Determining the requirements and Data Flow Diagram (DFD)

- Korukonda Pradeep
- Sollety Sujan Kumar
- Uday Kumar

Data Flow Diagram

A Data Flow Diagram (DFD) is a visual representation of how data flows within a system or a process. To create a DFD for a currency exchange rate system using data analytics, we can follow these steps and guidelines:

Level 0 DFD:

At the highest level, we can represent the system as a single process that interacts with external entities. In this case, the system interacts with two main external entities: "Data Sources" and "Users." The process in the center represents the core functionality of the system, which is to analyze and provide currency exchange rates.

1. External Entities:
    - Data Sources: These entities provide the raw data for currency exchange rates. This can include APIs, databases, financial markets, or any other sources.
    - Users: These are the individuals or systems that request currency exchange rate information.

2. Process:
    - Currency Exchange Rate Analysis: This process is responsible for gathering, processing, and analyzing exchange rate data. It may involve various data analytics techniques to predict or analyze exchange rate trends.
3. Data Flows:
    - Data Flow from Data Sources to Currency Exchange Rate Analysis: This arrow represents the data input to the system, which comes from external data sources.
    - Data Flow from Currency Exchange Rate Analysis to Users: This arrow represents the output of the system, which is delivered to the users.

Level 1 DFD:

Next, we need to break down the "Currency Exchange Rate Analysis" process into more detailed subprocesses or data flows.

- "Currency Exchange Rate Analysis" Process:
    - Data Flow: Exchange Rate Data (from Data Sources)
        - Subprocess 1: Data Collection
        - Subprocess 2: Data Preprocessing
        - Subprocess 3: Data Analysis and Modeling
        - Subprocess 4: Result Generation

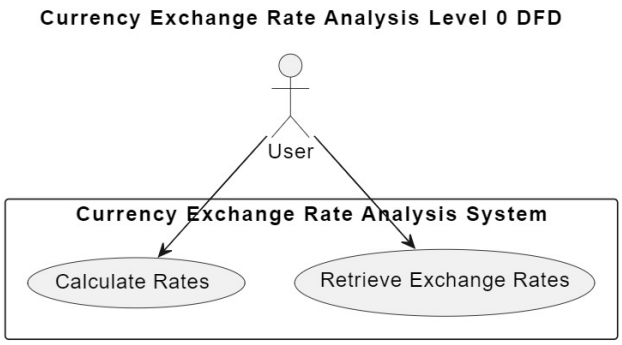
Level 2 DFD - Currency Exchange Rate Analysis:

- "Currency Exchange Rate Analysis" Process (Level 1)
    - Data Flow: Exchange Rate Data (from Data Sources)
        - Subprocess 1: Data Collection (Level 1)

