedule tersebut conflict serializable?  
    Apa sebabnya, tunjukan dengan precendence graph!
3. **Diketahui Schedule sebagaiberikut**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S2** | | |  | **S2'** | | |
| **T1** | **T2** | **T3** |  | **T1** | **T2** | **T3** |
| Read[A] |  |  |  | Read[A] |  |  |
| Write[A] |  |  |  | Write[A] |  |  |
|  | Read[B] |  |  |  | Read[B] |  |
|  | Write[B] |  |  |  | Write[B] |  |
|  | Read[A] |  |  | Read[C] |  |  |
|  | Write[A] |  |  |  |  | Read[B] |
|  |  | Read[B] |  |  |  | Write[B] |
|  |  | Write[B] |  |  | Read[A] |  |
| Read[C] |  |  |  |  | Write[A] |  |
|  |  | Write[C] |  |  |  | Write[C] |

1. Buktikanbahwadua schedule tersebut view equivalent
2. Apakah schedule diatas bias diubah menjadi view serializable? Jikabisa, tunjukkan!
3. 3. Buatlah Log entry pada table untuk keperluan recovery database bilaterjadikesalahan [**deferred-modification**] initial value a=4, b=12, c=16, d=20.

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **T1** | **T2** | **T3** |
| 1 |  | tmp := 0 |  |
| 2 |  | read[c] |  |
| 3 |  | tmp := 4 |  |
| 4 |  | c:= c - tmp; |  |
| 5 |  | write[c] |  |
| 6 | read[a] |  |  |
| 7 | a := a + tmp; |  |  |
| 8 | tmp := 0 |  |  |
| 9 | write[a] |  |  |
| 10 | savepoint | savepoint |  |
| 11 |  |  | read[b] |
| 12 |  |  | read[d] |
| 13 |  |  | b := b - 5; |
| 14 |  |  | d := d + 5; |
| 15 | a := a - 5; |  |  |
| 16 | write[a] |  |  |
| 17 | rollback | rollback | rollback |
| 18 | commit |  |  |
| 19 |  |  | write[c] |
| 20 |  |  | write[d] |
| 21 | failure | | |

Jawab :

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Log entry** | **DBMS disk** | | | |
| a | b | c | d |
| 1 | <start T2> | 4 | 12 | 16 | 20 |
| 2 | <T2,c,12> |  |  |  |  |
| 3 | <start T1> |  |  |  |  |

<T0 start>

<T4 start>

<T0, A, 0, 10>

<T0 commit>

<T1 start>

<**checkpoint** >

<T1, B, 0, 10>

<T1 commit>

<T4, D, 10, 5>

<T2 start>

<T2, C, 0, 10>

<**checkpoint** >

<T2, C, 10, 20>

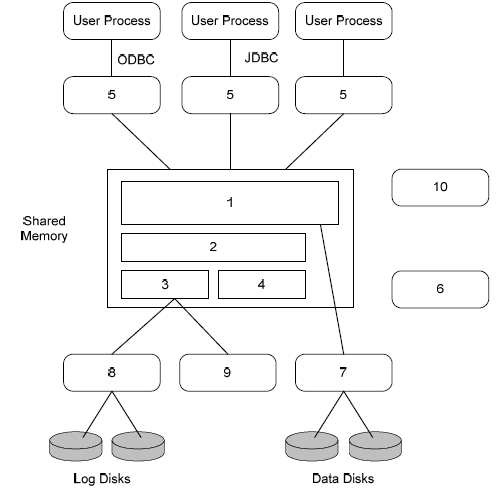
<T2 commit>

<T3 start>

<T3, A, 10, 20>

**------ failure**

1. **Recovery**
2. Ubah transaksi log disamping ke dalam bentuk deferred!
3. Berapakah nilai A, B, C, D setelah crash tetapi belum di recovery?
4. Berapakah nilai A, B, C, D setelah recovery? Dan jelaskan bentuk recovery yang dilakukan pada masing-masing transaksi
5. Sebutkan hanya nama 4 kotak kosong dibawah!



1. Jelaskan perbedaan antara client server system, parallel database, dan distributed database!