INFS 740 – FINAL PROJECT

STOCK AND CRYPTO MANAGEMENT SYSTEM

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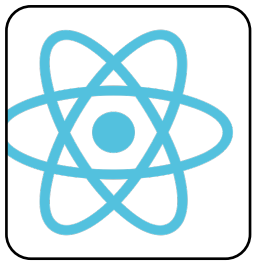
TECH STACK

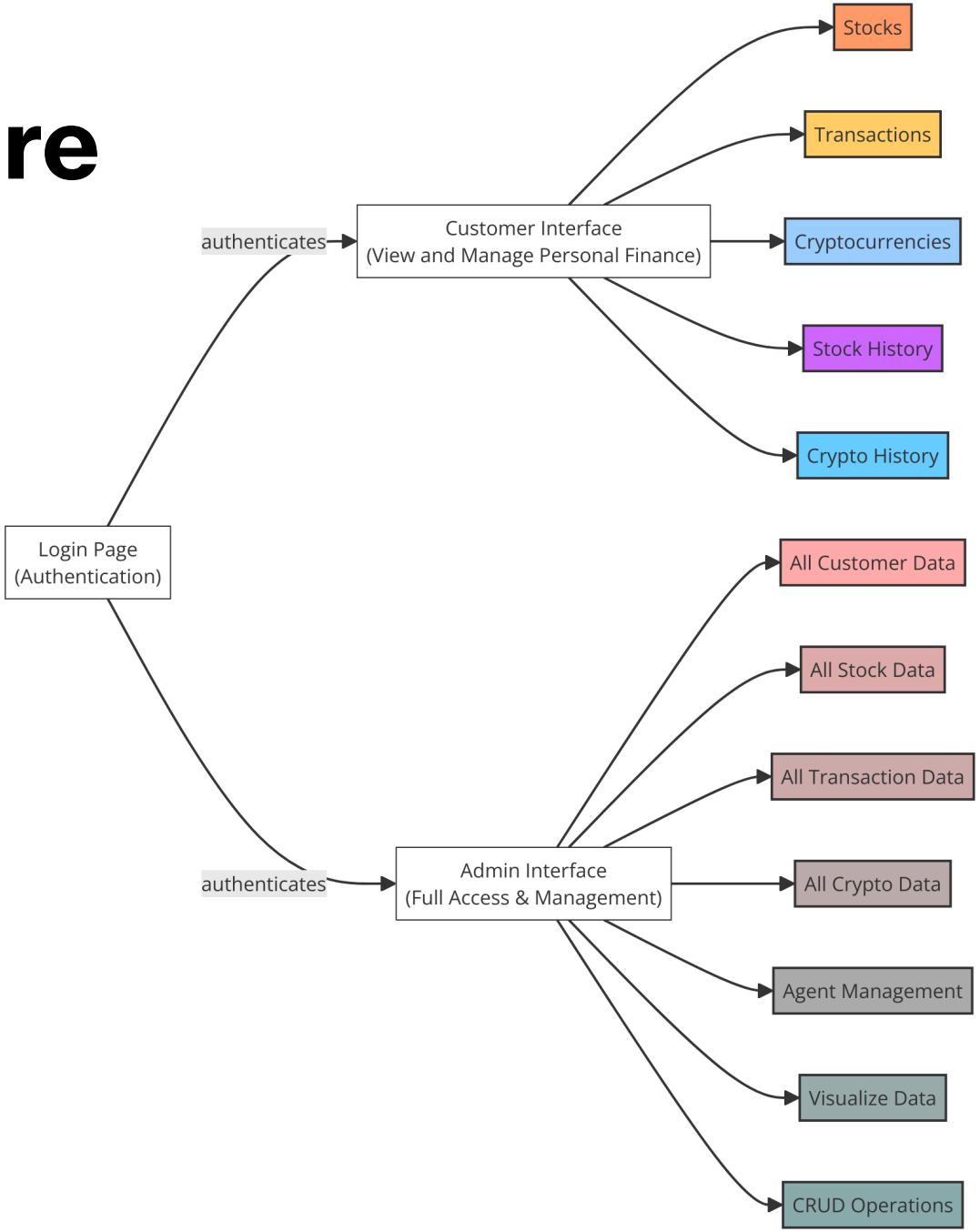


React

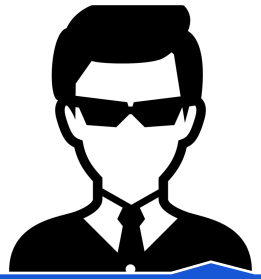
FastAPI

MongoDB

System Architecture



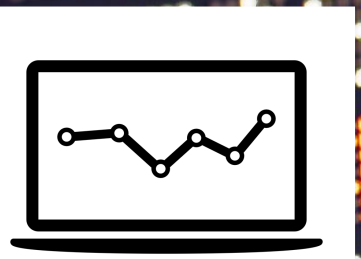
Collections



Agents

Customers

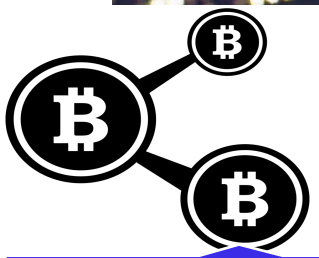
Transactions



Stock History

Stocks

Crypto History



Cryptocurrencies

Agents

_id

agent_id

name

contact

level

CUSTOMERS

_id

customer_id

username

email

balance

Net_stock

TRANSACTIONS

_id

transaction_id

stock_id

crypto_id

agent_id

ticket

volume

each_cost

action

STOCKS

_id

company_name

company_ticker

company_info

company_pe

Company_dividends

company_cashflow

agent_id

STOCK HISTORY

_id

open

close

high

low

adj close

volume

company_ticker

date

CRYPTOCURRENCIES

_id

name

symbol

last_close

market_cap

volume_24hr

circulating_supply

crypto_id

CRYPTO HISTORY

_id

open

close

high

low

adj close

volume

symbol

date

CRUD OPERATIONS

COMPLEX QUERIES

VISUALIZATIONS

ML PREDICTION

RECOMMENDATION SYSTEMS

Queries

GET	/api/queries/customers/most-stock-transactions	Retrieve Top 10 Stock Customers Transactions
GET	/api/queries/agents/top-stock-transactions	Retrieve Top 10 Stock Customers
GET	/api/queries/customers/top-stock-transactions	Retrieve Top 10 Stock Customers
GET	/api/queries/customers/top-crypto-transactions	Retrieve Top 10 Crypto Customers Transactions
GET	/api/queries/agents/top-crypto-transactions	Retrieve Top 10 Crypto Agents
GET	/api/queries/customers/most-crypto-transactions	Retrieve Top 10 Crypto Customers
GET	/api/queries/transactions/{stock_id}/most-stock-transactions	Retrieve Top Stock Customers Transactions by stoc
GET	/api/queries/transactions/by-ticker/{Company_ticker}/most-stock-transactions	Retrieve Top Stock Custo
GET	/api/queries/transactions/{crypto_id}/most-stock-transactions	Retrieve Top Crypto Customers Transactions by c

GET	/api/queries/transactions/by-symbol/{Symbol}/most-stock-transactions	Retrieve Top Crypto Custom
GET	/api/queries/transactions/{stock_id}/top-agents	Retrieve Top Stock Agents by stock_id