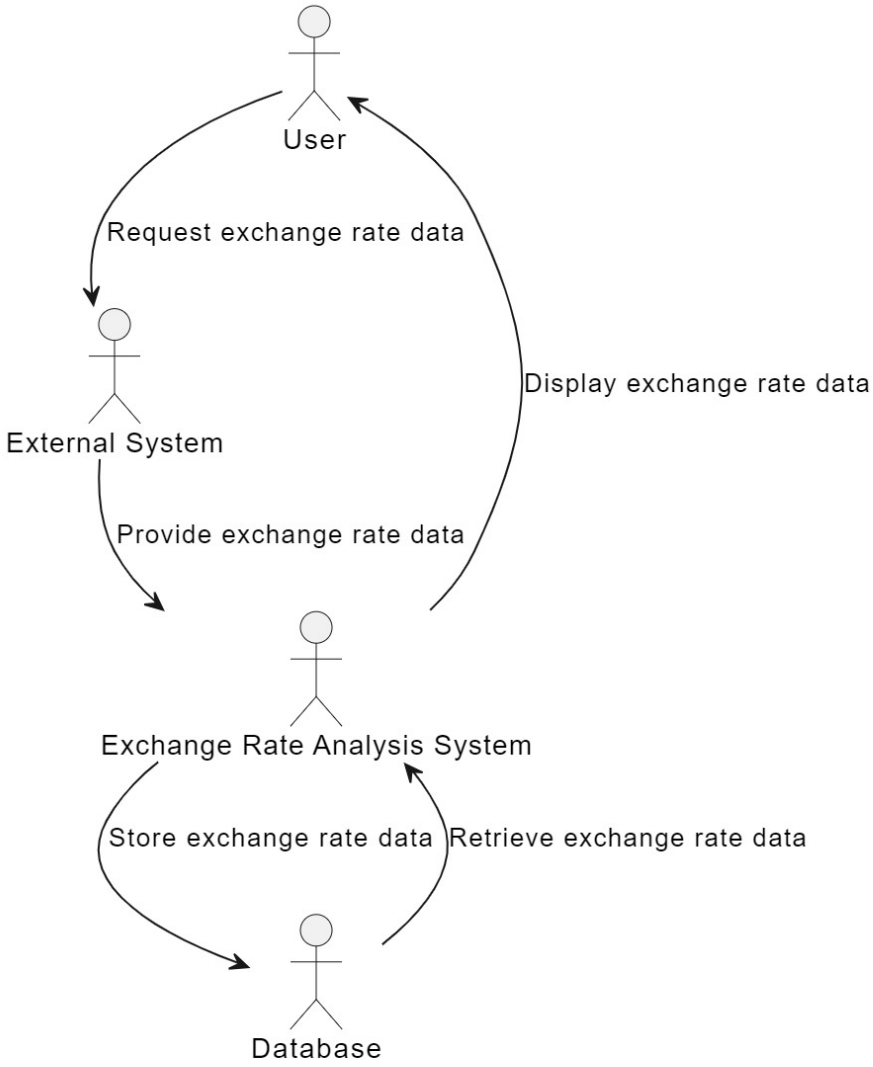
- Subprocess 2: Data Preprocessing (Level 1)
- Subprocess 3: Data Analysis and Modeling (Level 1)
- Subprocess 4: Result Generation (Level 1)

In this Level 2 DFD, each subprocess from Level 1 is further detailed into sub-processes, highlighting the specific tasks and data flows within each phase of the currency exchange rate analysis process. This provides a more granular view of how data is processed and analyzed within the system. Remember to label the data flows and processes appropriately at this level as well.

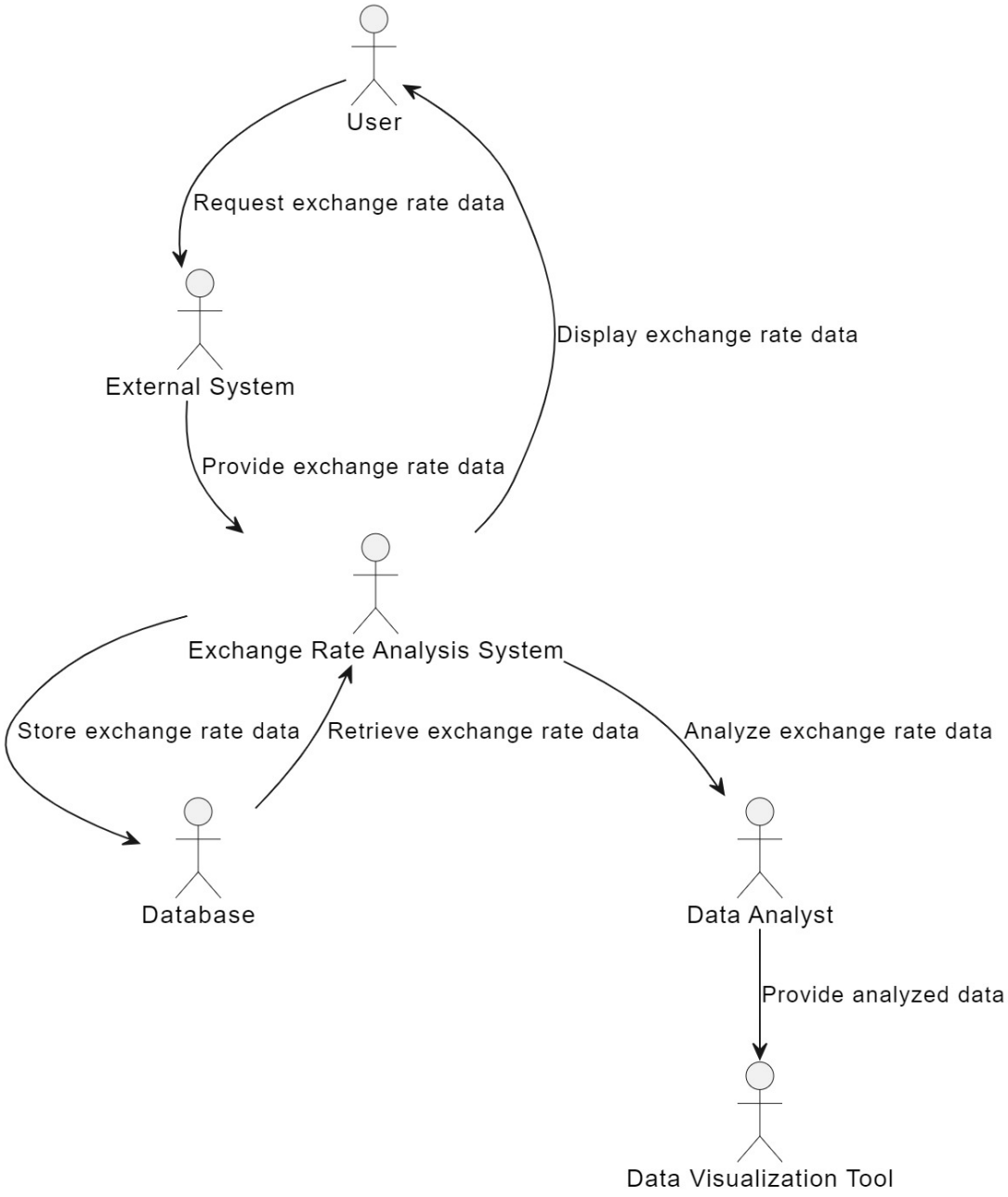
Level 0 DFD:



