NORTHERN TRUST

ForexDashboard

Hackathon

Presented by:
Divyam Dholwani
Harsh Rane
Khilee Singhal
Manas Pal
Manav Chandak

November 23, 2023

Problem Statement:

Create a dashboard which will allow users to analyze the exchange rates between two currencies over a period of time. Users should have the option to select weekly, monthly, quarterly, and yearly charts. The dashboard should also display the date on which the rate was at its peak (highest) and the date on which it was at its lowest. Users should be able to print the data in a chart. Input will be currency exchange rate dataset between a currency pair and will be provided in a file format

Use USD as Base Currency where first currency will always be USD and second currency will be variable. For instance, currency pairs could be USD/INR, USD/GBP, USD/EUR, USD/CAD etc

Objective:

- Read the data from file and store in csv.
- Create a use interface which allows users to select currency and desired duration. Users should have the ability to switch between weekly, monthly, quarterly, and annual charts.
- Fetch data for given currency and time duration. Show the trend over a given period. Also display the date on which the rate was highest with the actual rate and date on which the rate was lowest along with the rate

UI Requirements:

- UI should have the option to select 2 currencies (Currency 1 and Currency 2). Currency 1 auto populate with USD. Users should have the search capability to search for a currency in currency 2 field. Display currency name next to currency field

- Users should have an option to select duration for which they would prefer to see the data and graphs

Functions:

Year Range Selector

- Users can select the desired time range for analysis (weekly,monthly, quarterly,yearly)

Currency Pair Selection

- Users can choose the currency pair for analysis with base having default value of USD (e.g.,USD/INR, USD/GBP).

Chart Options

- Chart which we use to display trend of currency is Line Graph

Technical Details:

Technology Stacks:

- Frontend: HTML, CSS,
- Backend: Flask is used for connecting frontend and backend, matplot library is used for plotting graphs
- Data Storage: CSV file

Dependencies:

- Matplotlib
- CSV parsing library

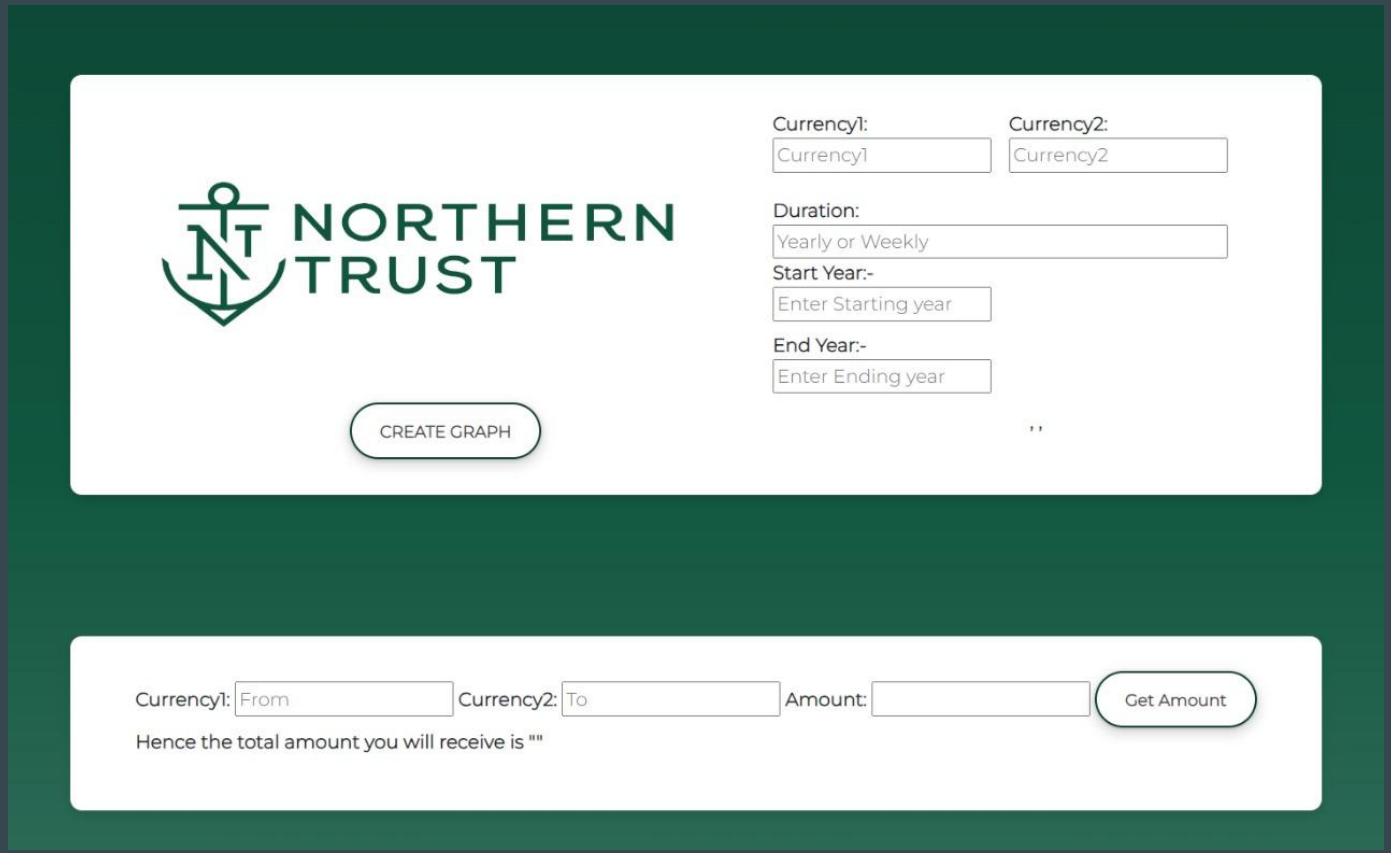
How to Run Code:

