



QUIZICALLY

TEST PLAN

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11/07/2025

VERSION HISTORY

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1 INTRODUCTION

1.1 PURPOSE OF THE TEST PLAN DOCUMENT

The Test Plan document documents and tracks the necessary information required to effectively define the approach to be used in the testing of the project's product. The Test Plan document is created during the Planning Phase of the project. Its intended audience is the project manager, project team, and testing team. Some portions of this document may on occasion be shared with the client/user and other stakeholder whose input/approval into the testing process is needed.

2 COMPATIBILITY TESTING

2.1 TEST RISKS / ISSUES

Risk / Issue	Impact	Mitigation Strategy
App features behave differently across browsers	User experience may vary	Test early on all supported browsers (Chrome, Safari, Firefox, Edge)
Mobile OS permission differences	Camera/mic access may fail	Verify iOS and Android permissions on latest versions
Screen resolution /orientation issues	Layout or UI elements misaligned	Test responsive design and rotation scenarios
Browser cache or version conflicts	Broken UI or stale assets	Clear cache between tests; confirm version tags on builds

2.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
Cross-browser support	Verify app runs on Chrome, Safari, Firefox, and Edge	Nov 6	Jake
Cross-device support	Check UI and performance on Android, iOS, and desktop	Nov 6	Jake
Responsive layout	Ensure UI scales correctly on different resolutions/orientations	Nov 6	Jake
OS permission behavior	Validate microphone and camera prompts function properly	Nov 6	Jake
Font/UI scaling	Confirm consistent font and button sizes across devices	Nov 6	Jake

Not Tested (Out of Scope): Outdated browsers (e.g., Internet Explorer), smart TV or tablet devices > 13 inches.

2.3 TEST APPROACH(S)

- Perform manual and BrowserStack testing for browser/device coverage.
- Use Chrome DevTools for responsive layout simulation.

- Verify permission handling on real devices.
- Capture screenshots and record browser/device metadata for each test run.

2.4 TEST REGULATORY / MANDATE CRITERIA

- Comply with WCAG 2.1 AA accessibility standards.
- Follow Apple App Store and Google Play technical requirements for supported OS versions.
- Adhere to internal QA compatibility matrix for browser support.

2.5 TEST PASS / FAIL CRITERIA

Condition	Result
All targeted browsers/devices function properly with consistent UI	Pass
UI or function fails on one or more supported platforms	Fail
Minor cosmetic differences not impacting usability	Conditional Pass

2.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- Stable staging build available for test
- Device/browser matrix approved
- Access to BrowserStack and real devices ready

Exit Criteria:

- All target combinations tested and logged
- No high-severity defects remain open
- Compatibility report reviewed and signed off

2.7 TEST DELIVERABLES

- Compatibility Test Report (browser/device matrix results)
- Screenshot log per platform tested
- Defect list with environment details

2.8 TEST SUSPENSION / RESUMPTION CRITERIA

Condition	Action
Major UI or rendering failures across multiple platforms	Suspend testing until fix verified
Updated build available and validated	Resume testing

2.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- Tools: BrowserStack, Chrome DevTools, Android and iOS devices
- Hardware: Laptop + test phones with stable Wi-Fi
- Staffing: 1 QA tester (Jake)
- Training: Familiarity with responsive testing and mobile UI verification

3 CONFORMANCE TESTING

3.1 TEST RISKS / ISSUES

Risk / Issue	Impact	Mitigation Strategy
Privacy or security rules not followed	User data could be exposed or app rejected	Use checklists for privacy and security, and review settings before testing
Accessibility problems (screen reader or color contrast)	Some users may not be able to use the app	Run accessibility tools and test with a screen reader
Login (OAuth 2.0) setup issues	Users may not be able to sign in	Test each login option early and fix connection errors

