Currency Converter Using Python

Submitted by:

Aman Kumar Thakur - AP23110011682

Sameer Bachhar - AP23110011496

Bibek Kumar Sah- AP23110011548

Bikash Kumar Mahato- AP23110011681

Problem Statement

In today’s globalized world, currency conversion is essential for a variety of users from international travelers and online shoppers to multinational businesses and stock traders. Despite the availability of online tools, many lack the convenience, speed, and simplicity needed for regular use.

Challenges with Existing Tools:

- Mostly web-based — not reliable offline
- Filled with ads and complex UI
- Mobile-focused apps that lack desktop alternatives

Our Goal:

- Create a simple, offline-capable desktop application
- Provide real-time currency conversion using API
- Build a minimal, fast, and user-friendly GUI

Objectives

- Design a Graphical User Interface (GUI) using Python’s Tkinter library.
- Use the ExchangeRate-API to fetch live exchange rates.
- Allow users to select any currency combination and enter the amount.
- Handle invalid input and connection issues gracefully.
- Implement multithreading to ensure the UI remains responsive during API calls.
- Deliver a desktop-friendly experience with simple interactions.

Technology Stack

Component	Technology Used
Language	Python 3
GUI Library	Tkinter
API	ExchangeRate-API
HTTP Requests	requests library
OS Compatibility	Windows / Linux / macOS

System Architecture

User Input

↓

Tkinter GUI (Currency Selection + Amount Entry)

↓

Send API Request (ExchangeRate-API)

↓

Receive JSON Response

↓

Extract Rate & Calculate Converted Amount

↓

Display in GUI

UI/UX Design Features

- Clean, modern dark-themed interface.
- Intuitive dropdown menus for selecting currencies.
- Input field with numeric validation.
- Convert button with instant action feedback.
- Final result displayed in large, styled text.
- Focused on simplicity and performance.

