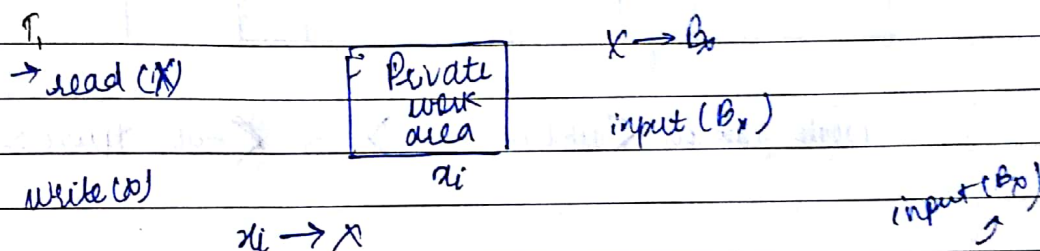
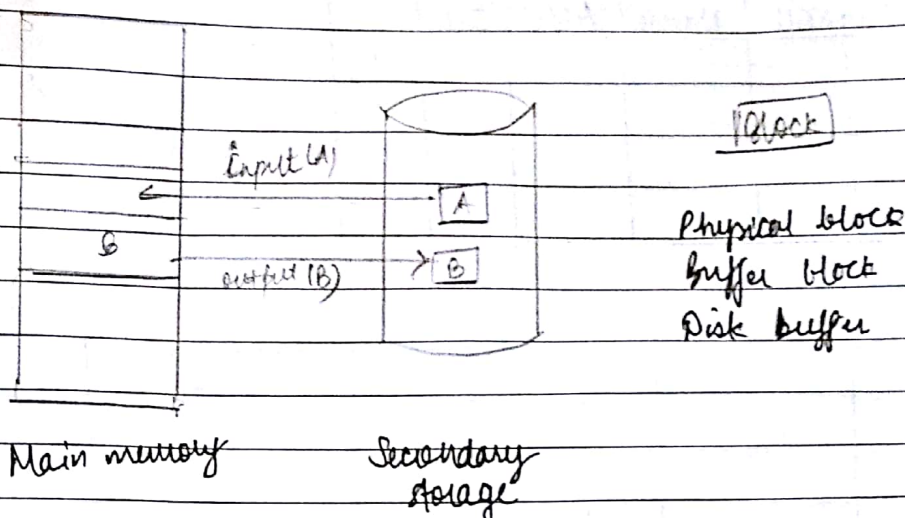


## Recovery

### Data access



If  $x_i$  is not found in private work area, it is searched in the secondary storage & written to the database

Deferred output  $\rightarrow$  Because output is not displayed just immediately after writes as the data elements may be in use by some other components.

### Log based recovery

- \* Transaction identifier ( $T_i$ )
- \* Data-item identifier ( $x$ ) stable storage
- \* Old value
- \* New value

$\langle T_i, x_j, v_1, v_2 \rangle$

$\langle T_i, start \rangle$

$\langle T_i, commit \rangle$

$\langle T_i, abort \rangle$