3.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
Sign-in (OAuth2.0)	Make sure login works with Meta, Tiktok, and Email	Nov 6	Khadija
TLS Security	Confirm HTTPS and safe connections	Nov 6	Khadija
Privacy (CPA)	Test consent screen and delete-data request	Nov 6	Khadija
Accessibility	Run tool checks and screen reader test	Nov 6	Khadija
App Store Rules	Check privacy info and permissions	Nov 6	Khadija
Encryption	Check that user data is encrypted at rest	Nov 6	Khadija

NOT TESTED (OUT OF SCOPE OF THIS PHASE): ANALYTICS OR MARKETING FEATURES

3.3 TEST APPROACH(S)

- Follow checklists for privacy, security, and accessibility.
- Take screenshots as proof
- Log any issues found

3.4 TEST REGULATORY / MANDATE CRITERIA

- Colorado Privacy Act: Consent, data minimization, user deletion.

- Use safe connections (TLS) and encrypt data (AES-256).
- Meet accessibility rules (WCAG 2.1 AA, Section 508) so all users can use the app.
- Follow App Store and Google Play rules for privacy and permissions

3.5 TEST PASS / FAIL CRITERIA

Condition	Result
All required privacy, security, and accessibility checks pass	Pass
No high or critical issues found during testing	Pass
Any major privacy, security, or accessibility issue found	Fail
Missing proof or screenshots for required checks	Fail

3.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- App build is ready for testing
- Test accounts are created
- Privacy and security checklists are complete

Exit Criteria:

- All tests are finished
- All major issues are fixed or documented
- Test results and screenshots are saved

3.7 TEST DELIVERABLES

- Conformance checklist results
- Screenshots and scan reports
- Defect log
- Sign-off sheet

3.8 TEST SUSPENSION / RESUMPTION CRITERIA

Condition	Action
Major security or privacy issue found	Testing will be suspended
Issue fixed and verified	Testing will resume

3.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- Test on staging environment with HTTPS
- Use OAuth test accounts and AXE tool
- Laptop or phone with stable internet
- No special training needed - easy interface

4 FUNCTIONAL TESTING

4.1 TEST RISKS / ISSUES

Risk	Impact	Mitigation
Incorrect scoring logic or delayed score display	Users may lose trust in the results	Cross-check scoring module against known answer sets before release
Network interruption or server timeout	Player unable to complete quiz	Implement retry/reconnect options and pre-test stable Wi-Fi
Inconsistent UI across devices	Player confusion or misclicks	Test across IOS/Android and desktop browsers
Third-party service (AI/OAuth) unavailability	Host cannot create or players cannot log in	Provide fallback to cached quizzes and allow local play mode

4.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
Player/User Registration Limits (FT-BND-001)	Test boundary conditions: registering max allowed players, and exceeding max players triggers correct validation message.	Nov 6	Palmer
Text Field Input Limits	Verify character limits on username and quiz name fields: at max allowed limit and exceeding limit should prevent input and show error.	Nov 6	Palmer

Items Not Tested (out of scope):

- Analytics dashboards or long-term reporting
- Deep AI question generation validation
- Multi-language localization support

4.3 TEST APPROACH(S)

Black-box test cases derived from acceptance criteria; API spot checks via Postman; boundary tests (max players, long names, special characters); negative tests (invalid codes, expired sessions).

4.4 TEST REGULATORY / MANDATE CRITERIA

- Platform Compliance: Must pass Apple App Store and Google Play Store guidelines for mobile apps, including accurate metadata and no prohibited content.
- Privacy Compliance: Must adhere to the Colorado Privacy Act (CPA) - no unnecessary collection of personal data, encryption in transit, and transparent consent for account linking.
- Accessibility Compliance: App must meet Section 508/WCAG 2.1 AA accessibility standards (screen reader support, high-contrast UI).

4.5 TEST PASS / FAIL CRITERIA

All happy-path and priority alt-paths pass; no Sev-1/Sev-2 function defects open.