- Go to backend.py home path
- In the terminal write- python backend.py
- Click on the local host link
- Further to run the test cases- pytest backend_test.py

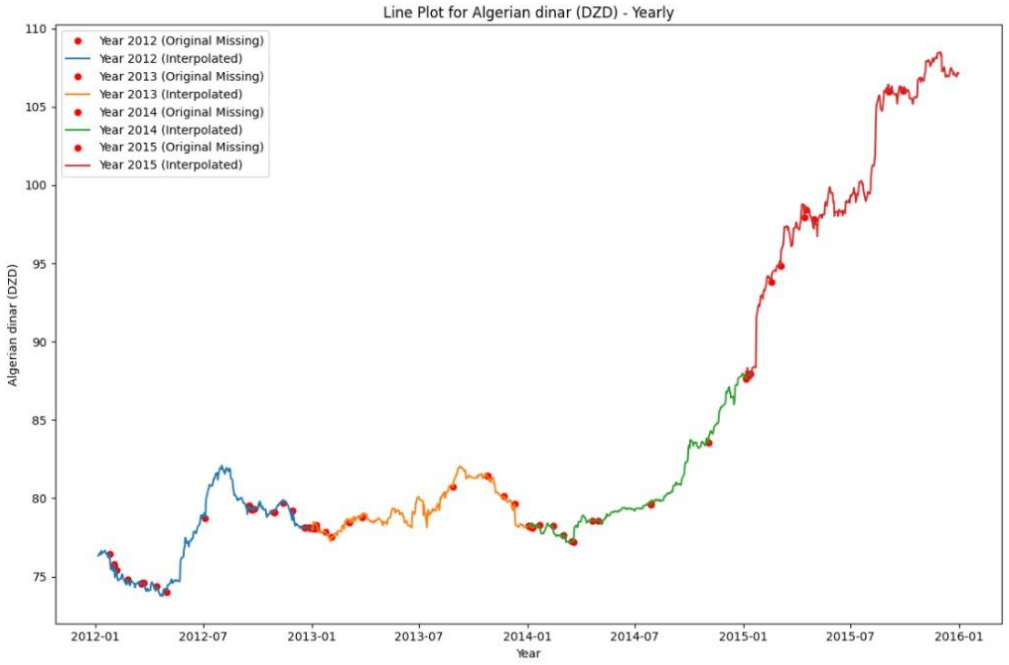
Working

1. User Input:
    a. Users provide input through the web interface.
2. Backend Processing:
    a. Input is sent to the backend powered by Flask, a Python web framework.
    b. Flask processes the input and initiates graph generation.
3. Graph Generation:
    a. Matplotlib plotting library may be used.
4. Graph Saving:
    a. The generated graph is saved, ensuring persistence for future access.
5. Webpage Display:
