

QA Testing Principles for Frontend & Backend

1. Input Validation Principles

- Test valid inputs.
- Test empty values, null values, and missing fields.
- Test incorrect data types.
- Test special characters and emojis.
- Test extremely long inputs and leading/trailing spaces.

2. Empty State Testing

- Verify UI behavior when no data exists.
- Ensure meaningful empty-state messages.
- Confirm loading and error states are handled.
- Avoid blank screens or broken layouts.

3. Boundary Value Testing

- Test minimum allowed values.
- Test maximum allowed values.
- Test just below and above boundaries.

4. API / Backend Response Testing

- Validate correct HTTP status codes.
- Verify response structure and schema.
- Test success and failure responses.
- Ensure proper error handling.

5. Error Handling

- Ensure user-friendly error messages.
- Prevent technical stack traces in UI.
- Verify retry or fallback mechanisms.

6. Loading State Testing

- Verify loading indicators appear.
- Prevent duplicate submissions.
- Ensure UI elements are disabled during processing.

7. State Transition Testing

- Loading → Success state.

- Loading → Error state.
- Empty → Data populated.

8. Permission and Authorization

- Verify role-based access control.
- Test unauthorized access attempts.
- Ensure backend enforces permission checks.

9. Data Consistency Testing

- Ensure frontend data matches backend responses.
- Verify updates propagate correctly across systems.

10. Performance Edge Cases

- Test large datasets.
- Test slow network conditions.
- Test concurrent users or actions.

11. Security Basics

- Test XSS and injection vulnerabilities.
- Verify authentication flows.
- Check token expiration and sensitive data exposure.

12. UI/UX Consistency

- Verify consistent styling and layout.
- Test responsive behavior on different devices.
- Check button states and accessibility.

13. Regression Testing

- Ensure bug fixes do not break existing features.
- Retest related workflows and integrations.

14. Negative Testing

- Attempt invalid inputs and actions.
- Test invalid file uploads or malformed requests.

15. Observability Testing

- Verify logging of important events and errors.
- Ensure monitoring and traceability.

16. Cross Environment Testing

- Test across browsers (Chrome, Firefox, Safari, Edge).
- Test across devices and operating systems.
- Test various network conditions.