Level 1 DFD:


User
Request exchange rate data
External System
Display exchange rate data
Provide exchange rate data
Exchange Rate Analysis System
Store exchange rate data
Retrieve exchange rate data
Database

Level 2 DFD:


User
Request exchange rate data
External System
Display exchange rate data
Provide exchange rate data
Exchange Rate Analysis System
Store exchange rate data
Retrieve exchange rate data
Analyze exchange rate data
Database
Data Analyst
Provide analyzed data
Data Visualization Tool

User Stories

User stories are a way to capture the functional requirements of a software system from the perspective of an end user. When developing a system for currency exchange rates using data analytics, one can create user stories to express the features and functionalities that users need.

1. As a currency trader, one wants to see real-time exchange rates for various currency pairs, so informed trading decisions can be made.
2. As a financial analyst, one wants historical exchange rate data for a specific currency pair over the last 5 years, to analyze long-term trends.
3. As a business owner, one wants a daily report on exchange rates to help make decisions on importing and exporting goods.
4. As a casual traveler, one wants to be notified when the exchange rate for a destination currency reaches a favorable level for currency exchange.
5. As a risk manager, one wants to receive alerts when there is a significant fluctuation in exchange rates that may affect international investments.
6. As a data scientist, one wants access to raw exchange rate data for research purposes, to build custom models and analytics.
7. As an investor, one wants to see exchange rate forecasts and predictions for the next quarter, to adjust an investment portfolio accordingly.
8. As a mobile app user, one wants a user-friendly mobile app

that provides real-time exchange rates and historical data for easy access on the go.

9. As a currency exchange website user, one wants a currency conversion calculator that uses real-time rates for accurate conversions.
10. As a financial institution, one wants an API that provides up-to-date exchange rate data for integration into banking software.
11. As a compliance officer, one wants to track exchange rate movements to ensure adherence to regulatory requirements for international transactions.
12. As a financial advisor, one wants access to a comprehensive dashboard that displays exchange rates, trend analysis, and currency news to help guide clients.
13. As a market researcher, one wants to export exchange rate data in CSV format for further analysis in statistical software.
14. As a business executive, one wants a summary report of the impact of exchange rate fluctuations on international revenue and expenses.
15. As a budget planner, one wants a tool that calculates projected foreign currency expenses for an upcoming international business trip.

User stories like these help to prioritize and plan the development of a currency exchange rate system with data analytics by focusing on the specific needs and expectations of different user groups. These stories can serve as a foundation for creating a detailed product backlog and implementing the necessary features and functionalities.