    a. The saved graph is embedded in the webpage.
    b. Users can visualize and interact with the dynamically generated content.
6. Flask Interaction:
    a. Flask handles communication between the frontend and backend.
    b. The web interface seamlessly interacts with the Flask-powered backend.

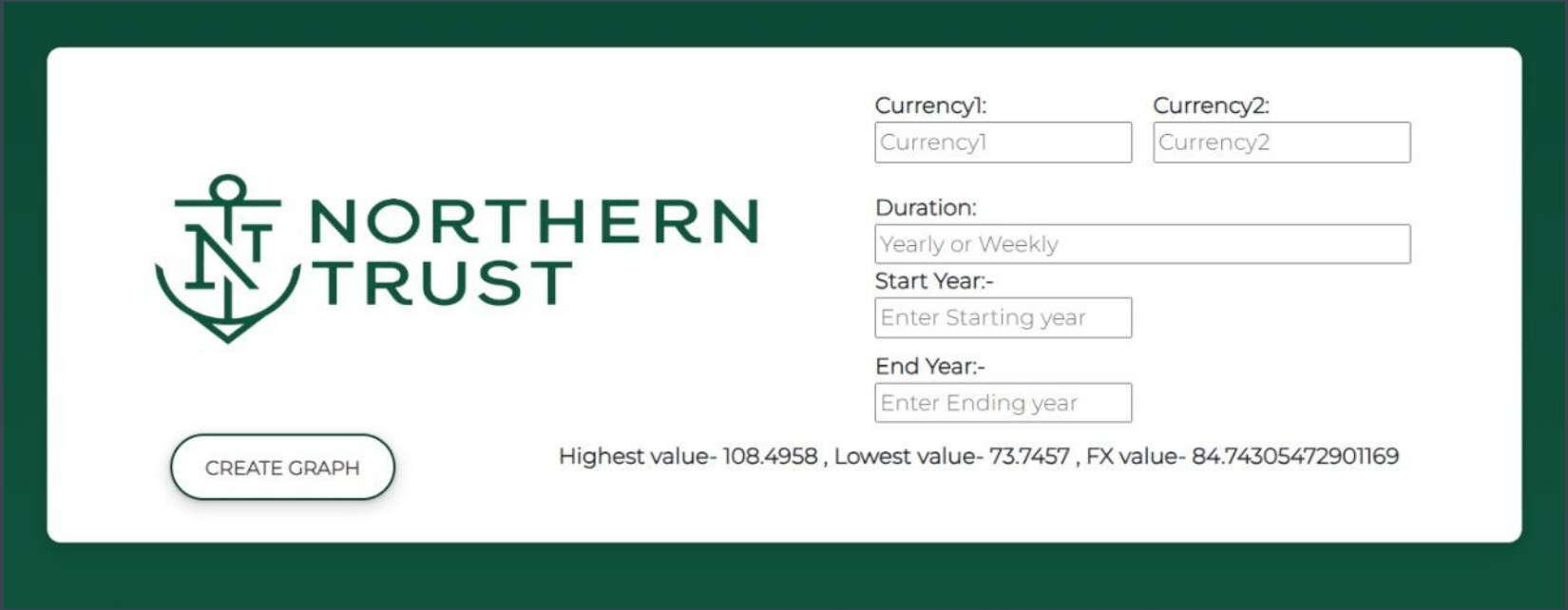
Dashboard


NORTHERN TRUST
Currency1:
Currency1
Currency2:
Currency2
Duration:
Yearly or Weekly
Start Year:-
Enter Starting year
End Year:-
Enter Ending year
CREATE GRAPH
,,
Currency1: From
Currency2: To
Amount:
Get Amount
Hence the total amount you will receive is ""

