Abstract:

This project offers a comprehensive overview of the fundamental ideas of database management systems. In this project, I was able to develop a database for Hyseni Crypto Store to assist this company in managing data flow as efficiently as possible in order to meet future objectives. It will be feasible to quickly digitize all main departments by developing an efficient DBMS, allowing Crypto Store to achieve its goal: to become the best crypto app in Albania. This means that this database will be crucial to efficiency because everything will be automated, making data management much easier and more efficient. I used some basic methods, such as data management, graphical depiction of various critical business keys, standard tools for storing and analysing data, and turning all of this into queries, the standard language for database management systems. This system will be able to process a significant amount of data, as well as manage and improve the ability to correct, query, and report Crypto Store's acquired data. Finally, at the end of the project, I will have completely comprehended and executed the ER diagram, relational schema, and managerial queries, all of which will aid in the decision-making process in the business I have chosen.

Introduction

I have chosen to build a database for a Crypto system because I like them very much and I find them very interesting. Without a doubt, investing in cryptocurrencies, is the new trend of the decade. People can profit a lot by just investing and making good deals. In Albania we do not have a specific market for cryptos. Albanians' citizens are forced to buy form foreign markets. With the new app, now we can buy cryptos with much less commission. Since cryptos are digital, we will create an app and a web application for users to make the process of buying and selling easier for the consumer. Except for cryptocurrencies, the user has the opportunity to buy currency. We are trying to build an investing app for those who want to make money faster and simpler. Finally, this DBMS will be the key to efficiency since everything will be automated, making data management easier and more efficient.

The purpose of the project

- Using ERD and SQL to build a database system for a crypto store.
- Use of Store Queries for a variety of purposes
- Data management has never been easier.