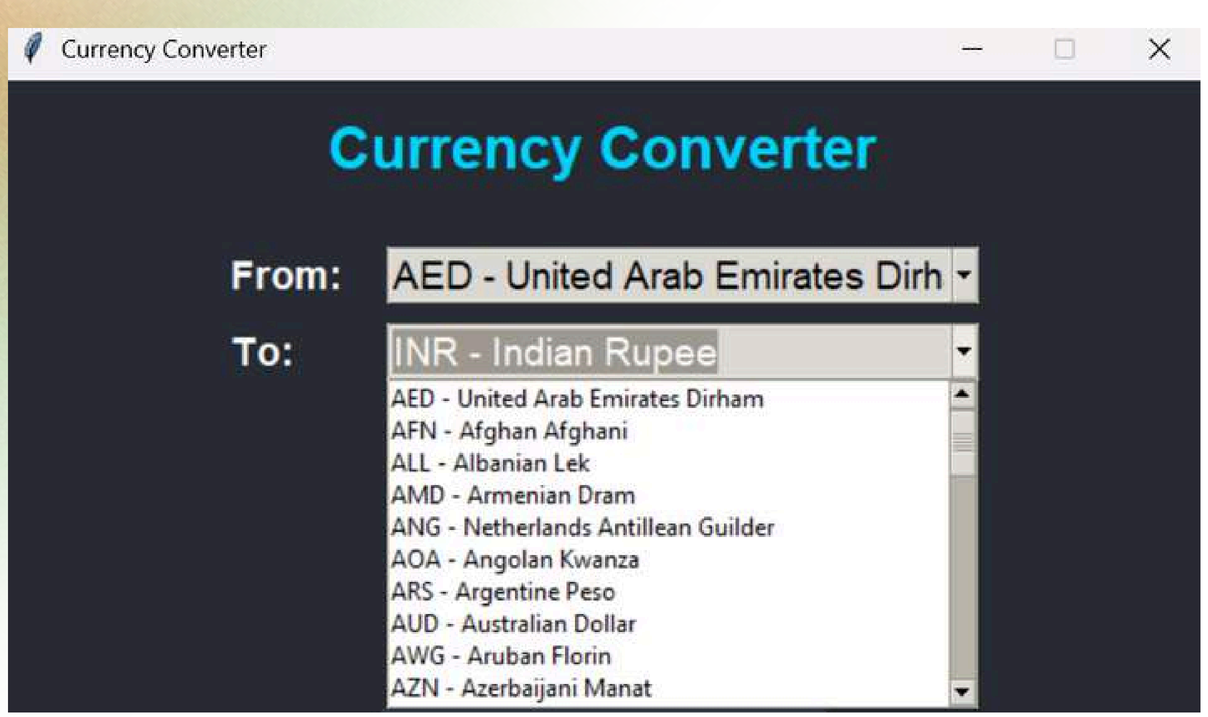
Application Workflow

- User launches the app.
- Select “**From**” and “**To**” currencies via dropdown.
- Enter the **amount to convert.**
- Press the **Convert button.**
- API fetches real time exchange rate.
- Result displayed clearly on screen.

Code Explanation

- requests.get() used to retrieve **live exchange data.**
- API returns **JSON**; code extracts conversion_rate.
- Tkinter widgets:
    - Entry for input.
    - OptionMenu for currency selection.
    - Label to display result.
- threading.Thread() used to perform API calls without freezing the GUI.

