anything done in database is transaction.

Unit: 5 Transaction Processing

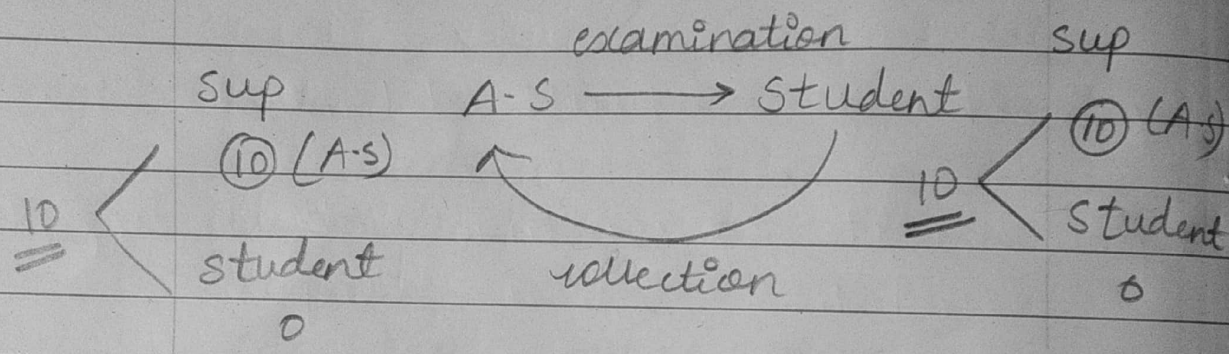
set of operation

* Transaction Management:

IMP

- Sequence and compulsion

⇒ It is a task that contains logically related operations in a sequence.



- Properties of transaction:

A → Atomicity
C → Consistency
I → Isolation
D → Durability

① Atomicity:

agar alag operation hoi tp badha compulsory thava joie.

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Eg: O1 ✓ → RB
O2 ✗
O3 ✓ → R.B
op → fail

- agar operation karvu che to puru karvanu. partial ni chale

⇒ Either **all** operations or **None** operation.

Eg:
10,000 → 5000
A → B
— 5000 —

Fund Tranfer — Transaction that contains Two operations
- ① withdraw 5000 from A
- ② deposite 5000 into B

② Consistency

⇒ Before the transaction and after the transaction database must be in consistent state.

Scanned by CamScanner

eg:

	A →	B	(A+B)
Before T	10,000	5000	15,000
①	5000	5000	10,000
②	3000	10,000	15,000
After ③ T	5000	10,000	15,000

Transaction pela ane Transaction pachi value same j hovi joie.

inbetween transaction inconsistent hoi sake.

③ Isolation (not to interfer)

agar ek database ma more than 1 transaction that
eg: T1, T2, T3
to T1 — T2 me affect ni kare
T2 — T3 ne affect ni kare.
they should be isolated

⇒ All Transactions must be preform in an isolated

manner, that means ~~impact~~ of one transaction does not affect any other transaction.

④ Durability (long lasting)

agar 2000 Rs hai to eni value 2-3 years pachi pn 2000 Rs j rahe

⇒ The impact of transaction should be long lasting that means the balance of account B remains 10,000 until and unless sum other transaction changes it.

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- Single user system: one user at a time

eg: ATM System.

- Multi user system: many user can use the system concurrently.

mostly

eg: airline reservation system, system in bank.

- two sequences

① Sequential
② Concurrent (more than two transaction are done simultaneously.

- Concurrency

① Multiprogramming: allows the computer to execute multiple programs at the same time.

② Interleaving: keeps the C.P.U busy when a process

processor mostly

requires an input or output operation, the CPU switched to executed another process rather than remaining idle during I/O time.

- Most of the theory concerning concurrency control in databases is developed in terms of interleaved concurrency.

* Basic Operation

- A database is a collection of named data items.
- Basic operations are read and write.

⇒ read_item(X): Reads a database item named X into a program variable. To simplify notation, we assume that the program

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variable is also named X.

⇒ write_item(X): Writes the value of program variable X into the database item named X.