Goals

- Improving database abilities

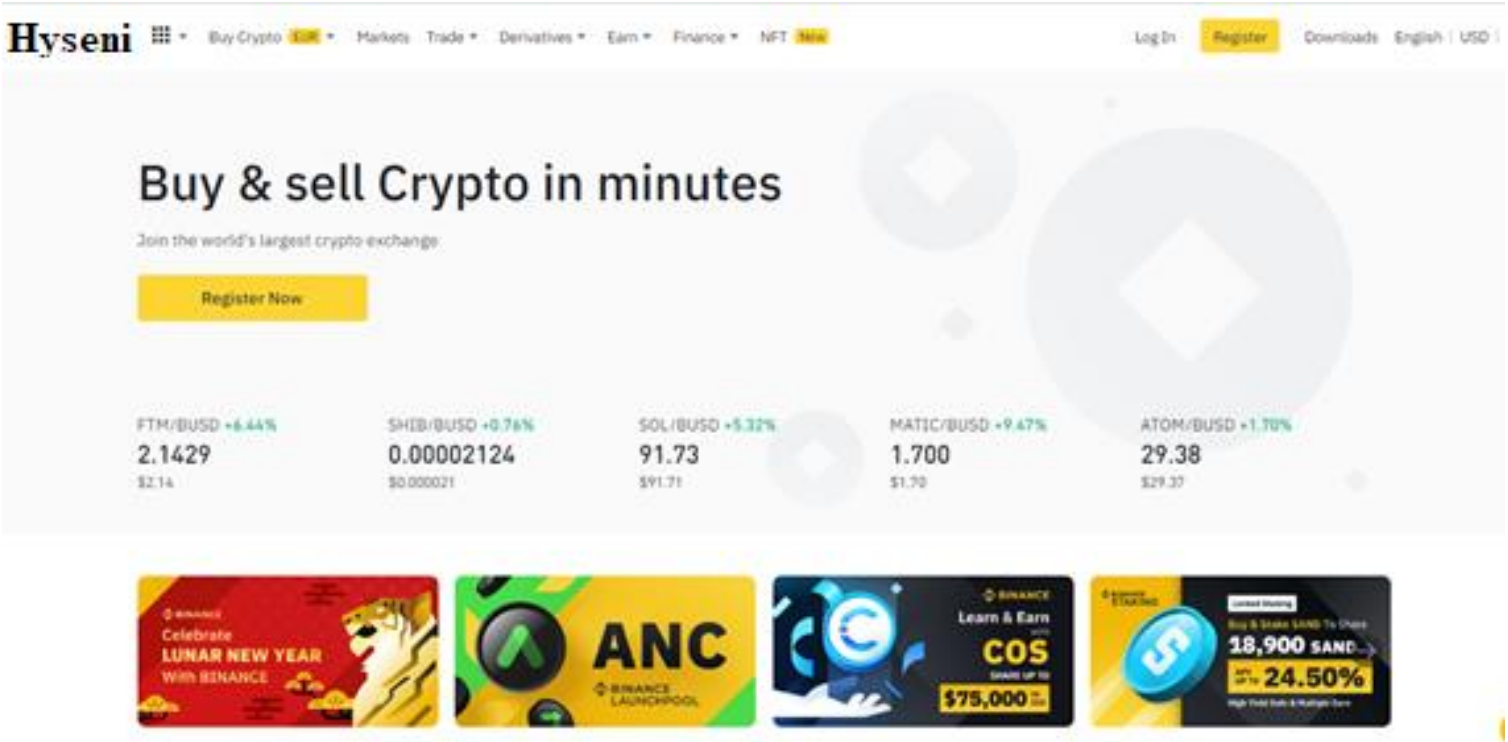
- Using my data in real life

- Gaining a better knowledge in practice

- Creating an efficient database management system with easy data access

Business Description

Hyseni Crypto Store is the first Albanian crypto market app that will be launched in three months. Users have lots of opportunities to choose from. They can buy different cryptocurrencies and currencies all around the globe. We aim to bring the Albanian costumer closer to the crypto market. The world is changing, and we need to adapt these changes. We start by developing a mobile application and after one month we will launch the web version. Our company will only interchange cryptos that are verified and used worldwide. We have a backup amount for a bankruptcy scenario. The commissions are lower in order for the consumer to maximise its profits. We will launch a campaign, to help and teach Albanians how the crypto market works, and they can choose to continue working. Everything will be digitalized. Our goal is to be the best crypto market in Albania and spread firstly across the Balkan and then reach a worldwide audience. With the help of a fast DBMS, we know we will be able to maximize profits in our business.



Gantt Chart

Tasks	Week 1-3	Week 4-5	Week 6-7	Week 8-9	Week 10-11	Week 12
Business Description						
ER Diagram						
Relation Schema						
Create Tables						
Insert Into						
Select Statements						
Summary						

Scope of the project

Over the course of two months, this project will be extended. From October 2021, through the end of January 2022. During this time, I will discuss the themes that were discussed in the previous lectures. We will not be only focused on one type of product; instead, we will be open to new ideas based on client preferences. Operating this business online allows us to interact with individuals all around the world in a much more convenient manner. By the first week of February, the project will be officially completed.

Processes / Operations

- The user can buy and sell every cryptocurrency that he/she likes.
- Every transaction will be declared to the government
- A user must be over the age of 18 and he/she must have a bank account.
- Once the transaction is made it cannot be corrected
- The database will record each transaction with its specific date and every user can see the transaction but not the id of the user who has done it. All users can view the amount of the crypto that is being bought in order to make prediction about the future value. It is going to be an open source.
- The database will be updated in real time based on how the global trade changes.
- A user can transfer cryptocurrencies to another user but with a commission
- The database will keep track of many wallets that a user can possess, and he/she can do transaction only through the wallet
- In conclusion everything will be secure and profitable for everybody.

Domain of the business

The Database Management System needed for Hyseni Crypto Store will be mainly a visual representation of the Sales Department of the entire business organization.

List of managerial queries

- The manager wants to know the name, the value of the crypto and the date when it was transferred after 2022.
- The manager wants to know the name, buy value of the most expensive currency.
- The manager wants to know the name and the sell value of the least expensive currency.
- The manager wants to know the name and the value of the cryptocurrencies that are supplied less than 500 tokens.
- The manager wants to know the name, the email and the phone number of the user who has bought bitcoin.