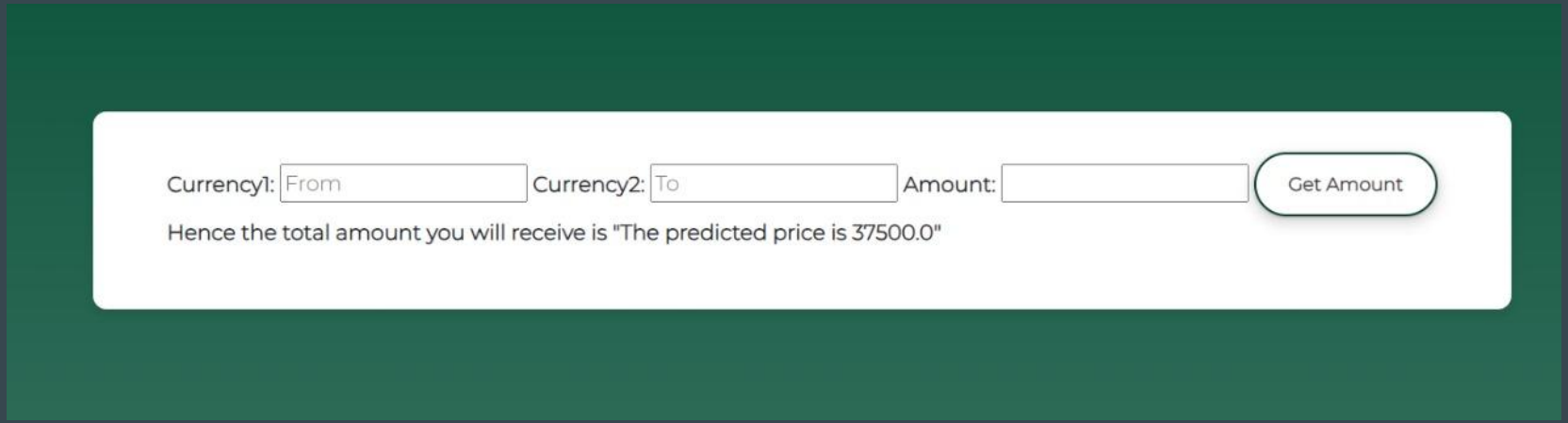
Results


Line Plot for Algerian dinar (DZD) - Yearly
Year 2012 (Original Missing)
Year 2012 (Interpolated)
Year 2013 (Original Missing)
Year 2013 (Interpolated)
Year 2014 (Original Missing)
Year 2014 (Interpolated)
Year 2015 (Original Missing)
Year 2015 (Interpolated)
Algerian dinar (DZD)
110
105
100
95
90
85
80
75
2012-01
2012-07
2013-01
2013-07
2014-01
2014-07
2015-01
2015-07
2016-01
Year

Results


NORTHERN TRUST
Currency1:
Currency1
Currency2:
Currency2
Duration:
Yearly or Weekly
Start Year:-
Enter Starting year
End Year:-
Enter Ending year
CREATE GRAPH
Highest value- 108.4958 , Lowest value- 73.7457 , FX value- 84.74305472901169

Currency Exchange Rate



Test Cases

```
C:\Users\Dell\Desktop\MITWPU-team21-ForexDashboard>pytest backend_test.py
============================================================ test session starts ============================================================
platform win32 -- Python 3.9.12, pytest-7.1.1, pluggy-1.0.0
rootdir: C:\Users\Dell\Desktop\MITWPU-team21-ForexDashboard
plugins: anyio-3.5.0
collected 2 items

backend_test.py ..                                                                                                                  [100%]

============================================================= 2 passed in 1.69s =============================================================

C:\Users\Dell\Desktop\MITWPU-team21-ForexDashboard>
```

Thank You