

Transaction Management:-

1-

| Transaction A | Time | Transaction B |
|-------------------------|-------|---------------|
| read-item(x) | T_2 | |
| $x := x + 1$ | T_2 | |
| | T_3 | read-item(x) |
| write-item(x) | T_4 | |
| | T_5 | write-item(x) |

lost update problem because when transaction A read the first item so the value of 'x' will be incremented. At time T_3 , Transaction B will be overwritten its value so there will be a lost update in Transaction A.

2

| Transcation A | Time | Transcation B |
|---------------|-------|---------------|
| | T_1 | Read item X |
| | T_2 | $X := X - 1$ |
| | T_3 | write item(X) |
| read-item(X) | T_4 | |
| write-item(X) | T_5 | |
| | T_6 | ROLL BACK |

The dependency in this uncommitted dependency problem because when B write-item(X) & T_3 so at time T_4 Transca will be write item X. Transcation B roll back so it will go its original value at time T_1 & transaction A has wrong value at Time T_5 will be uncommitted dependency.

3.

| Transaction A | Time | Transaction B |
|-------------------------|----------|--------------------------|
| | T_1 | Read-item(x) |
| | T_2 | $X := X - 1$ |
| | T_3 | Write item(x) |
| $Sum := 0$ | T_4 | |
| Read-item(x) | T_5 | |
| $Sum = Sum + X$ | T_6 | |
| Read-item(y) | T_7 | |
| Read-item(y) | T_8 | |
| | T_9 | Read-item(y) |
| | T_{10} | $Y := Y + 1$ |
| | T_{11} | Write-item(y) |

there will be inconsistent analysis problem occur where we write or read multiple transaction so inconsistency in the committed values will occur at different times.

4-

| Transaction A | Time | Transaction B |
|---------------|-------|---------------|
| Read-item(x) | T_1 | |
| $x := x + 1$ | T_2 | |
| | T_3 | read-item(y) |
| Write-item(x) | T_4 | |
| | T_5 | write-item(y) |

in the following transaction there will be no problem because every transaction is independent to each other.