A computer screen capture

Description automatically generated with medium confidence

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| T1 | T2 | T3 | T4 | Ket | (Read,Write) |
|  |  |  |  | awal | A(0,0);B(0,0);C(0,0);D(0,0);E(0,0) |
| R1(A) |  |  |  | 1 > 0 (eksekusi) | A(1,0);B(0,0);C(0,0);D(0,0);E(0,0) |
|  | R2(B) |  |  | 2 > 0 (eksekusi) | A(1,0);B(2,0);C(0,0);D(0,0);E(0,0) |
| W1(C) |  |  |  | 1 > 0 (eksekusi) | A(1,0);B(2,0);C(0,1);D(0,0);E(0,0) |
|  |  | R3(D) |  | 3 > 0 (eksekusi) | A(1,0);B(2,0);C(0,1);D(3,0);E(0,0) |
|  |  |  | R4(E) | 4 > 0 (eksekusi) | A(1,0);B(2,0);C(0,1);D(3,0);E(4,0) |
|  |  | W3(B) |  | 3 > 2 & 3 > 0 (eksekusi) | A(1,0);B(2,3);C(0,1);D(3,0);E(0,0) |
|  | W2(C) |  |  | 2 > 0 & 2 > 1 (eksekusi) | A(1,0);B(2,3);C(0,2);D(3,0);E(0,0) |
|  |  |  | W4(A) | 4 > 1 & 4 > 0 (eksekusi) | A(1,4);B(2,3);C(0,2);D(3,0);E(0,0) |
| W1(D) |  |  |  | 1 < 3 (abort) |  |
| A1 |  |  |  | T1 kembali dengan waktu = 5 | |
| R1(A) |  |  |  | 5 > 4 (eksekusi) | A(5,4);B(2,3);C(0,2);D(3,0);E(0,0) |
| W1(C) |  |  |  | 5 > 0 & 5 > 2 (eksekusi) | A(1,4);B(2,3);C(0,5);D(3,0);E(0,0) |
| W1(D) |  |  |  | 5 > 3 & 5 > 0 (eksekusi) | A(1,4);B(2,3);C(0,5);D(3,5);E(0,0) |
| C1 |  |  |  |  |  |
|  | C2 |  |  |  |  |
|  |  | C3 |  |  |  |
|  |  |  | C4 |  |  |

Schedule:

R1(A);R2(B);W1(C);R3(D);R4(E);W3(B);W2(C);W4(A);W1(D);A1;R1(A);W1(C);W1(D);C1;C2;C3;C4

Text

Description automatically generated with low confidence

1. Timestamp Ordering

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| T1 | T2 | T3 | Ket | (Read,Write) |
|  |  |  | awal | X(0,0);Y(0,0) |
| R1(X) |  |  | 1 > 0 (eksekusi) | X(1,0);Y(0,0) |
|  | W2(X) |  | 2 > 0 & 2 > 1 (eksekusi) | X(1,2);Y(0,0) |
|  | W2(Y) |  | 2 > 0 (eksekusi) | X(1,2);Y(0,2) |
|  |  | W3(Y) | 3 > 0 & 3 > 2 (eksekusi) | X(1,2);Y(0,3) |
| W1(Y) |  |  | 1 < 3 (abort) |  |
| A1 |  |  | T1 kembali masuk dengan waktu = 4 | |
| R1(X) |  |  | 4 > 2 (eksekusi) | X(1,4);Y(0,3) |
| W1(Y) |  |  | 4 > 0 & 4 > 3 (eksekusi) | X(1,4);Y(0,4) |
| C1 |  |  |  |  |
|  | C2 |  |  |  |
|  |  | C3 |  |  |

1. Timestamp Ordering with Thomas Rule

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| T1 | T2 | T3 | Ket | (Read,Write) |
|  |  |  | awal | X(0,0);Y(0,0) |
| R1(X) |  |  | 1 > 0 (eksekusi) | X(1,0);Y(0,0) |
|  | W2(X) |  | 2 > 0 & 2 > 1 (eksekusi) | X(1,2);Y(0,0) |
|  | W2(Y) |  | 2 > 0 (eksekusi) | X(1,2);Y(0,2) |
|  |  | W3(Y) | 3 > 0 & 3 > 2 (eksekusi) | X(1,2);Y(0,3) |
| W1(Y) |  |  | Rule Thomas aktif (skip) |  |
| C1 |  |  |  |  |
|  | C2 |  |  |  |
|  |  | C3 |  |  |

1. validation based

|  |  |  |  |
| --- | --- | --- | --- |
| T1 | T2 | T3 | Ket |
|  |  |  | awal |
| R1(X) |  |  | Start T1 |
|  | W2(X) |  | Start T2 |
|  | W2(Y) |  |  |
|  |  | W3(Y) | Start T3 |
| W1(Y) |  |  |  |
| C1 |  |  | Validasi T1, karena belum ada transaksi lain yang selesai, maka berhasil dan finish T1 |
|  | C2 |  | Validasi T2 terhadap T1, karena T2 tidak baca hasil T1, validasi berhasil dan finish T2 |
|  |  | C3 | Validasi T3 terhadap T1 dan T2, karena T3 tidak baca hasil T1 dan T2, maka validasi berhasil dan finish T3 |