- The manager wants to know the name, the role and the phone number of the person who has sold more than 50 GBP.
- The manger wants to know the name of the user and the cryptocurrency that have made a transfer with a commission more than 3%.
- The manager wants to know the crypto and its value ordered from the most expensive one to the least.
- The manager wants to know all the transfers that user ‘Drilon’ has made, the crypto that was transferred, the amount and the date of the transfer.
- The manager wants to know the crypto, amount and the date of the cryptos that were sold with an amount bigger than 50.
- The manager wants to know all the Banks.

ER Diagram

-Each entity contains at least one primary key.

-Each entity has two or more attributes.

-There are 1:M and M: N relationships available between entities.

-All entities are normalized and there is no such thing as duplicity of records.

1. *Users*: Attributes of users are: user_id (primary key), name (composite attribute composed of FName and LName), role, email, date_started, password, phone_nr.

- ✓ User_id: keeps all the ID of all users
- ✓ FName: The name of the user
- ✓ LName: The surname of the user
- ✓ Role: The role in society that a user has. It is optional.
- ✓ Email: Email of the user. It is optional.
- ✓ Date_started: When the user has created an account.
- ✓ Password: The password of the user and it is encrypted.
- ✓ Phone_nr: Number of the user.

2. *Wallet:* Attributes of wallet are: wallet_id(primary key), balance , date_created.

- ✓ Wallet_id: keeps the ID of the wallet and it is unique.

- ✓ Balance: keeps the amount (double value) that a user possesses.
- ✓ Date_created: keeps the date when the wallet was created.

3. *Bank:* Attributes of bank are: IBAN (primary key), name , value.

- ✓ IBAN: keeps the iban of the bank ant it is unique
- ✓ Name: the name of the bank that user have
- ✓ Value: the amount of the money bank account has.

4. *Currency:* the attributes of currency are: currency_id (primary key), name, buy_value, sell_value.

- ✓ Currency_id: keeps the ID of the currency and it is unique
- ✓ Name: the name of the currency.
- ✓ Buy_value: the buying cost of a currency.
- ✓ Sell_value: the selling cost of a currency.

5. *Cryptos:* the attributes of cryptos are: crypto_id (primary key), cryptoname, date, value amountavailable.

- ✓ Cypto_id: keeps the ID of each crypto and it is unique
- ✓ Cryptoname: keeps the name of the cryptocurrency.
- ✓ Date: keeps the dates.
- ✓ Value: keeps the value in real time of the currency
- ✓ Amountavailable: the amount of the tokens available.

Description of Relationships (Cardinality and Participation)

- ❖ Buy (M:M)

A user can buy none or many currencies.

A currency is available to all users.

- ❖ Sell (M:M)

A user can sell none or many currencies.

A currency is available to all users.

- Transfer (M:M) unary relationship

A user can transfer currencies to one or more other users.

A user can receive from one or many other users.

- Possess (1: M)

A user can have one or many wallets.

A wallet is assigned to one and only one user.

- Link (1: M)

