# Cryptocurrency Historical Data Fetcher

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***Abstract*— This project focuses on gathering historical Bitcoin price data using both an API and web scraping techniques. The market data is extracted and processed, then stored in CSV format for further analysis. The approach demonstrates how to use data collection methods to analyze cryptocurrency market behavior and trends, offering a comprehensive view of Bitcoin's price movements over time.**

***Keywords*— Bitcoin, CoinGecko API, Selenium WebDriver, data scraping, cryptocurrency, historical price data, market trends, financial data, CSV**

## I. INTRODUCTION

The study examines the collection and analysis of Bitcoin market data, essential for understanding cryptocurrency markets. With the rising popularity of cryptocurrencies, there is an increasing need for accurate and timely data to analyze trends and support decision-making. This research utilizes two methods to gather historical Bitcoin data: an API for direct data retrieval and web scraping from a financial website.

The study demonstrates efficient approaches for data collection and offers insights into factors influencing Bitcoin's price movements. The paper is structured as follows: Section II covers the methods and tools for data collection, Section III presents the data analysis, and Section IV provides conclusions based on the findings.

## II. TECHNOLOGIES AND METHODS USED

- Python (Project Development Language):Python is a general-purpose programming language that has been utilized for various tasks in this project, including data processing, API integration, web scraping, and managing CSV files. Python's simple syntax and extensive library support enabled rapid development and efficient implementation of the project.
- Requests (CoinGecko API Integration):Requests is a Python library used for sending HTTP requests. In this project, it was used to interact with the CoinGecko API. CoinGecko is a platform providing cryptocurrency market data, and the API was utilized to retrieve Bitcoin price data over specific time periods, such as the past 90 days.
- CSV (Data Storage):CSV (Comma-Separated Values) is a commonly used format for storing data. In this project, CSV files were employed to store data retrieved from both Yahoo Finance and the CoinGecko API. These files contain historical Bitcoin price information, organized by date and price columns, for further analysis or processing.

## III. OBSTACLES AND SOLUTIONS IN THE PROJECT DEVELOPMENT PROCESS

- **Dynamic Content:** Pages load data dynamically, complicating scraping. *Solution:* Used Selenium's WebDriverWait to ensure full loading.
- **Bot Detection:** CAPTCHAs can block scraping. *Solution:* Applied CAPTCHA-solvers, proxies, or switched to APIs.
- **API Timeouts and Rate Limits:** High requests cause delays and blocks. *Solution:* Added timeouts, reduced request frequency, and followed rate limits.
- **Format Differences:** Timestamp and data structure variances across sources. *Solution:* Standardized timestamps and unified data format with pandas.
- **Large Data Handling:** Big datasets impact performance. *Solution:* Split data, used compression, databases, and multi-threading for efficiency.

## IV. FUTURE IMPROVEMENTS AND RECOMMENDATIONS

Future improvements include expanding data sources by integrating additional financial APIs like Alpha Vantage or Quandl for a more comprehensive dataset. Enhancing error handling with strategies like retries and logging would improve system reliability. Implementing data caching would optimize performance by reducing redundant API calls and web scraping.

As the project grows, scalability can be addressed through load balancing and cloud infrastructure, ensuring it handles larger data volumes and traffic. Integrating machine learning models for market predictions and anomaly detection would add intelligence, while incorporating Bitcoin price prediction using techniques like ARIMA or LSTM could help investors make better decisions.

## REFERENCES

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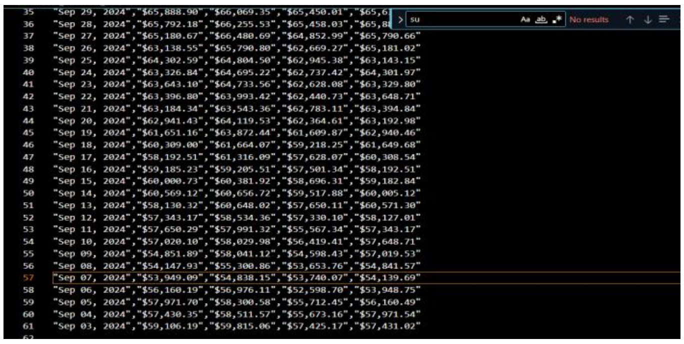

