DEVELOPMENT OF A DIGITAL WALLET USING OBJECT-ORIENTED PROGRAMMING AND SOFTWARE DESIGN PATTERNS

Cristian Santiago López Cadena, Carlos Alberto Barriga Gámez
20222020027, 20222020179

INTRODUCTION

Object-oriented programming is defined as a programming paradigm that attempts to simulate things in the real world through elements called objects. These objects have some characteristics such as inheritance, polymorphism, encapsulation, and abstraction. Likewise, these objects are defined as a series of behaviors called methods and properties known as attributes.

According to the authors [4], design patterns are proven solutions to certain problems encountered when designing software.
On the other hand, the author [3] defines digital wallets as software that allows us to store electronic money for later use in online commerce. Likewise, the author states that digital wallets are used as a means of payment to send and receive money safely.
This project aims to develop a functional digital wallet platform using the object-oriented programming paradigm and the software patterns.

GOAL

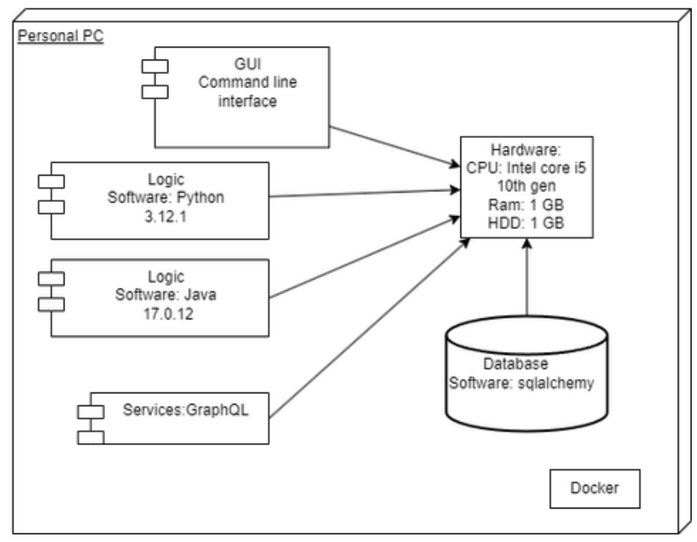
Develop a digital wallet, using the object-oriented programming paradigm and the software design patterns, to obtain a scalable, maintainable and efficient application.

PROPOSED SOLUTION

Python version 3.12.1 and Java version 17.02.12 will be used for the development of the logical part of the software, in the same way for the development of the data layer, it was decided to use the SQL Alchemy library.
We will use the GraphQL tool to manage and unify the services of the Python and Java backends.
Docker software will be used to automate the deployment of the application as a local host.

RESULTS

The application design process was carried out, identifying user stories, creating class, activity, sequence, and deployment diagrams.
To verify the correct functioning of the software, it was decided to use user stories as a way of verifying the effectiveness of the software
Unit tests of the code will also be carried out to determine whether the software meets its intended purpose.
To do this, the persistence of the information will be tested by checking whether the information can be stored and manipulated correctly in the database.
On the other hand, tests of the application services will be carried out in order to determine whether they generate the information requested in each case.



Deployment diagram

CONCLUSION

BIBLIOGRAPHY

[1] S. Valbuena and S. A. Cardona, “Object-oriented programming principles” Elizcom S.A.S, 2018, pp. 7.
[2] C. A. Robleto, “Electronic Commerce: Background, Definitions and Subjects”, 2004, pp. 6-8.
[3] G.Bellindo, “Electronic wallets: a tool for entrepreneurship in the digital age”, 2023
[4] E.Gamma, R.Helm, R. Johnson, J.Vissides, “Design patterns. Elements of reusable object-oriented Software”, 1994
[5] Autentia, “Software design, principles and patterns of the software development”, 2012, pp. 9-17.
[6] Amazon, “What is the difference between monolithic and microservices architecture?”, 2023.