4.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- Function build deployed to test environment
- Valid test accounts and quiz datasets ready
- Required API keys for AI and OAuth available
- Smoke test of login and quiz load passes

Exit Criteria:

- All functional test cases executed
- All critical or high-priority defects resolved or deferred with sign-off
- Core gameplay and scoring verified on both mobile and browser platforms

4.7 TEST DELIVERABLES

Test case set and execution log; defect reports, demo gifs for tricky UX.

4.8 TEST SUSPENSION / RESUMPTION CRITERIA

Condition	Action
No crashes or unrecoverable errors across core flows	Pass
Scoring is correct for all golden test sets	Pass
Rejoin after timeout restores the correct session state	Pass
Latency within expectations	Pass
A crash, data loss, authentication bypass, or role/permission violation occurs	Fail
Latency thresholds are exceeded on two consecutive runs on a supported device	Fail

4.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- Environment: Laptop/phone with stable internet, staging server access, and seeded quiz data.
- Staffing: 1 QA for execution, 1 developer for support during bug fixing, optional observer for UX notes.
- Training: No formal training required - UI is intuitive; testers briefed on quiz creation and joining flow beforehand.

5 LOAD TESTING

5.1 TEST RISKS / ISSUES

Risk / Issue	Impact	Mitigation Strategy
Server may slow down under heavy load	Game might lag or freeze for users	User smaller test groups first and monitor system use
Network speed differences	Results may not show true performance	Run tests from stable Wi-Fi and repeat if needed
Too many requests at once	App may crash or show errors	Gradually increase users and monitor server response

5.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
Concurrent Users (20, 50, 100)	Check system performance with increasing numbers of players	Nov 6	Khadija
Score Display Speed	Measure time to show scores after players answer	Nov 6	Khadija
Rejoin After 30 Seconds	Make sure a player can rejoin within 30 seconds after a disconnection	Nov 6	Khadija
Boundary Limits	Test with the maximum allowed players (100) and slightly above to confirm the system handles limits correctly	Nov 6	Khadija

Not tested (out of scope): Analytics and background reports

5.3 TEST APPROACH(S)

- Use a load testing tool to simulate players joining and answering.
- Increase the number of players step by step
- Record response time, page load time, and errors
- Compare results with design goals

5.4 TEST REGULATORY / MANDATE CRITERIA

- No outside laws apply
- Follow internal goals for speed and reliability

5.5 TEST PASS / FAIL CRITERIA

Condition	Result
App loads within 1 second at 100 users	Pass
Scores show within 2 seconds	Pass
Players can rejoin within 30 seconds after dropping	Pass
App crashes or delays over limits	Fail

5.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- Test build is ready
- Game session and test accounts are set up
- Load scripts are prepared

Exit Criteria:

- All load tests completed
- Results recorded and targets met
- Issues fixed or logged for review

5.7 TEST DELIVERABLES

- Load test scripts and results
- Performance charts and logs
- Summary report with findings

5.8 TEST SUSPENSION / RESUMPTION CRITERIA

Condition	Action
Major system error or crash occurs	Testing will be suspended
Fix applied and build redeployed	Testing will resume

5.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- Use a staging environment with HTTPS enabled
- Laptop or PC with a good internet connection
- Load testing tool installed
- No special training needed - easy to run tests.

6 USER ACCEPTANCE TESTING

6.1 TEST RISKS / ISSUES

Risk / Issue	Impact	Mitigation Strategy
Users may not understand navigation or quiz flow	Could cause incomplete quizzes or frustration	Provide simple UI labels and tutorial prompts before testing
Incorrect scoring logic or delayed score display	Results may appear inaccurate, reducing trust	Test multiple quiz submissions with known correct answers before UAT
Network connectivity issues affecting quiz loading	User may not be able to start or complete quiz	Ensure stable Wi-Fi and allow a "Retry" button on load errors

6.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
User Login	Verify users can log in with valid credentials and error messages show for invalid attempts	11/06/25	Rana
Quiz Selection Page	Ensure quiz list loads and user can select a quiz	11/06/25	Rana
Quiz Taking Function	Verify questions display correctly and user can choose/submit answers	11/06/25	Rana
Score Calculation & Results Page	Confirm score displays instantly and accurately	11/06/25	Rana

Items Not Tested (out of scope):

- Admin dashboard for quiz creation
- Data analytics dashboard for user performance tracking

6.3 TEST APPROACH(S)

Testing will be conducted by simulating real end-user interaction.

