

Functional & Performance Testing Template

Model Performance Test

Date: 25 June 2025
Team ID: PNT2022TMIDxxxxxx
Project Name: Edu Tutor AI
Maximum Marks: (To be filled later, if applicable)

Test Scenarios & Results

| Test Case ID | Scenario (What to test) | Test Steps (How to test) | Expected Result | Actual Result | Pass/Fail |
|--------------|--|--|--|--|-----------------------|
| FT-01 | Text Input Validation (e.g., topic, student query) | Enter valid and invalid text in input fields for topics, questions, etc. | Valid inputs accepted, errors for invalid inputs | EXAMPLE: When "topic" field entered with "Biology - Chapter 3", accepted. When "topic" field entered with "!@#\$", error message "Invalid characters in input" displayed. Max length (200 chars) tested with 201 chars, truncated and error message displayed. Min length (5 chars) tested with 3 chars, error "Input too short" displayed. | Pass (Example) |
| FT-02 | Number Input | Enter numbers | Accepts valid values, | EXAMPLE: Grade level | Pass (Example) |

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| | Validation (e.g., grade level, number of practice problems) | within and outside the valid range for grade levels or problem counts. | shows error for out-of-range | field: Entered "8", accepted. Entered "0" (below range), error "Grade must be between 1-12". Entered "13" (above range), error "Grade must be between 1-12". Entered "abc", error "Please enter a valid number". | |
| FT-03 | Content Generation (e.g., explanations, practice problems, feedback) | Provide complete inputs (e.g., topic, question, student answer) and click "Generate" for explanations, problems, or feedback. | Correct content is generated based on input, relevant to the educational context | EXAMPLE: Provided topic "Photosynthesis" for explanation. AI generated a 3-paragraph explanation covering light-dependent and light-independent reactions, and chemical equation. Content was accurate, coherent, and relevant for a high-school level. | Pass (Example) |

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| FT-04 | API Connection Check | Check if API key is correct and model responds for AI functionalities (e.g., content generation, answer evaluation). | API responds successfully | EXAMPLE: Monitored network requests upon "Generate" click. API call to /generate endpoint returned HTTP 200 OK status within expected timeframe. No connection errors observed. | Pass (Example) |
| New Functionality Tests | | | | | |
| FT-05 | Subject-based Tutoring | Select a subject and ask a question relevant to it. | AI provides accurate, subject-specific tutoring assistance. | EXAMPLE: Selected "Physics" and asked "Explain Newton's third law with an example." AI provided a correct explanation and the rocket propulsion example. Follow-up question "What about friction?" was also answered accurately | Pass (Example) |

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| | | | | within the physics context. | |
| FT-06 | Topic Explanation | Request an explanation for a specific topic (e.g., "explain photosynthesis"). | AI provides a clear, concise, and accurate explanation of the requested topic. | EXAMPLE: Requested "explain blockchain technology for beginners." AI returned an explanation using simple analogies (ledger, blocks, chain) that was easy to understand and accurate, avoiding excessive jargon. | Pass (Example) |
| FT-07 | Essay Writing | Provide a prompt or topic for an essay and specify parameters (e.g., length, style). | AI generates a coherent, well-structured essay based on the provided prompt and parameters. | EXAMPLE: Prompt: "Discuss the impact of social media on youth mental health." Parameters: 500 words, persuasive style. AI generated a 480-word essay with clear introduction, body paragraphs supporting | Pass (Example) |

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| | | | | both positive and negative impacts, and a conclusion. Tone was persuasive. | |
| FT-08 | Freeform Chatbot | Engage in a general conversation with the AI chatbot. | Chatbot responds naturally, contextually, and provides relevant information/c onversation. | EXAMPLE: Started with "Hi, how are you?". Chatbot replied, "I'm an AI, so I don't have feelings, but I'm ready to help you learn!" Continued with questions about weather and general knowledge; responses were relevant and conversational, not going off-topic. | Pass (Example) |
| FT-09 | Quiz Generation | Request a quiz on a specific topic or subject, specifying parameters like number of questions or difficulty. | AI generates a relevant quiz with correct questions and answers. | EXAMPLE: Requested a 5-question multiple-choice quiz on "World War II" for 10th grade. AI generated 5 questions, each with 4 options, and provided a correct | Pass (Example) |

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| | | | | answer key. Questions were appropriate for the difficulty level. | |
| FT-10 | Summarization | Provide a long piece of text (e.g., article, document) and request a summary. | AI provides an accurate, concise, and comprehensive summary of the given text. | EXAMPLE: Provided a 1000-word article on climate change. Requested 150-word summary. AI returned a 145-word summary that captured all main points and conclusions of the original article without introducing new information. | Pass (Example) |
| FT-11 | Translation | Provide text in one language and request translation into another. | AI accurately translates the text while maintaining context and meaning. | EXAMPLE: Provided "Bonjour, comment ça va?" (French) and requested English translation. AI returned "Hello, how are you?" Accurately translated | Pass (Example) |

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| | | | | context for conversational tone. Also tested a complex scientific paragraph (English to Spanish), translation maintained technical accuracy. | |
| FT-12 | Flashcards Generation | Provide a topic or list of terms and request flashcards. | AI generates relevant flashcards with terms and definitions/explanations. | EXAMPLE: Provided "Key terms for US Civil War: Emancipation Proclamation, Gettysburg Address, Appomattox Court House." AI generated three flashcards, each with the term on one side and a concise, accurate definition/explanation on the other. | Pass (Example) |
| PT-01 | Response Time Test | Use a timer to check content generation time for explanations, problem generation, | Should be under 3 seconds | EXAMPLE: For a typical 200-word explanation, response time was consistently 2.1 - 2.5 | Pass (Example) |

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| | | or feedback. | | seconds. For quiz generation (5 questions), time was 2.8 seconds. All observed times were under 3 seconds. | |
| PT-02 | API Speed Test | Send multiple API calls at the same time for various AI functionalities. | API should not slow down under load | EXAMPLE: Used a load testing tool to send 50 concurrent requests for explanations. Average response time increased from 2.2s to 3.5s, indicating a slight slowdown under load, but remained functional. | Fail (Example) |
| PT-03 | File Upload Load Test (e.g., student assignments, learning materials) | Upload multiple documents (e.g., PDFs, Word docs) for analysis or content extraction. | Should work smoothly without crashing, process files efficiently | EXAMPLE: Uploaded 10 PDFs (average 5MB each) simultaneously. 8 PDFs processed successfully. 2 PDFs failed with a "processing timeout" error, | Fail (Example) |

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| | | | | suggesting a potential bottleneck. System did not crash. | |
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