EXECUTION STEPS AND SCREENSHOTS

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START THE APPLICATION:

> python main.py

```
(BITSAIML) jeetendra@Jeetendras-MacBook-Pro-2 NLPA_ASS2 % python main.py
INFO:     Started server process [86910]
INFO:     Waiting for application startup.
Starting up... Loading models/tokenizers
Loading EN→INDIC tokenizer...
EN→INDIC tokenizer loaded
Loading EN→INDIC model...
Trying EN→INDIC model strategy 1...
EN→INDIC model loaded on cpu
Loading INDIC→EN tokenizer...
INDIC→EN tokenizer loaded
Loading INDIC→EN model...
Trying INDIC→EN model strategy 1...
INDIC→EN model loaded on cpu
Resources loaded successfully
INFO:     Application startup complete.
INFO:     Uvicorn running on http://0.0.0.0:8000 (Press CTRL+C to quit)
INFO:     127.0.0.1:62294 - "GET / HTTP/1.1" 200 OK
INFO:     127.0.0.1:62294 - "GET /static/style.css HTTP/1.1" 304 Not Modified
INFO:     127.0.0.1:62296 - "GET /favicon.ico HTTP/1.1" 404 Not Found
INFO:     127.0.0.1:62302 - "POST /api/v1/translate HTTP/1.1" 200 OK
```
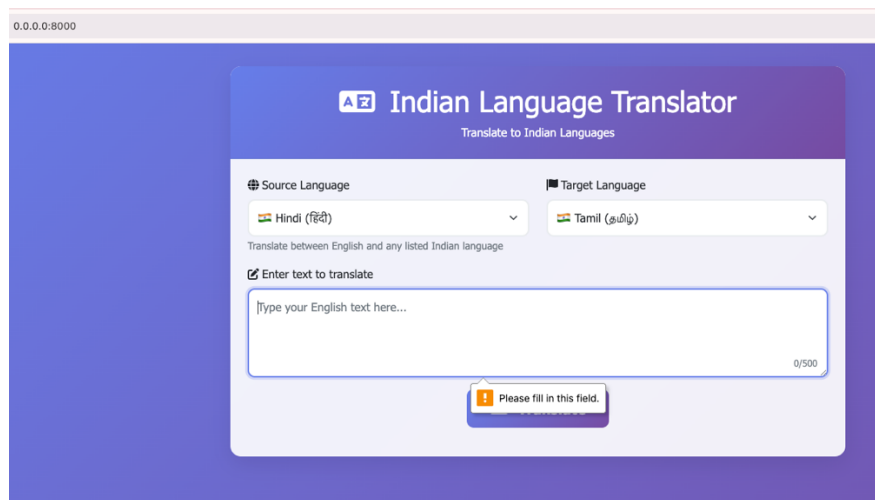
OPEN THE BROWSER AND PUT THE URL