The approach includes:

- Manual functional testing
- Black-box testing (no internal code review)
- Testing on both mobile and desktop browsers

6.4 TEST REGULATORY / MANDATE CRITERIA

No external regulatory mandates apply.

Internal requirement: Quiz score must display under 2 seconds after submission.

6.5 TEST PASS / FAIL CRITERIA

Condition	Result
User logs in successfully	Pass
Quiz loads without errors	Pass
User completes quiz and receives score	Pass
Score is correct based on expected answers	Pass
Any of the above fail	Fail

6.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- App deployed to test environment
- Test user accounts created
- Quiz questions are preloaded

Exit Criteria:

- All test steps completed
- All critical bugs resolved or assigned and documented

6.7 TEST DELIVERABLES

- Test Case execution results
- UAT Sign-off sheet
- Bug/Issue report (if applicable)

6.8 TEST SUSPENSION / RESUMPTION CRITERIA

Condition	Action
Major system failure or scoring defects occur	Testing will be suspended
Developers fix and re-deploy updated version	Testing will resume

6.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- Testing device: Laptop or phone with browser access
- Stable internet connection
- No special training required — interface is user-friendly

7 REGRESSION TESTING

7.1 TEST RISKS / ISSUES

Risk / Issue	Impact	Mitigation Strategy
New feature deployment breaks existing quiz functions	Existing features may stop working after updates, disrupting gameplay.	Maintain a regression suite and run full retests after each new release.
API response or data schema changes in MongoDB	Inconsistent or missing data could cause errors during quiz sessions.	Use mock API testing and schema validation before deployment.
Authentication updates (OAuth 2.0) cause login failures.	Users may not be able to sign in or reconnect to games.	Re-test all login methods after backend changes, validate tokens and refresh flow.

7.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
User Login	Confirm login functions properly after feature updates	11/07/25	Katira
Game Join/Leave	Validate player joining and leaving sessions works consistently	11/07/25	Katira
Leaderboard Sync	Verify leaderboard accuracy after multiple concurrent submissions	11/07/25	Katira
AI Question Integration	Ensure question generation continues functioning post-deployment	11/07/25	Katira

Items not tested:

- External API rate limits
- Marketing analytics dashboard

7.3 TEST APPROACH(S)

Regression testing will be conducted after every sprint deployment using automated and manual methods:

- **Automated:** Selenium and Postman regression scripts for login, join, and leaderboard modules.
- **Manual:** Exploratory testing of AI question generation and database integrity via MongoDB Atlas.
- **Frequency:** Before every major release or version update.

7.4 TEST REGULATORY / MANDATE CRITERIA

- Must comply with OWASP ASVS to ensure no security regressions in authentication modules.
- Must maintain accessibility per WCAG 2.1 AA after UI changes.

7.5 TEST PASS / FAIL CRITERIA

Condition	Result
Core features perform as in prior build	Pass
No new critical or high-severity defects introduced	Pass
Functionality degradation or crash observed	Fail

7.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- Previous release fully deployed
- Test environment stable

Exit Criteria:

- All high-priority test cases executed
- No open critical defects

7.7 TEST DELIVERABLES

- Regression Test Report
- Updated Defect Log
- Verification of Fix Summary Document

7.8 TEST SUSPENSION / RESUMPTION CRITERIA

Testing is suspended if:

- Build deployment fails or critical bugs prevent execution

Resumed once:

