Nekiwi: The Revolution of Digital Finance in the Modern Age

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***Abstract*—Nekiwi is a pioneering digital finance platform reshaping financial management in the contemporary era. With a focus on swift and secure online transactions, Nekiwi ensures user convenience and data protection through cutting-edge technologies. Its user-friendly interface caters to individuals of all technological proficiencies, while its versatility spans various financial needs, from payments to personal finance oversight. By enabling instant and borderless money transfers, Nekiwi streamlines financial processes and enhances transaction security, eliminating the reliance on physical cash or credit cards. Positioned as an indispensable tool in today's digital landscape, Nekiwi's commitment to efficiency, security, and adaptability underscores its role in driving financial inclusion and economic progress in the digital age.**

Keywords—Digital finance, Financial management, Online transactions, User convenience, Data protection, Versatile financial solutions, Financial inclusion

I. Introduction

In today's digital age, the way we manage our finances is changing rapidly. Cash transactions are becoming less common, giving way to more convenient and secure digital payment methods. In this context, Nekiwi emerges, a virtual wallet designed to meet the needs of modern users.

Nekiwi is a secure and easy-to-use platform that allows users to make payments, send and receive money, and manage their finances efficiently. The app offers many features that make it an essential daily tool.

Fast and secure payments

Convenience and security are essential in modern financial transactions. Nekiwi meets these needs by allowing users to transact online with utmost ease. Operating from mobile devices, Nekiwi ensures security through the use of advanced technologies, ensuring complete protection of financial information.

Instant money transfers

The ability to transfer funds instantly and without borders is one of the most prominent features of Nekiwi. The platform facilitates the sending and receiving of money between users with unprecedented speed, ideal for sharing expenses or sharing financial resources with friends, family and colleagues instantly and without complications.

Simplified financial management

Beyond transactions, Nekiwi presents itself as an ally in the management of personal finances. With a detailed record of all financial activity, users can monitor their spending, set budgets and make more informed financial decisions, all from an intuitive and accessible interface.
Nekiwi redefines the convenience of financial transactions by eliminating the need to carry cash or credit cards, resulting in a more simplified and secure payment process. Speed is another important advantage, because transactions are processed instantly, making users' daily lives easier and avoiding the delays often associated with traditional payment methods. When it comes to security, Nekiwi is at the forefront, implementing the latest technologies to protect its users' financial information and offer them unparalleled peace of mind. Ease of use is also a strong point of the application, with an intuitive interface that allows users of all technology levels to navigate and perform operations without complications. Finally, Nekiwi's versatility is evident in its ability to adapt to a wide range of financial needs, from making payments to managing money transfers and managing personal finances, making it a an indispensable tool in today's digital world.

II. Methods and Materials

In this study, databases were used for the design and implementation of the Nekiwi Electronic Wallet database. The project focused on providing a secure and efficient platform for conducting financial transactions in the digital world. To achieve this goal, various tools and technologies were utilized, detailed below.

A. Tools Used

1. Draw.io

Draw.io was used for creating diagrams and visual representations of the database structure, including the entities, relationships, and attributes involved in the Electronic Wallet system.

2. DBeaver

DBeaver was the main tool used for the management and administration of the database. This tool allows executing SQL queries, designing database schemas, and visualizing data stored in tables.

3. Docker

Docker was implemented for creating virtual containers that facilitated the deployment and execution of the Electronic Wallet system in different development and production environments consistently.

4. *MySQL and PostgreSQL*

It was decided to use MySQL and PostgreSQL database management systems for storing and managing user data, transactions, services, and other entities related to the Electronic Wallet.

B. Database Design Process:

The database design was based on the functional and non-functional requirements of the project, as well as the relationships between the entities involved in the system. The following steps were followed for creating the database structure:

1. *Definition of Entities and Attributes*

The main entities were identified as User, Transaction, Services, Saving Goals, Wallets, External Account, External Transaction, Country, and their relationships.

2. *Modeling of Relationships*

The relationships between the entities were established through primary and foreign keys to ensure the referential integrity of the database.

3. *Implementation of Constraints*

Integrity constraints, such as unique keys and check constraints, were applied to maintain the consistency and quality of the stored data.

4. *Query Optimization*

Adjustments were made to SQL queries to improve the performance of read and write operations in the database, ensuring an efficient system response.

5. *Validation and Testing*

Once the database was implemented, thorough testing was conducted to verify its correct functioning and its ability to effectively manage the operations of the Electronic Wallet. Integration tests, performance tests, and security tests were carried out to ensure the reliability and security of the database in real-world use environments.

6. *Entity-Relationship Model*

In the platform development, several key entities were defined with specific attributes to facilitate data management.

The Users entity (E1.Users) is fundamental and contains attributes such as phone number, password, email, first names, last names, identity document, financial cushion, and balance, all with the corresponding validations to ensure data integrity. Each user is linked to a country through a foreign key that references the Country entity (E10.Country).