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"Sep 06, 2024","$56,160.19","$56,976.11","$52,598.70","$53,948.75"
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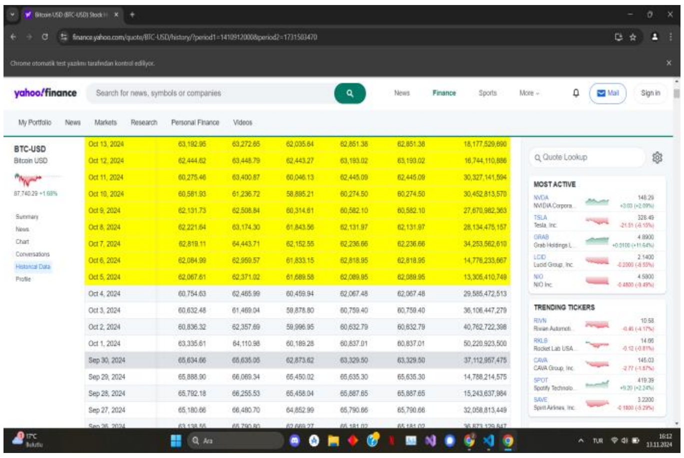
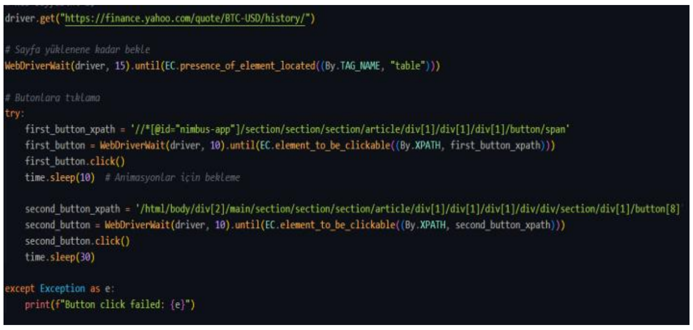


finance.yahoo.com/quote/BTC-USD/history/?period1=1410912000&period2=1731503470

Chrome otomatik test yazılımı tarafından kontrol ediliyor.

| | | | | | | |
|---|---|---|---|---|---|---|
| Oct 13, 2024 | 63,192.95 | 63,272.65 | 62,035.64 | 62,851.38 | 62,851.38 | 18,177,529,690 |
| Oct 12, 2024 | 62,444.62 | 63,448.79 | 62,443.27 | 63,193.02 | 63,193.02 | 16,744,110,886 |
| Oct 11, 2024 | 60,275.46 | 63,400.87 | 60,046.13 | 62,445.09 | 62,445.09 | 30,327,141,594 |
| Oct 10, 2024 | 60,581.93 | 61,236.72 | 58,895.21 | 60,274.50 | 60,274.50 | 30,452,813,570 |
| Oct 9, 2024 | 62,131.73 | 62,508.84 | 60,314.61 | 60,582.10 | 60,582.10 | 27,670,982,363 |
| Oct 8, 2024 | 62,221.64 | 63,174.30 | 61,843.56 | 62,131.97 | 62,131.97 | 28,134,475,157 |
| Oct 7, 2024 | 62,819.11 | 64,443.71 | 62,152.55 | 62,236.66 | 62,236.66 | 34,253,562,610 |
| Oct 6, 2024 | 62,084.99 | 62,959.57 | 61,833.15 | 62,818.95 | 62,818.95 | 14,776,233,667 |
| Oct 5, 2024 | 62,067.61 | 62,371.02 | 61,689.58 | 62,089.95 | 62,089.95 | 13,305,410,749 |
| Oct 4, 2024 | 60,754.63 | 62,465.99 | 60,459.94 | 62,067.48 | 62,067.48 | 29,585,472,513 |
| Oct 3, 2024 | 60,632.48 | 61,469.04 | 59,878.80 | 60,759.40 | 60,759.40 | 36,106,447,279 |
| Oct 2, 2024 | 60,836.32 | 62,357.69 | 59,996.95 | 60,632.79 | 60,632.79 | 40,762,722,398 |
| Oct 1, 2024 | 63,335.61 | 64,110.98 | 60,189.28 | 60,837.01 | 60,837.01 | 50,220,923,500 |
| Sep 30, 2024 | 65,634.66 | 65,635.05 | 62,873.62 | 63,329.50 | 63,329.50 | 37,112,957,475 |
| Sep 29, 2024 | 65,888.90 | 66,069.34 | 65,450.02 | 65,635.30 | 65,635.30 | 14,788,214,575 |
| Sep 28, 2024 | 65,792.18 | 66,255.53 | 65,458.04 | 65,887.65 | 65,887.65 | 15,243,637,984 |
| Sep 27, 2024 | 65,180.66 | 66,480.70 | 64,852.99 | 65,790.66 | 65,790.66 | 32,058,813,449 |
| Sep 26, 2024 | 63,138.55 | 65,790.80 | 62,669.27 | 65,181.02 | 65,181.02 | 36,873,129,847 |



```python
driver.get("https://finance.yahoo.com/quote/BTC-USD/history/")

# Sayfa yüklenene kadar bekle
WebDriverWait(driver, 15).until(EC.presence_of_element_located((By.TAG_NAME, "table")))

# Butonlara tıklama
try:
    first_button_xpath = '//*[@id="nimbus-app"]/section/section/section/article/div[1]/div[1]/div[1]/button/span'
    first_button = WebDriverWait(driver, 10).until(EC.element_to_be_clickable((By.XPATH, first_button_xpath)))
    first_button.click()
    time.sleep(10)  # Animasyonlar için bekleme

    second_button_xpath = '/html/body/div[2]/main/section/section/section/article/div[1]/div[1]/div[1]/div/div/section/div[1]/button[8]
    second_button = WebDriverWait(driver, 10).until(EC.element_to_be_clickable((By.XPATH, second_button_xpath)))
    second_button.click()
    time.sleep(30)

except Exception as e:
    print(f"Button click failed: {e}")
```