Functional and performance testing

Performance testing

Date	9 Feb 2026
Team ID	LTVIP2026TMIDS71831
Project Name	Translingua: ai-powered multi-language translator
Maximum Marks	10Marks

Performance Testing :

1 **Streamlit (Frontend & App Framework)**

2 **Google Generative AI (Translation Model / API Layer)**

A. Performance Testing – Streamlit Application

Streamlit is used as the front-end framework to handle user interaction, text input, language selection, and displaying translated results.

Streamlit Performance Parameters

S.No	Parameter	Description
1	UI Response Time	Time taken to load UI and accept user input
2	Page Render Time	Time required to render translation output
3	Session Stability	Ability to handle repeated translations
4	Resource Usage	Memory and CPU usage during execution

Streamlit Performance Testing Table

Test Case ID	Operation	Expected Response Time	Actual Response Time	Result
ST-1	Application load	≤ 2 sec	1.5 sec	Pass
ST-2	Text input & submit	≤ 1 sec	0.6 sec	Pass

ST-3	Display translation output	≤ 1 sec	0.7 sec	Pass
ST-4	Multiple translations (same session)	Stable UI	Stable UI	Pass
ST-5	Reset / New translation	≤ 1 sec	0.5 sec	Pass

Streamlit Performance Analysis

- UI loads quickly with minimal delay.

- Repeated user interactions do not crash the session.

- Memory usage remains stable across multiple translations.

B. Performance Testing – Google Generative AI

Google Generative AI is used to perform language detection and generate translated output using large language models.

Google Generative AI Performance Parameters

S.No	Parameter	Description
1	Model Inference Time	Time taken to generate translation
2	Translation Accuracy	Quality and contextual correctness
3	API Latency	Delay caused by API request/response
4	Throughput	Number of requests handled sequentially

Google Generative AI Performance Testing Table

Test Case ID	Input Size	Language Pair	Expected Time	Actual Time	Result
AI-1	Short text	English → French	≤ 2 sec	1.6 sec	Pass
AI-2	Medium paragraph	English → Spanish	≤ 3 sec	2.4 sec	Pass

AI-3	Long text	English → German	≤ 4 sec	3.5 sec	Pass
AI-4	Auto language detect	Hindi → English	≤ 3 sec	2.7 sec	Pass
AI-5	Repeated requests	English → Telugu	≤ 3 sec	2.3 sec	Pass

Google Generative AI Load Testing Table

Concurrent Requests	Expected Behavior	Observed Behavior	Status
1	Smooth response	Smooth response	Pass
3	Minor latency	No significant delay	Pass
5	Acceptable delay	Slight latency	Pass
8	Slower response	Response time increased	Pass

Google Generative AI Performance Analysis

- Translation results are generated within acceptable time limits.

- Contextual accuracy is high for commonly used languages.

- System remains stable for multiple API calls.

Overall Performance Conclusion

The combined performance testing of **Streamlit** and **Google Generative AI** demonstrates that Translingua provides **fast UI interaction**, **accurate translations**, and **stable performance** under normal and moderate workloads.