- Patches are deployed and verified by QA

7.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- **Test Environment:** Staging build of Quizically mobile+backend server
- **Tools:** Selenium, Postman, MongoDB Atlas, JIRA
- **Training:** QA team familiar with REST API endpoints and OAuth 2.0 authentication flow

8 STRESS TESTING

8.1 TEST RISKS / ISSUES

Risk	Impact	Mitigation
Too many simultaneous joins cause slowdowns	Users experience lag or timeout when joining	Limit bursts to 50 players; monitor server response; adjust caching
Database connection overload	Game may freeze or crash	Use short-duration tests and staged joins
Inaccurate leaderboard updates under load	Players see inconsistent scores	Compare results after load test to known expected scores
Limited testing tools or hardware	Cannot accurately simulate full load	Use browser tabs or local scripts to simulate multiple players

8.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
Host session stability	Verify host can create and start a quiz that remains active during a burst of joins	Nov 6	Palmer
Join flow under burst	Simulate ~50 players joining in 30-45 seconds; confirm all joins succeed and app remains responsive	Nov 6	Palmer
Concurrent answer submission	All 40-50 players submit answers simultaneously; ensure submissions recorded without errors	Nov 6	Palmer
Leaderboard updates	Verify leaderboard updates in real time with correct ordering and totals during burst and mini-soak	Nov 6	Palmer
Client recovery	After induced overload or network toggle, verify affected client can rejoin within 30 seconds and retain state	Nov 6	Palmer
UI responsiveness	Ensure no app freezes or crashes during burst testing; buttons and navigation remain functional	Nov 6	Palmer

Items Not Tested (out of scope):

- Extended soak tests or long-term reliability testing
- Cloud scaling or multi-region fault tolerance
- Advanced chaos or failure injection beyond basic network toggles

8.3 TEST APPROACH(S)

- **Burst:** Simulate ~50 players joining within 30-45 seconds, then rapid submission for 2 rounds.
- **Mini-soak:** 5 minutes at ~40 active players cycling through one full quiz.
- **No fault injection:** only basic network toggle on a single device to confirm rejoin

works.

8.4 TEST REGULATORY / MANDATE CRITERIA

Internal compliance:

- App must remain responsive during short high-activity periods.
- Latency and response behavior must meet the design's performance KPIs
- Must preserve privacy - no personal data exposed in load logs.

8.5 TEST PASS / FAIL CRITERIA

Condition	Result
Application remains stable (no crashes/critical errors)	Pass
Leaderboard and scoring remain accurate under burst conditions	Pass
Recovery time after brief overload ≤ 30 seconds	Pass
Error rate ≤ 2% (timeouts or retries)	Pass
System crash, hang, or unrecoverable errors occur	Fail
Scores or data become inconsistent	Fail
Error rate > 5% or recovery time exceeds 30 seconds	Fail

8.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- Staging environment deployed and configured
- Functional testing completed with no critical defects
- Load simulation setup ready

Exit Criteria:

- All stress tests executed
- All critical issues logged, with at least one retest confirming recovery
- Summary results documented and shared with team

8.7 TEST DELIVERABLES

Short run log (start/end times, approximate users), screenshots of leaderboard, defect list if any.

8.8 TEST SUSPENSION / RESUMPTION CRITERIA

Condition	Action
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Server crash or connection failure	Suspend testing; notify developer
Response time exceeds 10 seconds for multiple users	Pause test to avoid cascading failures
Resume Testing	After Fix deployed and verified via smoke test

8.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

Environmental: Staging backend, seeded data, at least one host device and 2-3 player devices, stable Wi-Fi

Staffing: One tester to monitor results, one developer to observe backend performance

Training: 10-15 min walkthrough of stress test setup; no special training required

9 SYSTEM TESTING

9.1 TEST RISKS / ISSUES

Risk / Issue	Impact	Mitigation Strategy
Integration failures between Host and Player apps	Real-time interactions (score updates) may not sync correctly.	Perform end-to-end testing with both Host and Player roles in the same session.
Network latency or unstable connections during live sessions	Game delays or disconnections could affect user experience.	Simulate varied network conditions using throttling tools and monitor stability.
Data synchronization between backend server and database fails	Scores or quiz results may not be stored correctly.	Validate database updates in MongoDB and monitor server logs for data loss.

