Problem statement

Title: Live Cryptocurrency Data Fetching and Analysis with Real-Time Excel Integration

The cryptocurrency market is highly dynamic, with prices and trading volumes fluctuating rapidly within minutes. For investors, analysts, and traders, staying informed with the most up-to-date data is critical for making sound decisions. However, the process of manually fetching and analyzing live cryptocurrency data can be time-consuming and prone to delays.

Objectives

- Fetch live cryptocurrency data using a public API (CoinGecko).
- Perform basic analysis to identify market trends and key metrics.
- Automatically update an Excel sheet with live data and analysis insights every 5 minutes.
- Enable seamless integration and auto-refresh capabilities within Excel using VBA scripting.

Data Analysis:

- **Top 5 Cryptocurrencies by Market Capitalization:**
    - Identifies the largest cryptocurrencies by value.
- **Average Price of the Top 50 Cryptocurrencies:**
    - Provides a benchmark for market comparison.
- **Highest and Lowest 24-hour Percentage Price Change:**
    - Highlights the most volatile assets over the past 24 hours.

Live-Running Excel Sheet:

- **"Crypto Data" Sheet:**
    - Displays real-time data fetched from the API.
- **"Analysis" Sheet:**
    - Summarizes insights, including:
        - Top 5 Cryptocurrencies by Market Cap

        - Average Price of the Top 50 Cryptocurrencies
        - Highest and Lowest 24-hour Percentage Price Changes
- **Automation:**
    - Python script ensures updates every 5 minutes.
    - VBA script in Excel enables auto-refresh every 30 seconds for a seamless user experience.

Python, Excel, and VBA: Summary of Uses and Purpose

Python

Purpose: A powerful programming language used for data fetching, processing, analysis, and automation.

Uses:

- Fetches live cryptocurrency data from APIs (e.g., CoinGecko).
- Processes and analyzes data (e.g., calculating averages, top performers).
- Automates data updates and applies conditional formatting for visualization.

Excel

Purpose: A user-friendly platform for data storage, visualization, and reporting.

Uses:

- Displays live cryptocurrency data and analysis in a structured format.
- Provides dynamic charts, tables, and conditional formatting for better insights.
- Acts as the interface for interacting with live data.

VBA (Visual Basic for Applications)

Purpose: An Excel-based scripting language for automating repetitive tasks and enhancing interactivity.

Uses:

- Links Excel to Python for live data integration.
- Automates data refreshes every 30 seconds.
- Enables user-triggered updates with a refresh button.

Note: To ensure that the VBA code functions correctly, please save the Excel file in a Macro-Enabled Workbook format (.xlsm).