Project 4 Task 2: Crypto Currency Recommender

API used: https://www.coinlore.com/cryptocurrency-data-api

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1. Implement a native Android application

a. Has at least three different kinds of Views in your Layout (TextView, EditText, ImageView, or anything that extends android.view.View).

Used TextView, EditText and Button

b. Requires input from the user

It requires the user to type in the name of the crypto currency. Currently, the app works only for the following currencies:

1. Bitcoin
2. Ethereum
3. Doge-Coin
4. Tether
5. Binance-Coin
6. Solana
7. Cardano
8. Hedera
9. Tron
10. 10. Matic

Note: please type it as above in the app to pull data correctly from API

c. Makes an HTTP request (using an appropriate HTTP method) to your web service

My webservice is hosted on Codespace. https://verbose-succotash-64rwqwqqprq345v6-8080.app.github.dev/getCryptoData?coinName=Bitcoin

The above is an example of how webservice fetches data from the Coin lore API

d. Receives and parses an XML or JSON formatted reply from your web service

Gets JSON response from the API and performs a simple logic to provide recommendation to buy or not based on volume of coins traded in the last 24 hours, percentage change in price in 24hrs, 1day, 7days, market cap of the coin.

It returns coin information along with the recommendation to the app.

e. Displays new information to the user

It displays these to the user on the app

f. Is repeatable (I.e. the user can repeatedly reuse the application without restarting it.)

It can be done multiple times without restarting

2. Implement a web service

a. Implement a simple (can be a single path) API.

I have two servlet paths. One for fetching data from API and the other for fetching data from MongoDB and displaying on the analytics dashboard

b. Receives an HTTP request from the native Android application

It receives a request from app to fetch corresponding data from 3rd party API

c. Executes business logic appropriate to your application. This includes fetching XML or JSON information from some 3rd party API and processing the response.

Gets JSON response from the API and performs a simple logic to provide recommendation to buy or not based on volume of coins traded in the last 24 hours, percentage change in price in 24hrs, 1day, 7days, market cap of the coin.

d. Replies to the Android application with an XML or JSON formatted response. The schema of the response can be of your own design.

Sends JSON Response to the app

3. Handle error conditions

Performed the following necessary error handling

Invalid mobile app input

Invalid server-side input (regardless of mobile app input validation)

Mobile app network failure, unable to reach server

Third-party API unavailable

Third-party API invalid data

4. Log useful information

At least 6 pieces of information is logged for each request/reply with the mobile phone. It should include information about the request from the mobile phone, information about the request and reply to the 3rd party API, and information about the reply to the mobile phone.

I have logged the following:

1. device from which data is requested
2. timestamp of request,
3. Response time for each request,
4. request parameters,
5. percentage_change_24h
6. recommendation.

5. Store the log information in a database

The web service can connect, store, and retrieve information from a MongoDB database in the cloud.

All of the above data is stored in MongoDB.

Here is the connection String:

String connectionString = "mongodb://admin:admin@ac-vmg9jvj-shard-00-00.kwmn2y1.mongodb.net:27017,ac-vmg9jvj-shard-00-01.kwmn2y1.mongodb.net:27017,ac-vmg9jvj-shard-00-02.kwmn2y1.mongodb.net:27017/crypto?w=majority&retryWrites=true&tls=true&authMechanism=SCRAM-SHA-1";

7. Deploy the web service to GitHub Codespaces

Here is the URL: https://verbose-succotash-64rwqwqqprq345v6-8080.app.github.dev/

DASHBOARD SCREEN SHOT:

https://verbose-succotash-64rwqwqqprq345v6-8080.app.github.dev/dashboard

OPERATIONAL ANALYTICS:

Analytics Dashboard
Most Requested Cryptocurrencies

Cryptocurrency	Number of Requests
Ethereum	2
Matic	2
Doge-Coin	2
Solana	1
Hedera	1
Tron	1
Bitcoin	1
Tether	1

High Performing Cryptocurrencies

Cryptocurrency	Number of times Recommended
Ethereum	2
Tether	1
Bitcoin	1

Currencies with highest drop in 24 Hours

Cryptocurrency	Percent Change (24h)
Solana	-2.38%
Hedera Hashgraph	-1.31%
Matic Network	-0.23%
Tether	-0.1%
Ethereum	-0.01%
Bitcoin	0.02%
TRON	0.75%
Dogecoin	0.84%

Average Response Time

0.23772727272727276 seconds

LOGS:

Logs

Timestamp	Mobile Info	Coin Name	Response Time	Percentage Change in 24 hours	Recommendation
Fri Nov 24 01:49:45 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Bitcoin	0.404 seconds	0.02 %	Recommended
Fri Nov 24 02:03:14 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Ethereum	0.45 seconds	-0.01 %	Recommended
Fri Nov 24 02:03:18 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Ethereum	0.153 seconds	-0.01 %	Recommended
Fri Nov 24 02:03:21 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Tron	0.14 seconds	0.75 %	Not Recommended
Fri Nov 24 02:03:25 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Solana	0.137 seconds	-2.38 %	Not Recommended
Fri Nov 24 02:03:30 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Matic	0.136 seconds	-0.23 %	Not Recommended
Fri Nov 24 02:03:42 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Hedera	0.284 seconds	-1.31 %	Not Recommended
Fri Nov 24 02:03:47 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Doge-Coin	0.128 seconds	0.84 %	Not Recommended
Fri Nov 24 02:03:49 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Doge-Coin	0.131 seconds	0.84 %	Not Recommended

Fri Nov 24 02:03:49 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Doge-Coin	0.131 seconds	0.84 %	Not Recommended
Fri Nov 24 02:23:39 UTC 2023	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.0.0 Safari/537.36	Matic	0.402 seconds	-0.23 %	Not Recommended
Fri Nov 24 02:24:27 UTC 2023	Dalvik/2.1.0 (Linux; U; Android 14; sdk_gphone64_x86_64 Build/UE1A.230829.036)	Tether	0.25 seconds	-0.10 %	Recommended