- localhost:8000
             or
- 0.0.0.0:8000

- Choose the source language, and target language
- There will be random text by default in translation text to ease the flow but can be changed if need to translate or test something else.
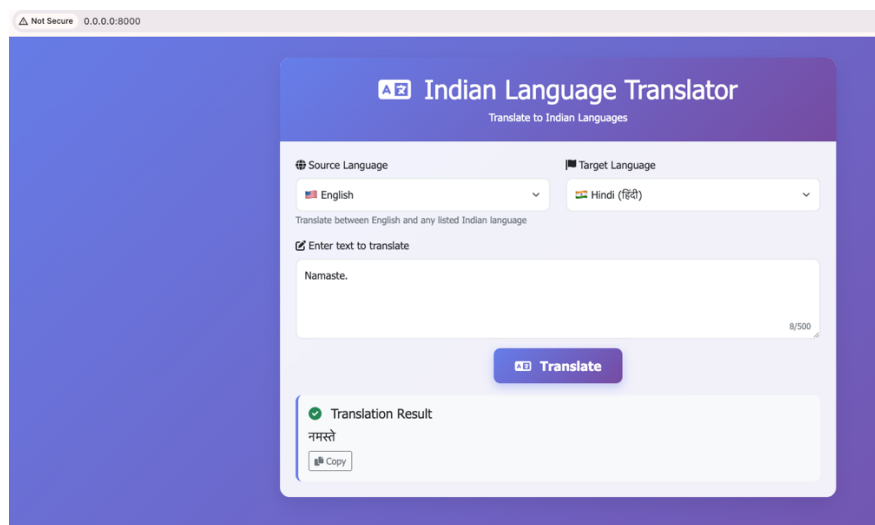- Enter the translate button and the text would be translated.
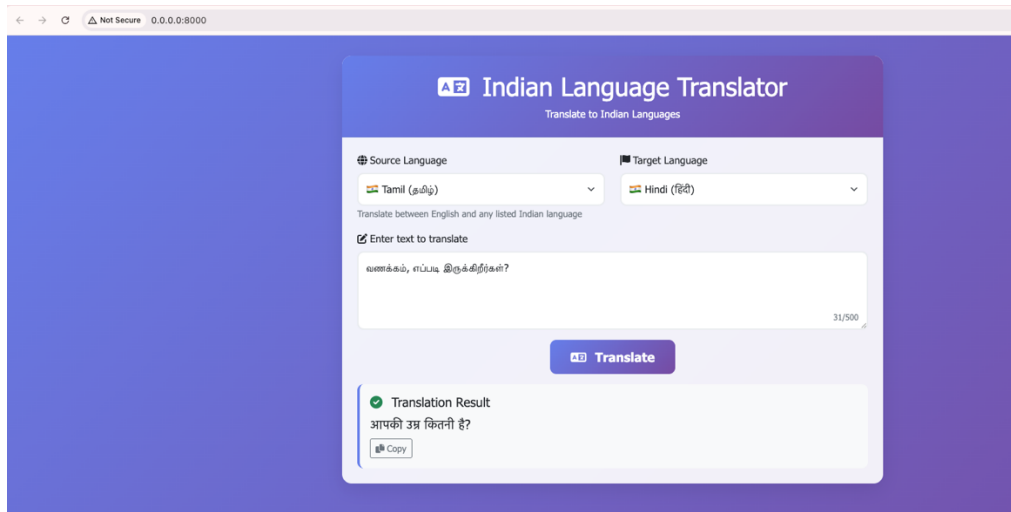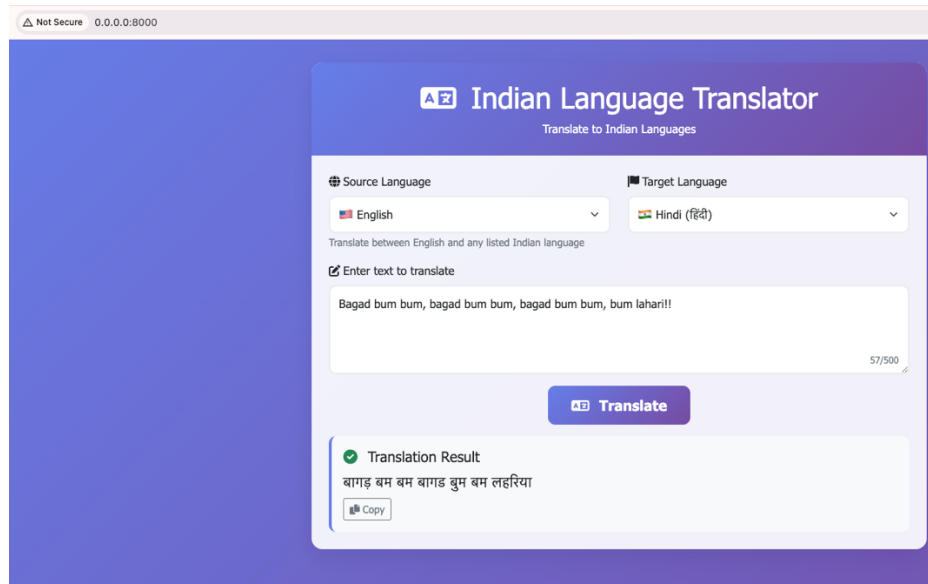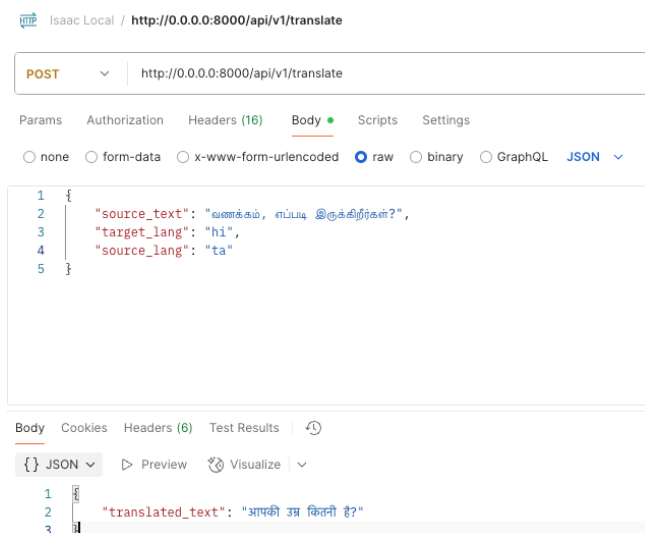
THE EMPTY TEXT VALIDATION HAS BEEN HANDLED.