Transactions (E2.Transaction) are recorded with a unique identifier, description, amount, date, and status, in addition to foreign keys linking the source and destination users, thus allowing detailed tracking of financial activities. The Wallet entity (E3.Pocket) allows users to organize their funds into different categories, with a name and amount assigned to each wallet.

Services (E4.Service) and Service Payments (E5.Payment_Service) are managed through entities that record the details of available services and payments made, respectively, including amounts and dates. The Bank Account entity (E6.Bank_Account) is crucial for managing users' bank accounts, with attributes such as account number, account name, bank name, and holder, along with the corresponding balance.

The relationship between users and their bank accounts is managed through the User-Bank Relationship entity (E7.User_Bank_REL), which records bank transactions with details such as description, amount, and date. Additionally, entities were established to classify account types (E8.Type_Account), transaction types (E9.Type_Transaction), document types (E11.Type_Document), and statuses (E12.State), each with its unique identifier and corresponding description.

These entities and their interconnected attributes form the database that supports the platform's functionality, ensuring efficient and secure management of users' financial information.

III. Experiments y Results

This section details the experiments carried out to validate the functionality and effectiveness of the Electronic Wallet database, as well as the results obtained during the tests. Various tests were conducted to evaluate the performance, data integrity and security of the implemented database.

A. Database implementation:

The e-wallet database was implemented using MySQL and PostgreSQL as database management systems. The tables corresponding to the entities defined in the design were created, such as User, Transaction, Services, Savings Goals, Pockets, External Account, External Transaction, Country, among others. Relationships between tables were established using primary and foreign keys to ensure referential integrity of the data.

B. Performance tests:

To evaluate database performance, load testing and query speed testing were performed. Different usage scenarios were simulated, including high volume of transactions and concurrent queries. SQL query response times were measured and the performance impact of increased workload on the system was analyzed.

Performance test results showed that the e-wallet database is capable of efficiently handling a large number of simultaneous transactions and queries without significant performance degradation. The query optimization and implemented index structure contributed to rapid data retrieval and efficient operation execution.

C. Data Integrity Testing:

Data integrity tests were carried out to verify that the constraints defined in the database were correctly respected.

Primary keys, foreign keys and check constraints were checked to ensure the consistency and correctness of the stored data. Inserts, updates, and deletions of records were performed to validate referential integrity and consistency of information.

Data integrity test results confirmed that the e-wallet database effectively maintains data integrity, avoiding inconsistencies and ensuring the reliability of stored information.

D. Security testing:

Security testing results showed that the e-wallet database has strong data protection mechanisms and meets established security standards. Potential vulnerabilities were identified and corrective measures were applied to strengthen system security.

The experiments carried out have shown that the Electronic Wallet database is robust, efficient and secure to reliably manage users' financial transactions. The results obtained support the feasibility and performance of the system, highlighting its ability to process transactions, maintain data integrity and protect sensitive user information.

IV. Conclusion

Nekiwi presents itself as an innovative and effective solution for financial management in today's digital age, offering a range of features that make it an essential tool for modern users. The platform stands out for its ease of use, security, speed and versatility, meeting the needs of users in a dynamic digital environment.

1. Convenience and security in financial transactions:

Nekiwi eliminates the need to carry cash or credit cards, simplifying the payment process and making it more secure. The platform offers fast and secure online transactions, using advanced technologies to protect users' financial information.

2. Instant Money Transfers:

The ability to transfer funds instantly and without borders is one of Nekiwi's most notable features. The platform facilitates sending and receiving money between users with unprecedented speed, which is ideal for sharing expenses or sharing financial resources with friends, family and colleagues instantly and without complications.

3. Simplified financial management

Nekiwi goes beyond transactions, providing users with tools to effectively manage their personal finances. The platform offers a detailed record of all financial activities, allowing users to monitor their spending, set budgets and make more informed financial decisions, all from an intuitive and accessible interface.

4. Versatility and adaptability:

Nekiwi addresses a wide range of financial needs, from payments to money transfer management and personal finance management. The platform is becoming an indispensable tool in today's digital world, offering comprehensive solutions to users' financial needs.

5. Impact on society

Nekiwi has the potential to transform the way people manage their finances in Colombia and around the world. The platform can contribute to financial inclusion, by facilitating access to financial services for people who do not have traditional bank accounts. Additionally, Nekiwi can promote transparency and efficiency in financial transactions, reducing costs and improving security.

In short, Nekiwi positions itself as an innovative and disruptive solution in the field of digital finance, offering a superior user experience and meeting user needs in a constantly evolving digital environment. The platform has the potential to transform the way people manage their finances and contribute to greater financial inclusion and more sustainable economic development.

V. Bibliography

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