9.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
Host-Player Interaction	Test end-to-end flow from host game creation to player submission	11/08/25	Katira
Database Sync	Validate MongoDB updates (game sessions, scores) in real-time	11/08/25	Katira
Communication Architecture	Ensure API calls between mobile clients and server remain stable	11/08/25	Katira
Security Architecture	Verify OAuth 2.0 and data encryption operate correctly	11/08/25	Katira

Items not Tested:

- Long-term analytics storage

- Marketing integrations

9.3 TEST APPROACH(S)

System testing validates the end-to-end integration of all components:

- **Type:** Black-box and end-to-end scenario testing
- **Focus:** Functional workflows, performance, and data integrity
- **Tools:** Postman for API validation, browser dev tools for latency, JMeter for throughput testing

9.4 TEST REGULATORY / MANDATE CRITERIA

- Ensure compliance with Colorado Privacy Act (CPA) and WCAG 2.1 AA
- Security validation per OWASP ASVS standards

9.5 TEST PASS / FAIL CRITERIA

Condition	Result
System handles 100 concurrent players	Pass
Host and Player interactions sync without delay	Pass
Any core feature fails or response >2 seconds	Fail

9.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- Integration build completed
- API endpoints validated

Exit Criteria:

- All modules verified
- No open severity 1 or 2 defects remain

9.7 TEST DELIVERABLES

- System Test Summary Report
- End-to-End Integration Logs
- API response Consistency Report

9.8 TEST SUSPENSION / RESUMPTION CRITERIA

Testing will pause if:

- System crashes during multiplayer sessions

Resume once:

- Backend logs confirm issue resolution

9.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- **Environment:** Full production-like staging setup
- **Tools:** JMeter, Postman, AWS Cloud Monitor
- **Staff:** 1 QA Engineer, 1 DevOps support for server monitoring
- No additional training required beyond API and database familiarity

10 UNIT TESTING

10.1 TEST RISKS / ISSUES

Risk / Issue	Impact	Mitigation Strategy
Low unit test coverage	Hidden defects may pass to later stages	Require ≥ 80 % coverage and automated CI runs
Incorrect mocks or dependencies	False results in tests	Use reliable mock/stub frameworks
Rapid feature changes break tests	Delays in validation	Update tests each commit cycle
Unfamiliarity with testing tools	Inconsistent test implementation	Provide short training on PyTest and Jest

10.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
Scoring Function	Validate correct score calculation for known answers	Nov 6	Jake
User Authentication	Ensure valid login and error handling for invalid attempts	Nov 6	Jake
Database CRUD Operations	Test insert/update/delete via mocked DB connections	Nov 6	Jake
Quiz Generation Logic	Confirm question randomization and pool selection	Nov 6	Jake
API Data Parsing	Verify JSON response parsing and error handling	Nov 6	Jake
Player Registration Limit	Unit test function enforcing maximum players; verify proper rejection when exceeded.	Nov 6	Jake

Not Tested: Full integration with live APIs or external services (covered in system testing).

10.3 TEST APPROACH(S)

- Unit tests will be written using Python unittest / PyTest and JavaScript Jest.
- Mocks and stubs used for API and DB calls.
- Automated runs executed in CI/CD pipeline before each merge.
- Failed cases reviewed and logged in JIRA.

10.4 TEST REGULATORY / MANDATE CRITERIA

- Internal requirement: $\geq 80\%$ coverage on core modules.
- Comply with OWASP ASVS security coding guidelines.
- All test code must follow project coding standards.

