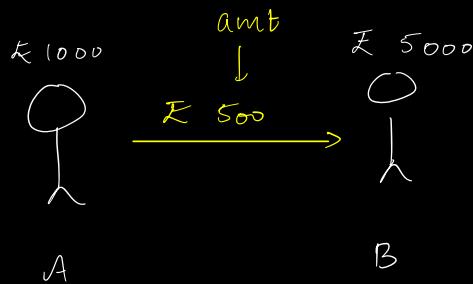




What are transactions?

Bank example

Transfer Money



Accounts

id	Name	balance	created_at . . . .
1	A	£1000	
2	B	£5000	

Transfer Money :-

- 1) Check balance of A (DB call - Read)
- 2) if (balance\_A  $\geq$  amt) (App<sup>n</sup> code)
- 3) Reduce balance of A by 500 (DB call - update)
- 4) Increment " " B " (DB call - update)

transferMoney ( A , B , amount ) {

\_\_\_\_ // multiple SQL Queries

\_\_\_\_

\_\_\_\_

\_\_\_\_

\_\_\_\_

}

↳ may be getting executed by multiple people at the same time.

500 is missing

21,000 → 20,500

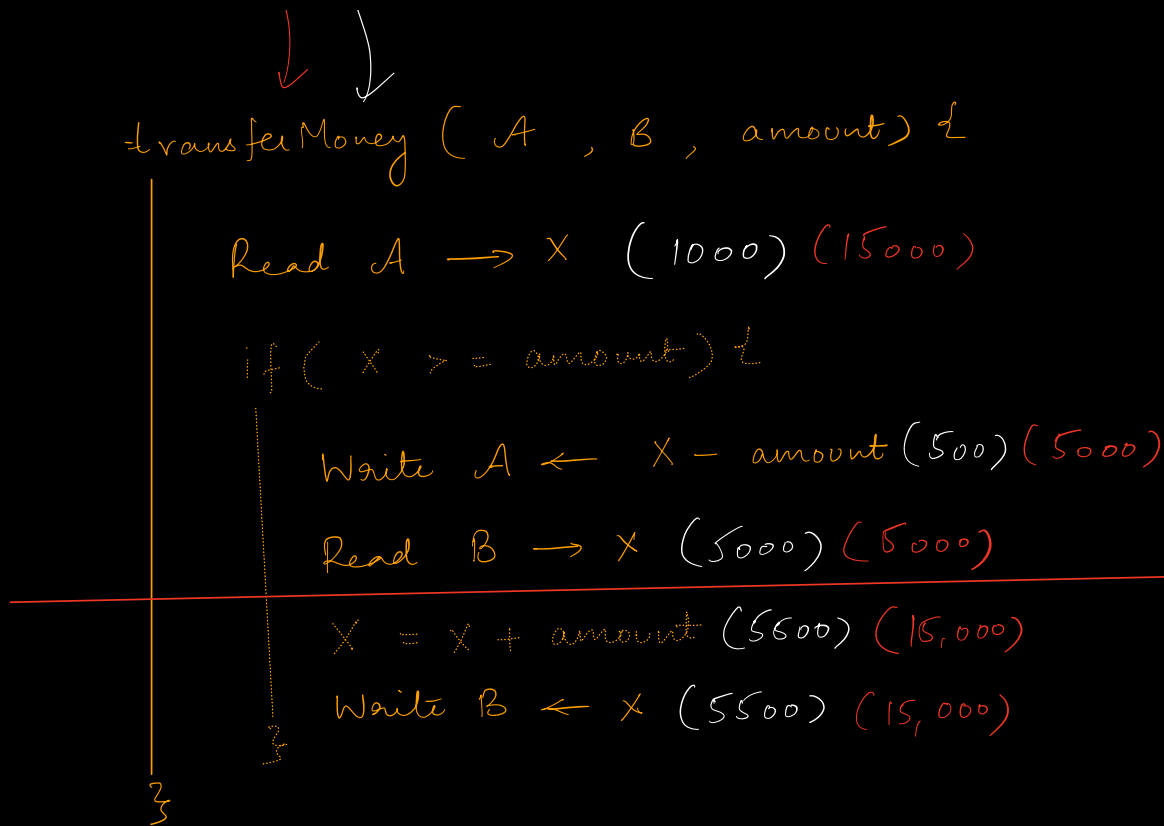
Balance

A ~~1000~~ 500

B ~~5000~~ ~~5500~~ 15000

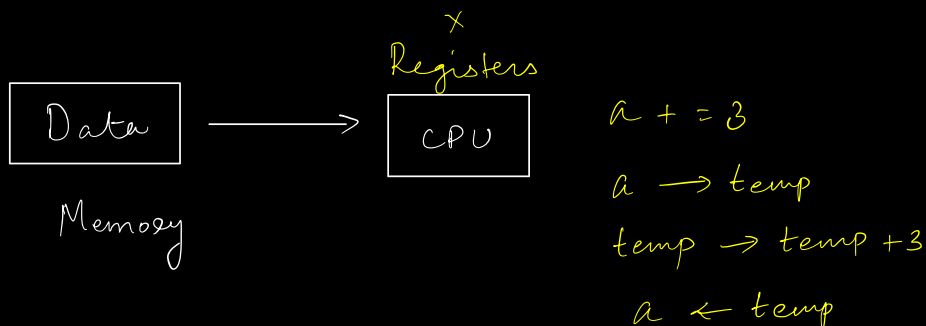
C ~~15000~~ 5000

A  $\xrightarrow{500}$  B  
C  $\xrightarrow{10,000}$  B  
\_\_\_\_\_



i) inconsistent / illogical state

ii) complete operation may not execute





## Expectations / Properties of a Transaction :-

(ACID properties)

A - Atomicity

C - Consistency

I - Isolation

D - Durability

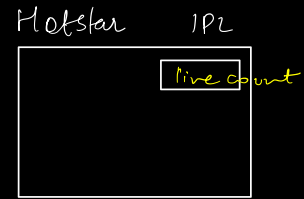
Atomicity :-  smallest indivisible unit

↳ Transaction should appear as indivisible unit to an end user.

To an outsider, it should feel like everything has happened or nothing has happened.

A transaction should never end in an intermediate state.

Consistency :- Logical Correctness  
Exactness  
Accuracy



The state of the DB before transaction  
& after should be accurate.

ISOLATION :- <sup>→ separate</sup>

One transaction shouldn't affect another  
transaction running at the same time on  
the same data

Durability :- <sup>Strong  
longevity</sup> long lasting

↳ Once your transaction is completed,  
we would want it to stay persisted.  
↓  
store in disk.

## Commit & Rollbacks :-

id	Name	psp	b-id
1	Umang	70	1

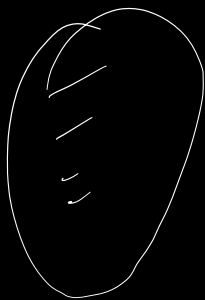
update Student  
set psp = 80  
where id = 1

Select \*

from Student

→ 80

By default, all sql queries have  
auto commit = true



COMMIT: Married Persisting the  
changes to the DB

Rollback: Breakup :- Undo the  
changes till the last  
commit.

Step



---

Transaction isolation levels :- ✓

In MySQL ⇒ every session is isolated. ✓ }