Introduction and Program Overview

Currency Converter Program Theory

Introduction

The Currency Converter program is a Python application that converts a specified amount of one currency into another. The program uses the ExchangeRate-API, a reliable and current source of exchange rates, to perform the conversions.

Program Overview

The program consists of a single function, `convert_currency`, which takes three parameters:

- `amount`: The amount of the original currency to convert.

- `from_currency`: The code for the original currency (e.g., USD).

- `to_currency`: The code for the target currency (e.g., EUR).

* Program Flow and Error Handling*

Program Flow

1. The user inputs the amount, original currency, and target currency.

2. The `convert_currency` function is called with the user's input.

3. The function sends a GET request to the ExchangeRate-API.

4. The API responds with a JSON object that contains the latest exchange rates.

5. The function extracts the exchange rate for the target currency.

6. The function calculates the converted amount using the exchange rate.

7. The converted amount is returned to the user.

Error Handling

The program handles errors to manage potential issues, such as:

- Invalid currency codes

- API request failures

- API response parsing errors

If an error occurs, the program raises a `ValueError` exception with a clear error message.

* API Documentation and Integration*

API Documentation

The ExchangeRate-API is a free API that provides current exchange rates. The API endpoint used in this program is:

- `https://api.exchangerate-api.com/v4/latest/<from_currency>`

The API responds with a JSON object that contains the latest exchange rates for the specified currency.

API Integration

The program uses the `requests` library to send a GET request to the ExchangeRate-API. The API response is then processed using the `json()` method.

Code Implementation and Structure

Code Implementation

The program is written in Python and uses the `requests` library for API requests. The code is organized into a single function, `convert_currency`, which covers the entire conversion process.

Code Structure

The code has a modular structure, with each section handling a specific task:

- User input handling

- API request and response processing

- Error handling and exception raising

- Conversion calculation and returning results

Conclusion and Future Development

Conclusion

The Currency Converter program offers a simple and effective way to convert currencies using the ExchangeRate-API. The program's organized structure and strong error handling ensure a reliable and user-friendly experience.

Future Development

Possible future developments for the program include:

- Adding support for more APIs and exchange rate sources

- Creating a graphical user interface (GUI) for a better user experience

- Expanding the program to support additional features, such as currency tracking and alerts.