

CHAPTER – 7

TESTING

7.1 Methods of Testing

7.1.1 Unit Testing

Individual components of the SmartQuiz System, such as models and views, are tested in isolation to ensure each unit functions correctly. This includes validating quiz creation, user registration, and adaptive algorithms.

7.1.2 System Testing

The entire system is evaluated as a whole to verify that all modules work together seamlessly. This includes testing the integration of the front-end interface with the Django backend and the In-memory database.

7.1.3 Functional Testing

Specific functionalities of the SmartQuiz System, such as quiz attempts, real-time feedback, and gamification features, are tested against the requirements to ensure they perform as expected.

7.1.4 Integration Testing

Modules are tested in combination to ensure they interact correctly. This involves checking the flow of data between user management, quiz management, and performance analytics components.

7.1.5 User Acceptance Testing

Real users test the SmartQuiz System to validate its usability and effectiveness. Feedback from this phase helps identify any necessary adjustments before the final deployment.

7.2 Test Cases

Test cases are developed for critical functionalities, including user registration, quiz creation, adaptive learning paths, and performance tracking. Each test case outlines the input, expected output, and actual output, ensuring comprehensive coverage of the application's features.

The below **table 7.2** for test cases based on the parameters relevant to the SmartQuiz System:

Test Case ID	Test Description	Input	Expected Output	Actual Output	Status
TC-001	User Registration	Valid user details (name, email, pwd)	Registration successful message	Registration successful	Pass
TC-002	User Registration (Duplicate Email)	Existing email	Error message indicating email already exists	Email already exists	Pass
TC-003	Quiz Creation	Quiz details (title, questions)	Quiz created successfully message	Quiz created successfully	Pass
TC-004	Quiz Attempt	User ID, Quiz ID	Display quiz questions	Quiz questions displayed	Pass
TC-005	Submit Quiz Response	User ID, Quiz ID, Answers	Success message with score feedback	Score submitted successfully	Pass
TC-006	Real-Time Feedback	User ID, current score	Updated performance metrics	Performance metrics updated	Pass
TC-007	Gamification Features	User ID	Points and badges updated	Points and badges updated	Pass
TC-008	Adaptive Learning Path	User performance data	Adjusted quiz difficulty	Quiz difficulty adjusted	Pass
TC-009	User Login	Valid credentials	Successful login message	Logged in successfully	Pass
TC-010	User Logout	User ID	Successful logout message	Logged out successfully	Pass

Status:

- All test cases have passed successfully.
- The Actual Output reflects the results of executing the test cases, confirming they meet the expected outcomes.