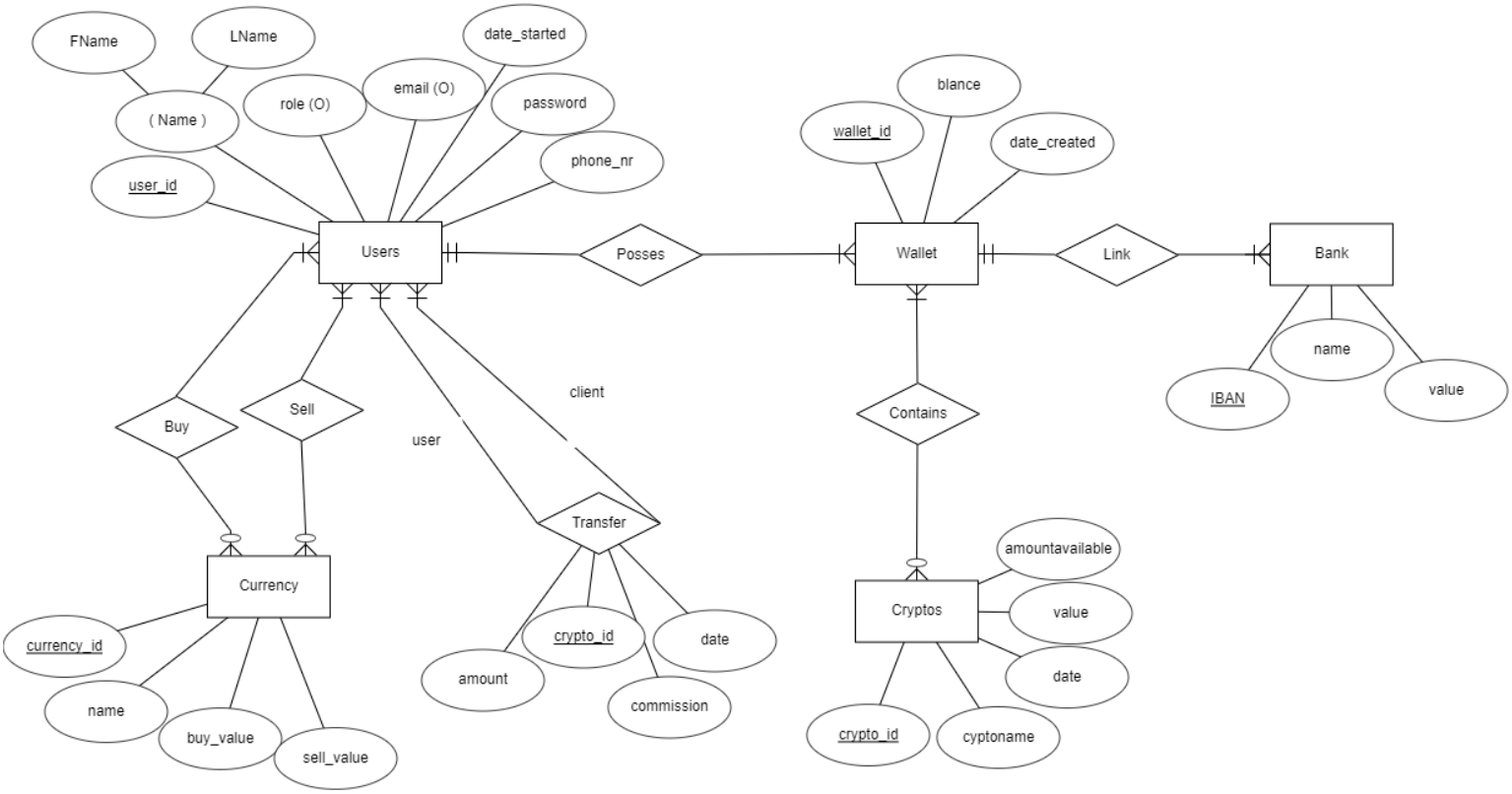
A wallet is linked to one or more banks.

