

Testing Phase

2. Test Cases for Backend

| TEST CASE ID | DESCRIPTION |
|--------------|---|
| TC-01 | Validate posting of a trading signal with valid trader authentication and valid input ranges. |
| TC-02 | Validate viewing of a private signal without an active subscription. |
| TC-03 | Validate closing of a trading signal by the correct owner while it is still open. |
| TC-04 | Validate consensus update when multiple signals exist for the same symbol within 48 hours. |
| TC-05 | Validate leaderboard recalculation updates trader KPIs correctly. |
| TC-06 | Validate subscription activation after receiving a successful payment webhook. |
| TC-07 | Validate market data ETL updates open signals when price target is hit. |
| TC-08 | Validate engagement by liking a signal twice (should toggle like). |
| TC-09 | Validate notification fan-out when a trader posts a new signal. |
| TC-10 | Validate admin blocking of a user account. |
| TC-11 | Validate system enforces rate limiting when too many requests are made in short time. |

DETAILED TABLE:

| TC-ID | INPUTS(s) | EXPECTED OUTPUT | RESULT |
|-------|--|--|--------|
| TC-01 | trader_id=101, symbol="BTCUSD", buyFrom=30000, buyTo=30500, stopLoss=29500 | Signal created successfully with status "Open", confirmation returned, notifications sent. | Pass |
| TC-02 | requester_id=202 (not owner, no subscription), | Error: 403 Forbidden – Subscription required. | Pass |

| | | | |
|-------|--|---|------|
| | signal_id=501 (private) | | |
| TC-03 | trader_id=101 (owner), signal_id=501 (status="Open") | Signal closed successfully, outcome computed, trader KPIs updated. | Pass |
| TC-04 | 3 signals posted for symbol="AAPL" within 48h window | Consensus group updated, consensus flag set if threshold met. | Pass |
| TC-05 | Trader 101 has 10 closed signals with varying outcomes | Leaderboard recalculated, KPIs updated (successRate, avgReturn). | Pass |
| TC-06 | sub_id=301, webhook_event="payment.succeeded", paymentId=555 | Subscription set to "Active", start/end dates recorded, notification sent. | Pass |
| TC-07 | Market price feed update: BTCUSD=31000 (target crossed for signal_id=601) | Signal target marked hit, notification sent to trader and followers. | Pass |
| TC-08 | user_id=202 likes signal_id=501 twice | First action adds like, second action toggles (removes like). | Pass |
| TC-09 | trader_id=101 posts new signal for ETHUSD | Notifications fan-out to followers/watchlist users, a sync delivery queued. | Pass |
| TC-10 | admin_id=900 executes POST /admin/users/202/block | User 202 blocked successfully, audit log entry created. | Pass |
| TC-11 | user_id=303 sends 50 requests in <10 seconds | Error: 429 Too Many Requests, request throttled. | Pass |

2. Test Cases for Frontend

User Signup Flow

| Test Case | Input | Expected Output |
|-------------------------|----------------------------------|--|
| TC1 – Empty fields | email="", password="" | Error message: "Email and password required" |
| TC2 – Invalid email | email="abc", password="Pass123!" | Error message: "Invalid email format" |
| TC3 – Successful signup | Valid email & password | Success message, redirect to login page |

User Login Flow

| Test Case | Input | Expected Output |
|-------------------------|-----------------------------------|------------------------------------|
| TC4 – Empty credentials | email="", password="" | Error message: "Fields required" |
| TC5 – Wrong password | email=validUser, password="wrong" | Error message: "Invalid password" |
| TC6 – Valid login | Correct credentials | Token stored, redirect to /signals |

Post Signal (Trader)

| Test Case | Input | Expected Output |
|-------------------------|---|--|
| TC7 – Unauthorized user | User role=User, tries to post signal | Error: "Only traders can post signals" |
| TC8 – Missing fields | symbol="", price range empty | Error message |
| TC9 – Valid signal | symbol="AAPL", trend="Buy", price range valid | "Signal Posted" notification, list refresh |

Like/Unlike Signal

| Test Case | Input | Expected Output |
|---------------------------|-----------------------------------|---------------------------|
| TC10 – Like without login | user=null | Error: "Login required" |
| TC11 – Toggle like | Logged in user clicks Like | Like count increases by 1 |
| TC12 – Unlike | Already liked signal, click again | Like count decreases by 1 |

| Test Case | Input | Expected Output |
|-----------|-------|-----------------|
| | | 1 |

Subscribe to Trader

| Test Case | Input | Expected Output |
|---------------------------|--|-----------------------------|
| TC13 – No login | user=null, planId=123 | Redirect to login |
| TC14 – Valid subscription | Logged in, traderId valid, plan selected | Redirect to payment gateway |
| TC15 – Payment success | Payment success webhook received | Subscription active |

Tools & Frameworks

- **Jest + React Testing Library** → Unit & integration tests
- **Cypress** → End-to-end UI testing
- **Postman/Newman** → Test API responses used in frontend
- **BrowserStack / Responsively App** → Cross-browser, cross-device testing