

currency exchange

Use case 2: Calculate currency exchange

Dependencies: use case 1 get source currency rates

business doc

1. short summary

Users need to convert one currency amount to another (e.g., USD to EUR) using the latest exchange rates.

2. explain the action

The user selects:

- Source currency (e.g., USD)
- Target currency (e.g., EUR)
- Amount to convert (e.g., 100)

The system uses real-time exchange rates to calculate the equivalent amount in the target currency.

3. explain the outcome

4. definition of done

solution doc

1. DB? what entities

2. API? param,inputs

3. node js

4. source?

All use cases

	feature	questions
1	get source currency rates	
2	calculate currency exchange	
3	store historical exchange	
4	user mgmt(simple)	
5	watchlist(for each user)	
6	currency management(simple)	
7	rate change watch	
8	reserve currency rate(for a limited time)	

Luffy

Business Doc

Eddie Shen

Business Document: Currency Exchange Calculation

Feature

1. Short Summary

Develop a backend service that performs real-time currency exchange calculations using Node.js.

2. Action

- Design and implement a RESTful Node.js API endpoint that receives currency codes (source and target), and date time (realtime or history).
- Get source and target currency rates from realtime DB or history DB.
- Perform conversion logic based on the latest exchange rates and return the converted value.

3. Outcome

Return currency conversion results (symbol and rate).

4. Definition of Done

- API endpoint is live and tested (unit + integration).
- Result displays correct symbol and rate used.
- API documentation is published.

Solution Document: Currency Exchange Calculation

1. Database

- Entity: currency code, value

2. API Design

- **Endpoint:** GET

/api/convert?sourceCurrency={}&targetCurrency={}&dateTime={}&isRealtime={}

- **Request Params (JSON):**

json

Attr	sourceCurrency	targetCurrency	dateTime	isRealtime
Type	String	String	String	Boolean

example

```
{  
  "sourceCurrency": "USD",  
  "targetCurrency": "SGD",  
  "dateTIme": "2025-07-18 11:20:35",  
  "isRealtime": false,  
}
```

- **Response:**

json

Attr	sourceCurren cy	targetCurren cy	exchangeRat e	dateTIme	isRealtime
Type	String	String	String	String	Boolean

example

```
{  
  "sourceCurrency": "USD",  
  "targetCurrency": "SGD",  
  "exchangeRate": "1.354",  
  "dateTIme": "2025-07-18 11:20:35",  
  "isRealtime": false,  
}
```

3. Node.js Implementation Highlights

- Use axios or node-fetch to consume external API for exchange rates.



4. Source Options

- **Currency Rate Provider:** currency rate database
- **Libraries:**
 - node
 - axios
- **DevOps:** Use GitHub Actions for CI/CD; deploy on AWS Lambda or containerized in Docker via ECS.