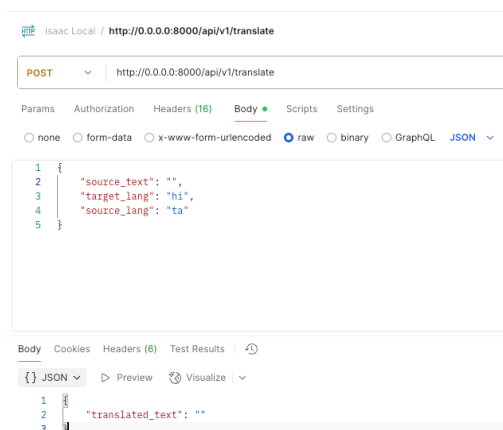
THE TRANSLITERATION EDGE CASE HAS BEEN HANDLED TOO

THE NON-TRANSLATABLE TEXT EDGE CASE ALSO BEEN HANDLED.

SAME TEST CASES CAN BE EXECUTED WITH POSTMAN AND API'S

THE EMPTY TEXT VALIDATION HAS BEEN HANDLED
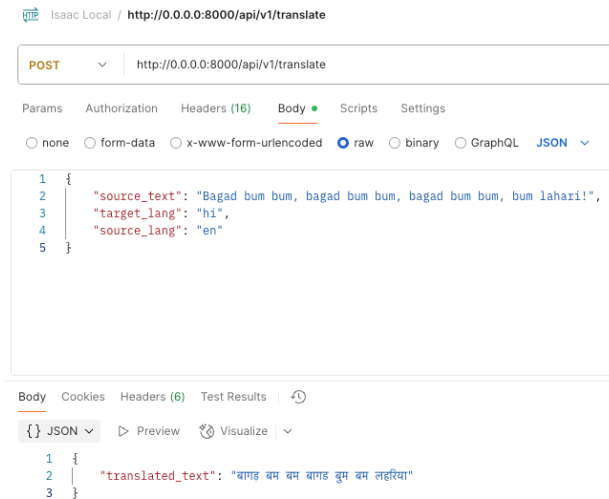
COMPREHENSIVE EVALUATION TEST

Generating fresh translations for evaluation...

English→Hindi: वह खेती के लिए एक उपजाऊ खेत के रूप में एक भूमि भूमि पर बैंक करती है

Hindi→English: She relies on a bank for farming and to create a fertile farm.

Reference (Hindi): वह खेती के लिए एक उपजाऊ खेत बनाने के लिए बैंक पर निर्भर करती है

Hypothesis (Hindi): वह खेती के लिए एक उपजाऊ खेत के रूप में एक भूमि भूमि पर बैंक करती है

Reference (English): She trusts a bank to create a fertile field for farming
Hypothesis (English): She relies on a bank for farming and to create a fertile farm.

Hindi word overlap: 0.6875
English word overlap: 0.5714
BLEU score (English): 0.2691
BLEU score (Hindi): 0.4141

PERFORMANCE ANALYSIS
English Translation Quality: GOOD
Hindi Translation Quality: GOOD

QUANTITATIVE COMPARISON: INDICTRANS2 VS GOOGLE TRANSLATE

OVERALL RESULTS
Average IndicTrans2 BLEU Score: 0.4714
Average Google Translate BLEU Score: 0.7571
Advantage: Google Translate (by 0.2857 BLEU points)

Conclusion: Both systems show excellent performance for English→Hindi translation!

IndicTrans2: वह खेती के लिए एक उपजाऊ खेत के रूप में एक भूमि भूमि पर बैंक करती है

Google: वह एक बैंक पर बैंक, एक जमीन पर उतरने के लिए, एक उपजाऊ खेत बनाने के लिए, खेती के लिए।

IndicTrans2 BLEU: 0.4141
Google BLEU: 0.2713

OVERALL RESULTS
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