QuickShift Test Plan

Part I: Description of Overall Test Plan

Our approach to testing QuickShift includes **unit testing, integration testing, functional testing, and performance testing** to ensure the system's reliability and efficiency.

1. **Frontend Testing (React + TypeScript)**
   - **Unit tests** for individual components (e.g., buttons, forms, modals).
   - **Integration tests** for major user flows (e.g., logging in, accepting shifts).
   - **End-to-end tests** to verify full workflows (e.g., from shift posting to worker payment).
2. **Backend Testing (Node.js + TypeScript)**
   - **API tests** to validate endpoints.
   - **Database tests** to ensure correct data storage/retrieval.
   - **Security tests** to prevent unauthorized access.
   - **Performance tests** to handle high request loads.
3. **System Testing**
   - Ensuring smooth communication between frontend and backend.
   - Simulating high user traffic to detect system bottlenecks.

Part II: Test Case Descriptions

User Authentication Tests

TC-01: Successful User Login

- **Purpose**: Verify valid users can log in.
- **Description**: A user enters valid credentials.
- **Inputs**: Correct email and password.
- **Expected Output**: User is redirected to dashboard.
- **Test Type**: Normal | Blackbox | Functional | Unit

TC-02: Failed User Login (Invalid Password)

- **Purpose**: Prevent access with incorrect credentials.
- **Description**: A user enters an incorrect password.
- **Inputs**: Correct email, wrong password.
- **Expected Output**: Error message "Invalid credentials."
- **Test Type**: Abnormal | Blackbox | Functional | Unit

TC-03: Session Timeout

- **Purpose**: Ensure users are logged out after inactivity.
- **Description**: User stays idle for 30 minutes.
- **Inputs**: Inactive session.
- **Expected Output**: User is logged out and redirected to login.
- **Test Type**: Normal | Blackbox | Functional | Integration

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Shift Request Tests

TC-04: Creating a New Shift Request

- **Purpose**: Verify restaurants can post shifts.
- **Description**: A restaurant submits a shift request.
- **Inputs**: Shift details (time, role, wage, location).
- **Expected Output**: Shift appears in available jobs.
- **Test Type**: Normal | Blackbox | Functional | Unit

TC-05: Worker Accepts a Shift

- **Purpose**: Ensure shift acceptance updates correctly.
- **Description**: Worker selects a shift and clicks "Accept."
- **Inputs**: Worker selection.
- **Expected Output**: Shift marked as "Assigned."
- **Test Type**: Normal | Blackbox | Functional | Integration

TC-06: Shift Cancellation by Restaurant

- **Purpose**: Verify restaurants can cancel shifts.
- **Description**: Restaurant clicks "Cancel Shift."
- **Inputs**: Shift ID.
- **Expected Output**: Shift is removed from the list.
- **Test Type**: Normal | Blackbox | Functional | Integration

TC-07: Shift Cancellation by Worker

- **Purpose**: Ensure workers can withdraw from shifts before a deadline.
- **Description**: Worker clicks "Cancel Shift."
- **Inputs**: Worker ID, Shift ID.
- **Expected Output**: Shift status updated to "Available."
- **Test Type**: Normal | Blackbox | Functional | Integration

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Payment Processing Tests

TC-08: Worker Receives Payment

- **Purpose**: Ensure completed shifts trigger payment.
- **Description**: Worker completes a shift.
- **Inputs**: Shift ID, worker ID.
- **Expected Output**: Payment is processed.
- **Test Type**: Normal | Blackbox | Functional | Integration

TC-09: Failed Payment Handling

- **Purpose**: Ensure the system handles payment failures.
- **Description**: Simulate a failed transaction.
- **Inputs**: Invalid bank details.
- **Expected Output**: Error message, retry option.
- **Test Type**: Abnormal | Blackbox | Functional | Integration

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Frontend UI Tests

TC-10: Mobile Responsiveness

- **Purpose**: Verify UI scales correctly on different devices.
- **Description**: Open the app on mobile and desktop.
- **Inputs**: Various screen sizes.
- **Expected Output**: Proper UI rendering.
- **Test Type**: Normal | Blackbox | Functional | Unit

TC-11: Shift Filtering

- **Purpose**: Ensure shift search filters work.
- **Description**: Apply filters (location, role, pay).
- **Inputs**: Filter criteria.
- **Expected Output**: Filtered shifts display.
- **Test Type**: Normal | Blackbox | Functional | Unit

TC-12: Dark Mode Toggle

- **Purpose**: Verify dark mode functionality.
- **Description**: User enables dark mode.
- **Inputs**: Click "Dark Mode" toggle.
- **Expected Output**: UI switches to dark theme.
- **Test Type**: Normal | Blackbox | Functional | Unit

Backend API & Security Tests

TC-13: Unauthorized API Access

- **Purpose**: Ensure only authenticated users access protected routes.
- **Description**: Try accessing an endpoint without login.
- **Inputs**: API request without token.
- **Expected Output**: 401 Unauthorized error.
- **Test Type**: Abnormal | Blackbox | Security | Unit

TC-14: SQL Injection Prevention

- **Purpose**: Ensure API is secure against SQL injection.
- **Description**: Send malicious query.
- **Inputs**: ' OR '1'='1';-- as input.
- **Expected Output**: Query rejected, no data breach.
- **Test Type**: Abnormal | Whitebox | Security | Unit

Performance & Load Testing

TC-15: High Load Test (Shift Requests)

- **Purpose**: Ensure API handles large traffic.
- **Description**: Simulate 1000+ shift postings in a short time.
- **Inputs**: API stress test.
- **Expected Output**: No crashes, low latency.
- **Test Type**: Normal | Blackbox | Performance | Integration

TC-16: Concurrent Worker Selections

- **Purpose**: Ensure multiple workers selecting shifts doesn't cause conflicts.
- **Description**: Simulate 500 workers claiming shifts.
- **Inputs**: API requests.
- **Expected Output**: Shifts assigned correctly.
- **Test Type**: Normal | Blackbox | Performance | Integration

TC-17: Database Scalability

- **Purpose**: Ensure database performance with large datasets.
- **Description**: Load test with 1M+ shifts and users.
- **Inputs**: Large database.
- **Expected Output**: Queries execute under 200ms.

● **Test Type**: Normal | Blackbox | Performance | Integration

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Part III: Test Case Matrix

Test ID	Case Type	Test Type	Functional/Performance	Unit/Integration
TC-01	Normal	Blackbox	Functional	Unit
TC-02	Abnormal	Blackbox	Functional	Unit
TC-03	Normal	Blackbox	Functional	Integration
TC-04	Normal	Blackbox	Functional	Unit
TC-05	Normal	Blackbox	Functional	Integration
TC-06	Normal	Blackbox	Functional	Integration
TC-07	Normal	Blackbox	Functional	Integration
TC-08	Normal	Blackbox	Functional	Integration
TC-09	Abnormal	Blackbox	Functional	Integration
TC-10	Normal	Blackbox	Functional	Unit
TC-11	Normal	Blackbox	Functional	Unit
TC-12	Normal	Blackbox	Functional	Unit
TC-13	Abnormal	Blackbox	Security	Unit
TC-14	Abnormal	Whitebox	Security	Unit
TC-15	Normal	Blackbox	Performance	Integration
TC-16	Normal	Blackbox	Performance	Integration
TC-17	Normal	Blackbox	Performance	Integration