

Project Team 4

Team members:

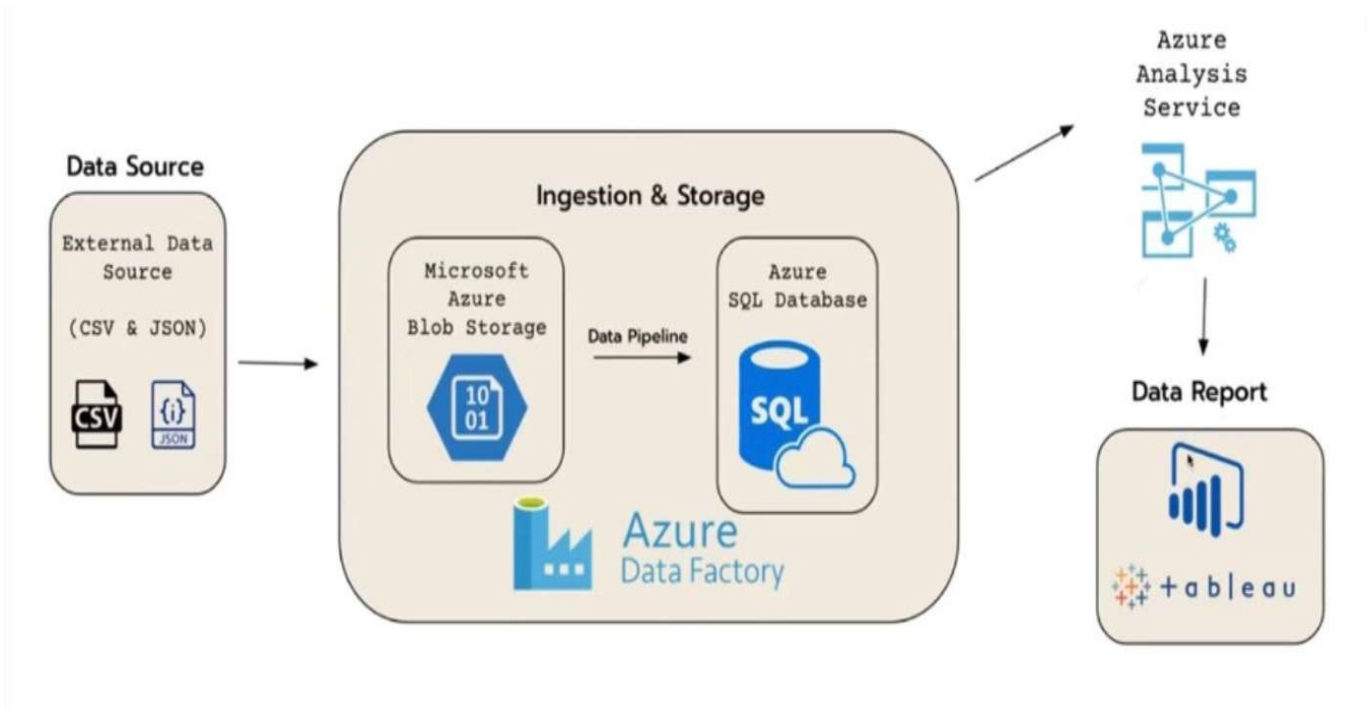
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Topic: Cryptocurrency Price Prediction

Data Model: Document (NewSQL)