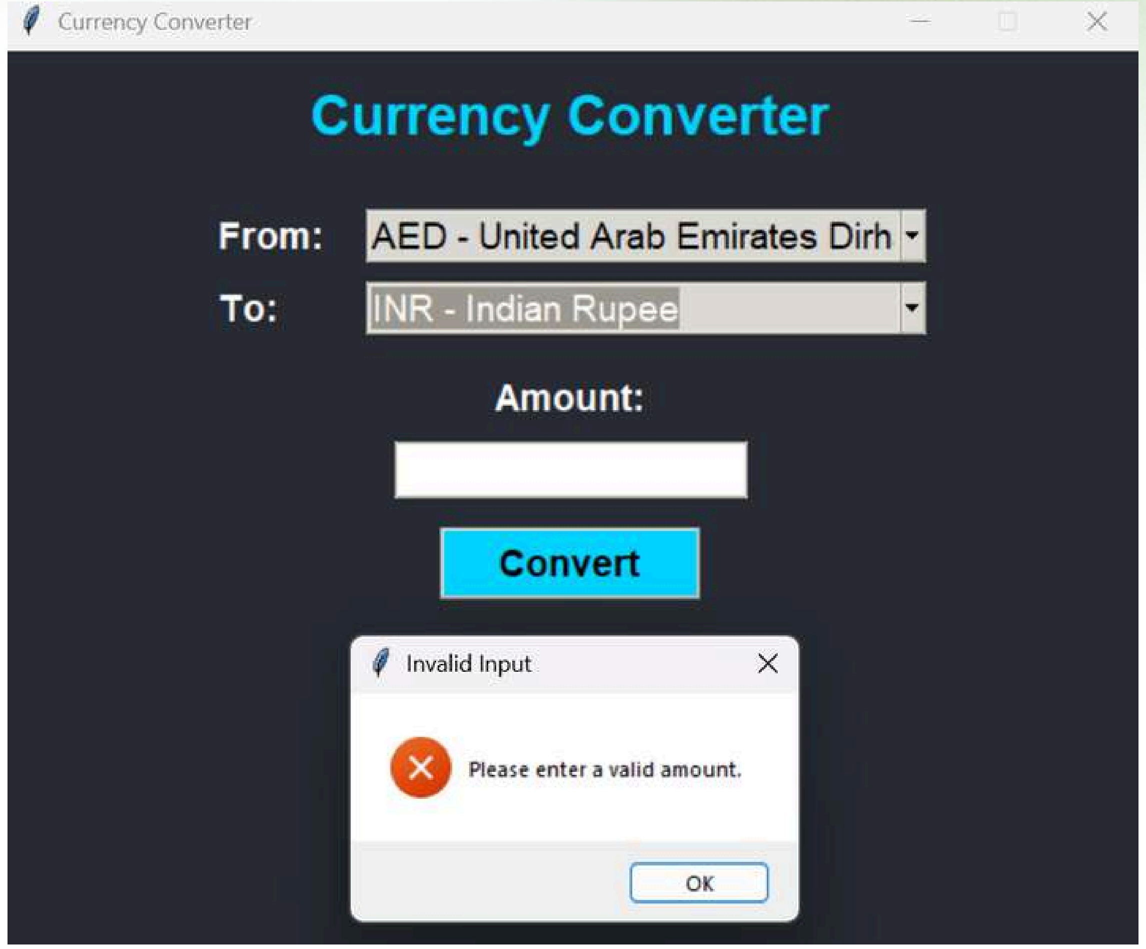
Screenshots



From: AED - United Arab Emirates Dirh

To: INR - Indian Rupee

Currency Dropdown Menus



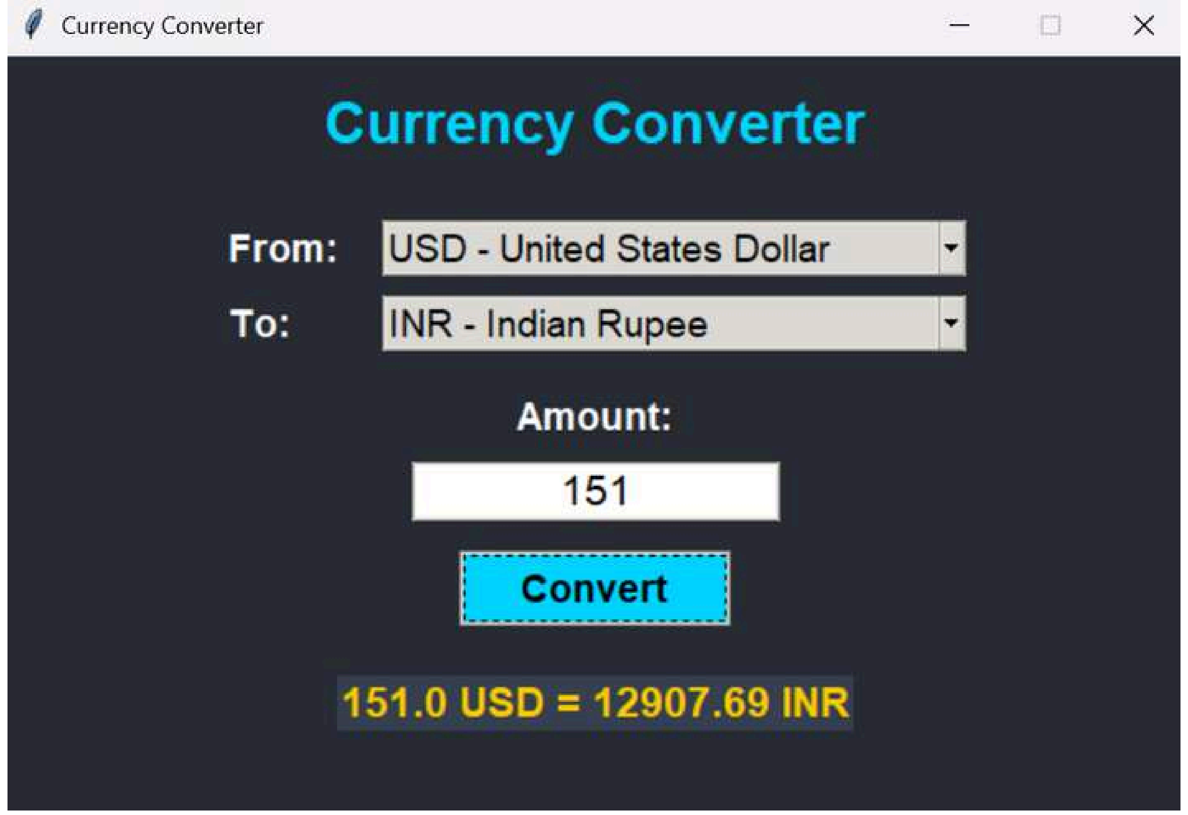
From: AED - United Arab Emirates Dirh

To: INR - Indian Rupee

Amount:

Please enter a valid amount.

⚠Error Message (invalid input)



From: USD - United States Dollar

To: INR - Indian Rupee

Amount: 151

151.0 USD = 12907.69 INR

Converted Output Display

Conclusion

We developed a Currency Converter desktop application using Python and Tkinter, featuring a clean and user-friendly interface.

The app integrates a real-time exchange rate API to ensure accurate currency conversions. To enhance performance, multithreading was used to keep the UI responsive during data fetching.

As a team, we effectively divided tasks such as UI design, API integration, and testing.

Through this project, we gained hands-on experience in API handling, GUI development, and collaborative software engineering.

Thank You