1. Serializability: Executing P1, P2 in any order (serially) gives A=1, B=2
   1. S1 Serializable because output of S1 is equal to output of any schedule of P1, P2
      1. S1 yields A=1, B=2
   2. S2 Not serializable because output of S2 is A=0, B=2.
   3. S3 Serializable because S3 yields A=1, B=2
2. Schedule, Serial, Strict
   1. S1
      1. Schedule because order and operations are preserved from P1, P2
      2. Not serial because there is interleaving
      3. Not strict because T2 writes A after T1 reads A before T1 c/o
   2. S2
      1. Schedule because it preserves order and operations
      2. Not serial because there is interleaving
      3. Not strict because T2 writes A after T1 reads A before T1 c/o
   3. S3
      1. Schedule because the order and operations are preserved
      2. Serial because there is no interleaving
      3. Strict because serial schedule makes conflict impossible
   4. S4
      1. Not a serial schedule nor a strict schedule because it’s not a schedule.
3. Lock Tables

S1:

1. T1: S(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T1 |  | T1 request s on A, T2 has no x on A; Approve |

1. T1: R(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T1 |  | Read A doesn’t change locks |

1. T1: R(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | X | T1 |  | T2 has no lock on A; Approve |

1. T1: R(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | X | T1 |  | Write A doesn’t change locks |

1. T1: Commit

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
|  |  |  |  | T1 locks released |

1. T2: S(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T2 |  | T2 requests s on A, T1 has no x on A; Approve |

1. T2: R(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T2 |  | Read doesn’t change locks |

1. T2: Commit

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
|  |  |  |  | T2 locks released |

S2:

1. T1: S(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T1 |  | T1 request s on A, T2 has no x on A; Approve |

1. T1: R(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T1 |  | Read A doesn’t change locks |

1. T2: S(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T1, T2 |  | T2 requests s on A, T1 has no x on A; Approve |

1. T2: R(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T1, T2 |  | Read A doesn’t change locks |

1. T1: X(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T1, T2 | T1 | T1 requests x on A, but T2 has s on A; Suspend |

1. T2: Commit

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | S | T1 |  | T2 locks released, T1 no longer waiting; resume T1 |

1. T1: X(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | X | T1 |  | T1 requests x on A, T2 has no lock on A; Approve |

1. T1: W(A)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
| A | X | T1 |  | Write A doesn’t change locks |

1. T1: Commit

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data** | **Lock** | **Owner** | **Waiting** | **Reason** |
|  |  |  |  | T1 locks released |