Target Platform: Azure SQL Multi-Model

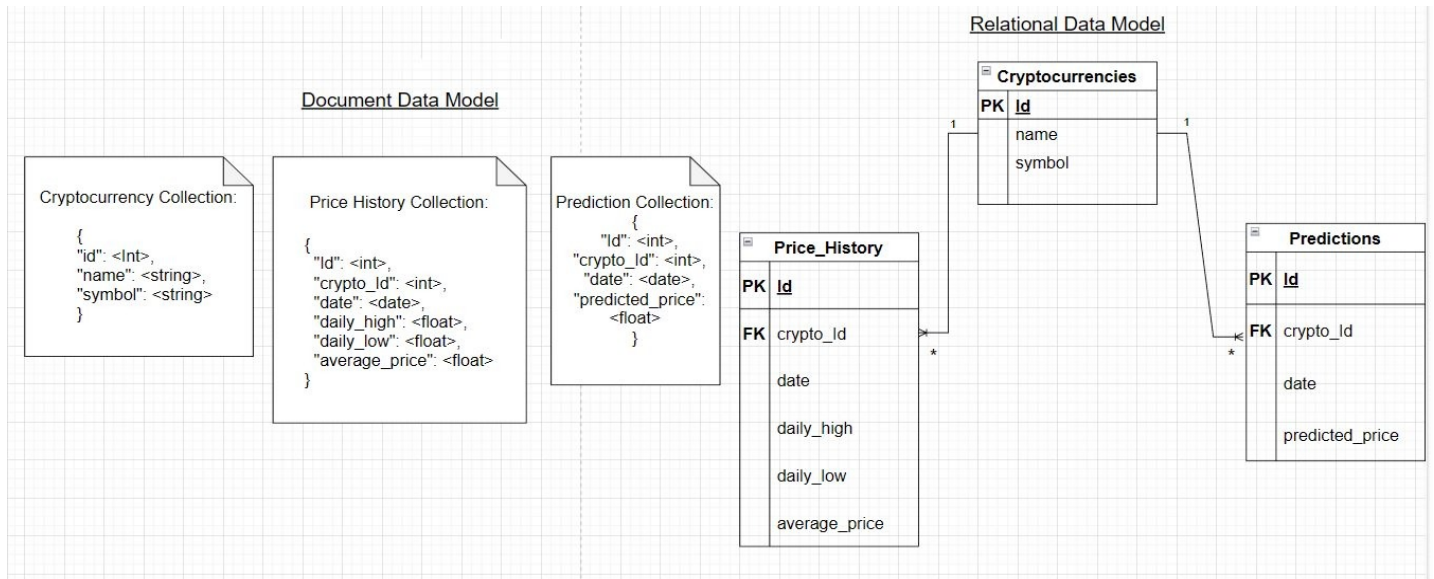
Data Architecture



1. **Data Source:** The model starts with a JSON file or a CSS file containing data that needs to be processed and analyzed.
2. **Azure Data Factory:** Azure Data Factory is used to orchestrate the data movement between the data source and the target storage and analysis services. In this model, Data Factory is used to extract data from the JSON or CSS file.
3. **Azure Blob Storage:** Azure Blob Storage is a cloud-based object storage solution that is used to store unstructured data in the cloud. In this model, the data extracted from the JSON or CSS file is stored in Azure Blob Storage.
4. **Azure SQL Database:** Azure SQL Database is a cloud-based relational database management system that is used to store structured data in the cloud. In this model, the data stored in Azure Blob Storage is processed and transformed using Azure SQL Database.
5. **Azure Analysis Services:** Azure Analysis Services is a fully managed analytics engine that is used to analyze large volumes of data. In this model, the data processed and transformed in Azure SQL Database is passed through Azure Analysis Services to generate insights and analytics.
6. **Tableau and Power BI:** Tableau and Power BI are business intelligence and analytics tools that are used to create visualizations and reports based on the data analyzed in Azure Analysis Services.

Overall, this data architecture model allows for a seamless flow of data from a data source to the storage and analysis services, with data being processed and transformed at each stage before being analyzed in Azure Analysis Services and visualized in Tableau and Power BI.

ER Diagram and Document Data Model



The ER diagram for a cryptocurrency price prediction database would include three tables:

"Cryptocurrencies," "Price History," and "Predictions."

The "Cryptocurrencies" table would include the following columns:

- ID (primary key)
- Name
- Symbol

The "Price History" table would include the following columns:

- ID (primary key)
- Crypto ID (foreign key referencing the "ID" column in the "Cryptocurrencies" table)
- Date
- Daily High
- Daily Low
- Average Price

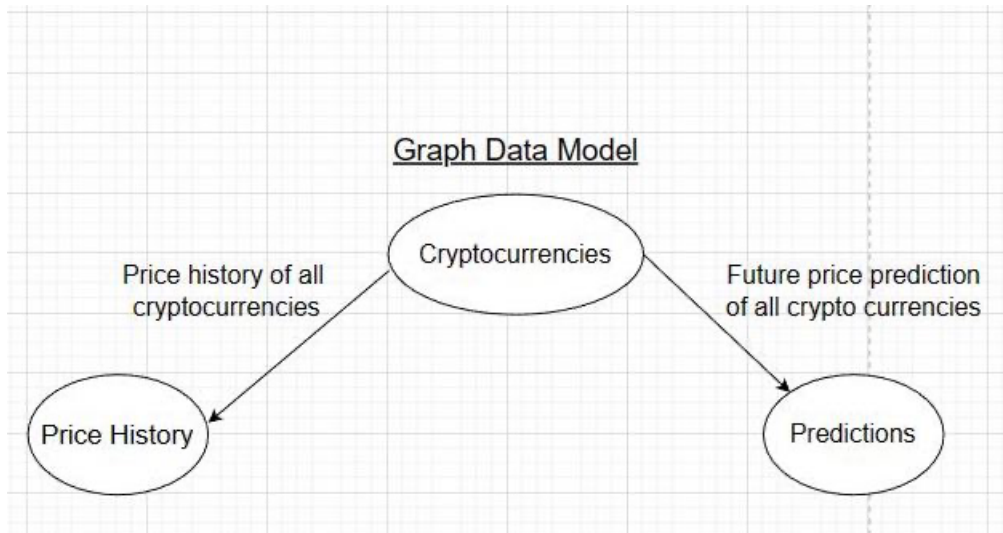
The "Predictions" table would include the following columns:

- ID (primary key)
- Crypto ID (foreign key referencing the "ID" column in the "Cryptocurrencies" table)
- Date
- Predicted Price

The ER diagram would include relationships between the tables, with the "Price History" and "Predictions" tables both having a foreign key referencing the "ID" column in the "Cryptocurrencies" table.

Overall, this ER diagram would enable a user to track the historical prices of various cryptocurrencies, as well as make predictions about their future prices.

Graph Data Model



The graph data model is a powerful way to represent data in a way that can easily be queried, analyzed, and visualized. It is often used to represent data that is structured as nodes and edges, where nodes represent entities and edges represent relationships between those entities. In the context of cryptocurrency, a graph data model could be used to represent information about different coins, their prices over time, and predictions for future prices.

Center Node-Cryptocurrency:- At the center of the graph data model would be the cryptocurrency itself, represented as a node. The node would contain information such as the name of the coin, its ticker symbol, and other relevant metadata.

Prediction Node:- This node contains information such as the date of the prediction, the predicted price, and any other relevant data. The prediction node is connected to the cryptocurrency node using edges that represent the relationship between the coin and the predicted price.

Price History Node:- This node contains information such as the date, the opening price, the closing price, and any other relevant data. The historical price node is connected to the cryptocurrency node using edges that represent the relationship between the coin and its price over time.