For this project, I selected PostgreSQL as the database system, primarily due to its robustness, flexibility, and strong support for relational data modelling. The ERD developed for this application outlines a system with multiple interconnected entities including users, wallets, cryptocurrencies, fiat currencies, and pricing data, making PostgreSQL a natural fit for the architecture of hodl-server. PostgreSQL's support for foreign keys, joins, and advanced querying makes it especially effective at managing these complex relationships.

Unlike NoSQL databases such as MongoDB, which are schema-less and excel with unstructured or hierarchical data, PostgreSQL enforces a rigid schema structure that ensures data integrity. In a financial tracking and portfolio management context, where precision and validation are crucial, the strict relational model of PostgreSQL helps prevent issues like inconsistent or orphaned data. For instance, ensuring that each wallet is always associated with a valid user or that every crypto price entry links to a known cryptocurrency is an essential feature handled natively by PostgreSQL.

Compared to other systems like MySQL, PostgreSQL offers superior support for complex queries, custom data types, and standards compliance. It also outperforms SQLite in terms of scalability and concurrency. While SQLite is lightweight and easy to set up (and often a go-to for small-scale applications) it lacks advanced features like concurrent writes and user management. PostgreSQL provides hodl-server the scalability and transactional reliability that SQLite cannot offer.

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