so for any transaction i will add or subtract the balance field in the wallet struct and will fetch the balance from the wallet (stored in mongodb) but i need to add the transaction by adding a block in the blockchain right

###### ChatGPT said:

Exactly ✅ — you’ve got the right idea.

Here's how it works step by step in an **account-based blockchain model** like you're building:

## ✅ 1. ****Update the Wallet Balance (MongoDB)****

When a transaction is processed:

* **Sender's balance**: Decrease by Amount
* **Recipient's balance**: Increase by Amount
* These updates happen directly in your wallet collection in MongoDB

go

CopyEdit

// Pseudo-code

UpdateWalletBalance(senderAddress, -amount)

UpdateWalletBalance(recipientAddress, +amount)

This is your system's **state** — and it's fast and easy to query.

## ✅ 2. ****Add the Transaction to the Blockchain****

Even though you’ve updated the state in MongoDB, you also need **an immutable record** — that’s what the blockchain gives you.

So:

* Create a Transaction object (already signed and verified)
* Add it to the PendingTransactions list
* Eventually mine it (or immediately append it) into a new **Block**
* Append the Block to your Blockchain array or collection

This keeps your system:

* **Auditable** — you can trace all past changes
* **Tamper-proof** — nobody can forge balance updates without valid transactions

## ✅ 3. ****Summary of Roles****

| **Component** | **Purpose** |
| --- | --- |
| **MongoDB Wallet** | Holds the current balance and public info |
| **Blockchain** | Holds the history of all transactions (via blocks) |
| **Transaction** | Causes balance change & gets logged on-chain |
| **Nonce** | Prevents replay attacks & keeps order |

## 🔒 Security Tip

Make sure:

* You validate the transaction before updating balances
* You update balances only **after** a transaction is successfully signed, verified, and added to the blockchain

## ⚙️ Optional Optimization

You could:

* **Delay balance updates** until the transaction is mined (like Ethereum)
* Or **update immediately** and consider a rollback if consensus fails

In your case (MongoDB + single-node ledger), immediate update is fine.

Let me know if you’d like the **code structure** or help in syncing these pieces (e.g., AddTransaction → UpdateBalances → AddToBlock).