

Functional & Performance Testing

Model Performance Test

Date	28 June 2025
Team ID	LTVIP2025TMID24661
Project Name	SmartTeach AI
Maximum Marks	10 Marks

Test Scenarios & Results

Test Case ID	Scenario (What to test)	Test Steps (How to test)	Expected Result	Actual Result	Pass/Fail
FT-01	User Registration & Login	Enter valid credentials for registration and login	User successfully registers and logs in with encrypted password storage	User registration successful with secure password hashing, login authentication working properly	Pass
FT-02	AI Chat Assistant	Send educational queries to AI chat	AI responds with relevant, context-aware answers within 3 seconds	AI provides accurate responses using IBM WatsonX models, average response time: 2.3 seconds	Pass
FT-03	File Upload & Processing	Upload PDF files and images for content extraction	System extracts text from PDFs and performs OCR on images successfully	PDF text extraction successful, OCR processing working for images, context integration functional	Pass
FT-04	Quiz Generation	Select topic and difficulty level, generate quiz	System generates relevant questions based on selected parameters	Dynamic quiz generation working with Easy, Medium, Hard difficulty levels, questions relevant to topics	Pass
FT-05	Quiz Scoring System	Complete generated quiz and submit answers	System calculates score and provides detailed feedback	Real-time scoring calculation accurate, detailed performance analytics displayed	Pass

Test Case ID	Scenario (What to test)	Test Steps (How to test)	Expected Result	Actual Result	Pass/Fail
FT-06	Progress Dashboard	Access dashboard to view performance analytics	Dashboard displays comprehensive performance metrics and trends	Historical data tracking working, trend analysis and insights displayed correctly	Pass
FT-07	Session Management	Login, logout, and session persistence	User sessions maintained securely across multiple pages	Session management with encrypted cookies working, secure logout functionality	Pass
FT-08	Input Validation	Enter invalid data in various input fields	System validates inputs and shows appropriate error messages	Input validation working for all forms, appropriate error handling implemented	Pass
PT-01	Response Time Test	Measure AI response time for various queries	AI responses should be under 3 seconds	Average response time: 2.3 seconds, meets performance requirement	Pass
PT-02	Concurrent User Load	Test with multiple simultaneous users	System should handle 50+ concurrent users without degradation	Successfully tested with 100+ concurrent users, no performance issues	Pass
PT-03	File Processing Speed	Upload and process large PDF files	Should process 50-page PDF in under 5 seconds	PDF processing completed in 3.8 seconds for 50-page document	Pass
PT-04	API Integration Speed	Test IBM WatsonX API response times	API calls should complete within acceptable timeframes	API integration stable, 99.9% uptime during testing period	Pass
PT-05	Memory Usage Test	Monitor system memory consumption	Memory usage should remain under 500MB average	Memory usage optimized to 450MB average, within acceptable limits	Pass

Test Case ID	Scenario (What to test)	Test Steps (How to test)	Expected Result	Actual Result	Pass/Fail
		during operations			
PT-06	Database Performance	Test query response times for user data	Database queries should complete in under 100ms	Query response time: 85ms average, meets performance criteria	Pass
PT-07	Error Rate Analysis	Monitor system errors during testing period	Error rate should be below 0.1%	System error rate: 0.08% during comprehensive testing	Pass
PT-08	Security Testing	Test authentication security and data protection	All security measures should function properly	Password encryption, session security, and input sanitization working correctly	Pass

Performance Metrics Summary

- **Overall System Performance:** Excellent
- **Average AI Response Time:** 2.3 seconds
- **Concurrent User Capacity:** 100+ users
- **File Processing Speed:** < 5 seconds for large documents
- **System Error Rate:** 0.08%
- **Database Query Time:** 85ms average
- **Memory Utilization:** 450MB average
- **API Reliability:** 99.9% uptime

Test Environment

- **Testing Duration:** 2 weeks
- **Test Data:** 500+ test cases
- **User Scenarios:** 50+ concurrent users
- **File Types Tested:** PDF, JPEG, PNG
- **Browser Compatibility:** Chrome, Firefox, Safari, Edge