

## Forex Backend Assignment Documentation

This is a comprehensive documentation covering the Backend Development Assignment that was given.

The assignment mentioned to cover 4 main tasks.

1. Live Rates of Conversion between currencies.
2. Live Exchange Rates for currencies mentioned.
3. Historical Data Endpoint
4. Limiting the number of API calls made

All these currency conversions are with respect to their value against **1USD**.

To implement these I used the free currency conversion API <https://openexchangerates.org>.

We first need to generate an API key and add them in the config.js file which is located in the config folder. This API key has been referenced in several places wherever the key needs to be accessed to access required data/functionality.

### config.js

This file contains information about the API key, contains the mongodb connection endpoint, startDate from which the historical forex data has to be maintained and also array of currencies who's live conversion is displayed.

Once we've configured these specific to our system we can go ahead and go to our project root and execute the following command to start our sever.

```
node ./server.js
```

Once we do this a number of things happen.

The **API connection** gets established. The connection to **MongoDB** is established.

Along with this it fetches data from the internet through the API and inserts all previous forex data from the StartDate mentioned till today and gives log statements of doing so.

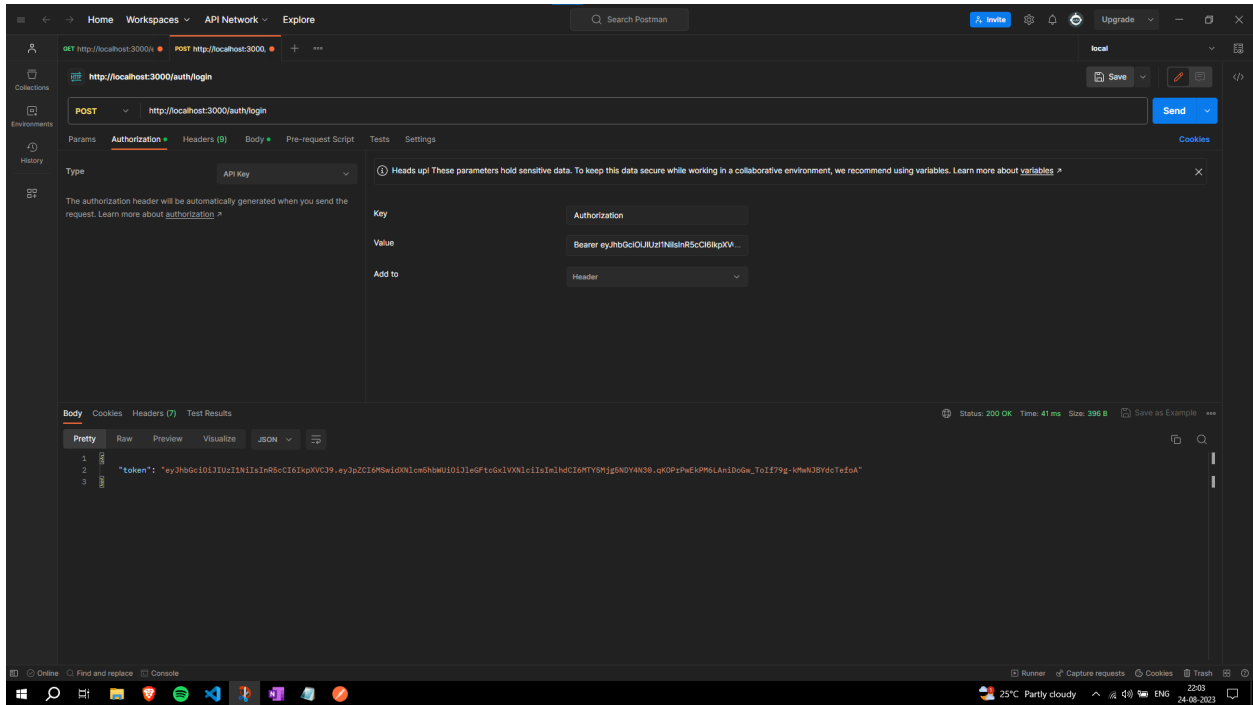
```
PS C:\Users\Lenovo\Desktop\Forex Converter> node .\server.js
Server is running on port 3000
Connected to MongoDB
Forex data for 2023-08-13 already exists in the database. Skipping insertion.
Forex data for 2023-08-14 already exists in the database. Skipping insertion.
Forex data for 2023-08-15 already exists in the database. Skipping insertion.
Forex data for 2023-08-16 already exists in the database. Skipping insertion.
Forex data for 2023-08-17 already exists in the database. Skipping insertion.
Forex data for 2023-08-18 already exists in the database. Skipping insertion.
Forex data for 2023-08-19 already exists in the database. Skipping insertion.
Forex data for 2023-08-20 already exists in the database. Skipping insertion.
Forex data for 2023-08-21 already exists in the database. Skipping insertion.
Forex data for 2023-08-22 already exists in the database. Skipping insertion.
Forex data for 2023-08-23 already exists in the database. Skipping insertion.
Forex data for 2023-08-24 inserted into the database.
█
```