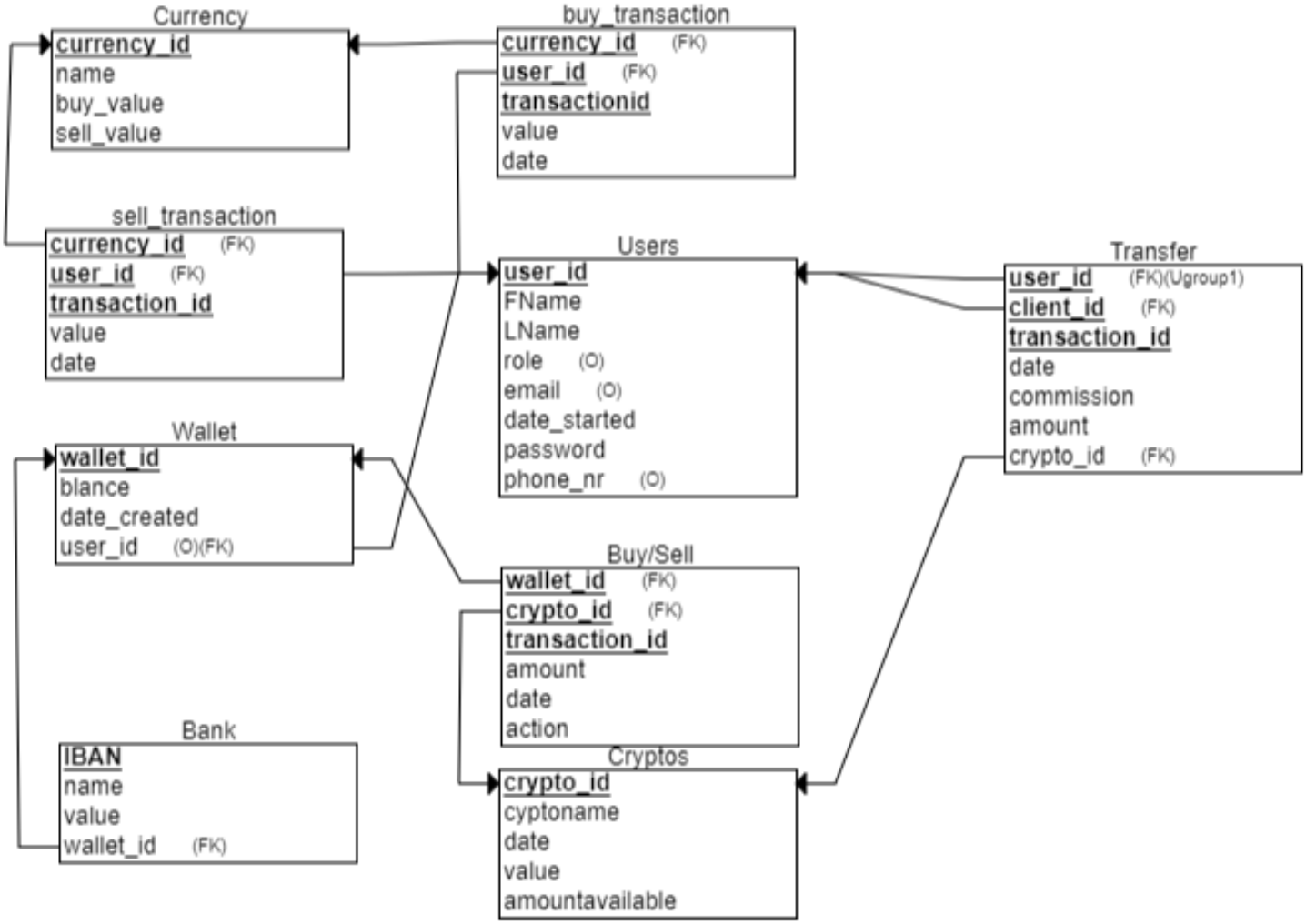
A bank is linked with only one wallet.

- Contains (M:M)

A wallet can contain many cryptos but cannot contain a single one.

A crypto can be spread to many wallets.





Foreign keys

Wallet table – user_id (primary key of User)

Bank table – wallet_id (primary key of Wallet)

Sell_transaction table – currency_id (primary key of Currency), user_id(primary key of User)

Buy_transaction table – currency_id (primary key of Currency), user_id (primary key of User)

Transfer table – user_id (primary key of User), client_id (primary key of User), crypto_id (primary key of Crypto)

Buy_Sell table – crypto_id (primary key of Crypto), wallet_id (primary key of Wallet).

Conclusion

To conclude, I managed to create a functional database that will accelerate in real time the annual transactions of Hyseni Crypto Store. This will have a huge and positive impact because it will have the ability to store large amounts of information, which is essential for a growing company with a large number of users. This project has helped me a lot to improve my skills in everything that we have learnt so far, as I can mention: ER Diagram, Relational Schema and SQL.