Faculty of Engineering - Cairo University

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Advanced Programming Techniques

CMPS211

Algorithm used in Collaborative Editor

Team 23

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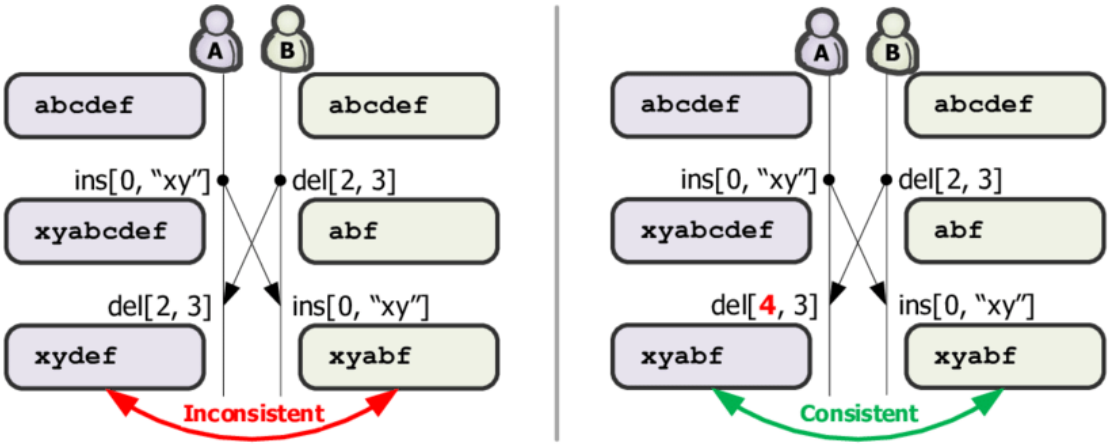
Algorithm used:

Operational Transformation (OT) was used for this project.

Without a synchronization algorithm, concurrent edits can lead to conflicts and inconsistencies in the document on the database and the local copy on each user's machine.

OT enables collaborative systems to maintain consistency by transforming and reconciling concurrent edits by processing each input as an object named `**Operation**`. This algorithm intercepts each operation that is pending on the user side or had just reached the server, and modifies each user request accordingly to provide the most synchronized and timely output.

For example, in the word BNR, if a user types Y at the end (position 3), but another user is quicker to type I at position 2, this means that the text at the server side now is BINR.
If there was no OT, this would mean that once the original request of Y was fulfilled, the result would be BINYR. However, the OT on the client side interferes and converts the pending request appropriately to satisfy the original intent of typing the Y after R, which means that it will now be written to position 4, making the output BINRY.



With this said, the algorithm takes every request into account, but synchronically processes each request in the order it came in, while updating the parameters appropriately.