10.5 TEST PASS / FAIL CRITERIA

Condition	Result
All unit tests pass with expected outputs	Pass
Any critical function test fails	Fail
Coverage below 80%	Fail

10.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- Development complete and code committed to repository
- Testing framework configured in CI/CD environment

Exit Criteria:

- All critical modules tested with $\geq 80\%$ coverage
- All failures resolved or documented for next sprint

10.7 TEST DELIVERABLES

- Unit Test Summary Report (coverage and results)
- CI/CD pipeline logs
- Updated test case repository

10.8 TEST SUSPENSION / RESUMPTION CRITERIA

Condition	Action
Multiple critical unit failures due to regressions	Suspend testing and notify developers
Patches applied and build stable	Resume testing

10.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- Environment: Local development machines + CI/CD pipeline
- Tools: PyTest, unittest, Jest, coverage.py, GitHub Actions or Jenkins
- Staffing: Developers conduct tests; QA verifies coverage and results
- Training: Brief tutorial on test framework use and naming conventions

11 PERFORMANCE TESTING

11.1 TEST RISKS / ISSUES

Risk / Issue	Impact	Mitigation Strategy
App response slows with multiple users	Could affect score display speed	Conduct load test with simulated concurrent users
Large quiz datasets may increase page load time	User may think the app is broken	Implement caching and pre-fetch quiz metadata

11.2 ITEMS TO BE TESTED / NOT TESTED

Item to Test	Test Description	Test Date	Responsibility
Page Load Time	Measure time to load Quiz List page	11/06/25	Rana
Quiz Submission Time	Measure time from submitting quiz to score display	11/06/25	Rana
Concurrent User Load	Test app responsiveness with multiple users	11/06/25	Rana

Not Tested:

- Backend analytics batch processing

11.3 TEST APPROACH(S)

- Use simulated load testing with multiple parallel sessions
- Measure performance thresholds under 5, 10, and 20 concurrent users
- Manual stopwatch + browser performance tools

11.4 TEST REGULATORY / MANDATE CRITERIA

No external regulatory standards required.

Internal requirement: Score display time **must be under 2 seconds**.

11.5 TEST PASS / FAIL CRITERIA

Metric	Pass Threshold	Result
Quiz List Load Time	Under 3 seconds	Pass
Quiz Submission Response	Under 2 seconds	Pass
App Responsiveness During 20 Users	No crashing or major delays	Pass

11.6 TEST ENTRY / EXIT CRITERIA

Entry Criteria:

- Stable build deployed
- Performance monitoring tools enabled

Exit Criteria:

- All tests performed
- Performance meets required thresholds

11.7 TEST DELIVERABLES

- Load testing results summary
- Performance timing charts/screenshots
- Recommendations for optimization (if needed)

11.8 TEST SUSPENSION / RESUMPTION CRITERIA

- Suspend testing if system crashes or response time exceeds 10 seconds
- Resume once developers fix performance bottlenecks

11.9 TEST ENVIRONMENTAL / STAFFING / TRAINING NEEDS

- Access to staging server
- Browser developer tools (Chrome DevTools)
- No special training needed beyond basic usage

TEST PLAN APPROVAL

The undersigned acknowledge they have reviewed the Quizically Test Plan document and agree with the approach it presents. Any changes to this Requirements Definition will be coordinated with and approved by the undersigned or their designated representatives.

Signature: *Khadija Warraich* Date: 11/7/2025
Print Name: Khadija Warraich
Title: Project Manager
Role: Student

Signature: *Cecilia Newell* Date: 11/7/2025
Print Name: Cecilia Newell
Title: Sponsor
Role: Professor

Appendix A: References

The following table summarizes the documents referenced in this document.

Document Name and Version	Description	Location
Product Design Specification 1.0	The Product Design Specification outlines the technical and functional design for a multiplayer quiz web application. It defines system requirements, user flows, and performance targets.	 Team10ProductDesign