After this, head to your API tool such as 'curl' or Postman

And go to the endpoint <http://localhost:3000/auth/login>. If your server started at default port number 3000 you can follow the same URL otherwise customise the port number accordingly.

Once you send a POST request to this endpoint a JWT token gets generated.

Copy the JWT token and navigate to the authorisation tab.



Enter the key as Authorisation and the token as Bearer <YOUR\_JWT\_TOKEN>

Doing so gives authentication for you to access further API endpoints.

### 1. Conversion between currencies:

This endpoint gives live conversion rates.

A POST request has to be made to the endpoint <http://localhost:3000/api/conversion/convert>.

To this we need to provide input in the following format

```
{
  "sourceCurrency": "INR",
  "targetCurrency": "INR",
  "amount": 100
}
```

To get output as

```
{
  "convertedAmount": 100
}
```

In case there's an error in naming the sourceCurrency or targetCurrency an error message which says the following shall show up

```
{
  "error": "Invalid currency codes."
}
```

## **2. Live Rates of Conversion for select currencies:**

If you go to the endpoint <http://localhost:3000/api/exchange-rates/live> this shows conversion rates for specific currencies which are listed in config.js

For an array of currencies it gives us the current exchange rate with respect to 1USD.

You need to enter the endpoint with GET method to get the following output.

```
{
  "USD": 1,
  "EUR": 0.924578,
  "GBP": 0.792925,
  "JPY": 145.876,
  "CAD": 1.356928,
  "AUD": 1.55664,
  "INR": 82.599848
}
```

## **3. History of Exchange Rates:**

This endpoint specifically retrieves data from the local MongoDB collection which stores data of all exchange rates w.r.t 1USD since the date startDate mentioned in config.js

There's redundancy added to make sure that the same dates data doesn't get entered and this is specified using console statements.

To access this the endpoint is <http://localhost:3000/api/forex/history>.

Data is retrieved from the MongoDB collection based on the model defined in forexData.js.

There's some extra features added.

We can view data for specific range of dates as well.

Those URL endpoints are as follows.

<http://localhost:3000/api/forex/custom-history?startDate=2023-08-15&endDate=2023-08-20>.

Here the startDate and endDate must be given according to requirement and while making sure that those dates are already present in the database otherwise it can't retrieve those.

## **4. Limiting the number of API calls:**

There's a file called Rate Limiting Middleware who's main purpose is to limit the number of API calls being made. Inside this file there's an argument which is called max. Max is the number of

API calls that can be made before a warning message that says too many API calls have been made shows up.

Any request to any of the endpoints can be made as long as those numbers of times is lesser than the value of max. If it exceeds, the call isn't made and a warning message pops up that looks as follows.

Too many requests from this IP, please try again later.

To make further requests you have to update the value of max or change the IP address.

### **Software used:**

1. Node.js
2. MongoDB
3. POSTMAN
4. Exchange rate API
5. GitHub for the GitRepo Maintained