GET	/api/queries/transactions/{crypto_id}/top-agent	Retrieve Top Crypto Agents by crypto_id
GET	/api/queries/transactions/by-ticker/{Company_ticker}/top-agents	Retrieve Top Stock Agents by Ticker
GET	/api/queries/transactions/by-Symbol/{Symbol}/top-agents	Retrieve Top Crypto Agents by Symbol
GET	/api/queries/transactions/{stock_id}/top-customers	Retrieve Top Stock Customers by stock_id
GET	/api/queries/transactions/{crypto_id}/top-customer	Retrieve Top Crypto Customers by crypto_id
GET	/api/queries/transactions/by-ticker/{Company_ticker}/top-customers	Retrieve Top Stock Customers
GET	/api/queries/transactions/by-Symbol/{Symbol}/top-customers	Retrieve Top Crypto Customers by Symbol

Query1: Customers with Most Transactions in the Platform with Stocks Data

VARIATIONS:

1) FOR A SPECIFIC STOCK_ID
2) FOR A SPECIFIC COMPANY

COLLECTIONS:

1) TRANSACTIONS
2) STOCKS
3) CUSTOMERS
4) AGENTS

Query2: Customers with Top Transactions in the Platform with Stocks Data

VARIATIONS:

1) FOR A SPECIFIC STOCK_ID
2) FOR A SPECIFIC COMPANY

COLLECTIONS:

- **1) TRANSACTIONS**
- **2) STOCKS**
- **3) CUSTOMERS**
- **4) AGENTS**

Query3: Agents with Top Transactions in the Platform with Stocks Data

VARIATIONS:

1) FOR A SPECIFIC STOCK_ID
2) FOR A SPECIFIC COMPANY

COLLECTIONS:

- **1) TRANSACTIONS**
- **2) STOCKS**
- **3) CUSTOMERS**
- **4) AGENTS**

Query4: Customers with Most Transactions in the Platform with Crypto Data

VARIATIONS:

1) FOR A SPECIFIC CRYPTO_ID
2) FOR A SPECIFIC CRYPTOCURRENCY

COLLECTIONS:

- **1) TRANSACTIONS**
- **2) CRYPTOCURRENCIES**
- **3) CUSTOMERS**
- **4) AGENTS**

Query5: Customers with Top Transactions in the Platform with Crypto Data

VARIATIONS:

1) FOR A SPECIFIC CRYPTO_ID
2) FOR A SPECIFIC CRYPTOCURRENCY

COLLECTIONS:

- **1) TRANSACTIONS**
- **2) CRYPTOCURRENCIES**
- **3) CUSTOMERS**
- **4) AGENTS**

Query6: Agents with Top Transactions in the Platform with Crypto Data

VARIATIONS:

1) FOR A SPECIFIC CRYPTO_ID
2) FOR A SPECIFIC CRYPTOCURRENCY

COLLECTIONS:

- **1) TRANSACTIONS**
- **2) CRYPTOCURRENCIES**
- **3) CUSTOMERS**
- **4) AGENTS**

ML - Predictions

Stock Data Prediction using Keras for a given Ticker and a given date.

Predict the next 10 days of Close price for the given ticker and calculate the RMSE.

Live Demo