# Testing Template

# User + Performance Test

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| --- | --- |
| Date | 25 March 2025 |
| Team ID | SWTID1743347281 |
| Project Name | Book Store |
| Maximum Marks | 10 |

# 1. Load Testing Scenarios

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| --- | --- | --- | --- | --- | --- |
| Test Case ID | Scenario | Virtual Users | Duration | Expected Throughput (req/sec) | Error Rate Threshold |
| LT-01 | User Login Load | 100 | 15 min | ≥ 40 | < 1% |
| LT-02 | Book Search by Users | 75 | 10 min | ≥ 35 | < 0.5% |
| LT-03 | Book Purchase | 50 | 10 min | ≥ 20 | < 1% |
| LT-04 | Check Balance | 60 | 10 min | ≥ 25 | < 0.2% |
| LT-05 | Admin Add/Delete Book | 20 | 10 min | ≥ 10 | < 0.5% |

# 2. Stress Testing Metrics

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| --- | --- | --- | --- | --- | --- |
| Test Case ID | Scenario | Breakpoint Metric | CPU Usage Threshold | Memory Usage Threshold | Recovery Time |
| ST-01 | High Login Attempts | 500 concurrent logins | ≤ 80% | ≤ 75% | < 2 min |
| ST-02 | Mass Book Purchases | 800 purchase attempts/min | ≤ 85% | ≤ 80% | < 3 min |
| ST-03 | Admin Bulk Operations | 300 book operations in batch | ≤ 90% | ≤ 85% | < 5 min |

# 3. Endurance Testing (Soak Test)

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| --- | --- | --- | --- | --- |
| Test Case ID | Scenario | Duration | Memory Leak Threshold | Throughput Degradation |
| ET-01 | User Search and Browse | 8 hours | ≤ 5% increase | ≤ 10% drop |
| ET-02 | Continuous Book Purchases | 12 hours | ≤ 3% increase | ≤ 5% drop |
| ET-03 | Admin Activity | 10 hours | ≤ 4% increase | ≤ 7% drop |

# 4. API Performance Benchmarks

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| --- | --- | --- | --- |
| API Endpoint | 90th Percentile Latency (ms) | Max Latency (ms) | Success Rate |
| POST /api/login | 200 | 500 | ≥ 99.5% |
| GET /api/books/search | 250 | 600 | ≥ 99% |
| POST /api/purchase | 400 | 1000 | ≥ 98% |
| GET /api/balance | 200 | 500 | ≥ 99.5% |
| POST /api/admin/addBook | 300 | 800 | ≥ 98.5% |
| DELETE /api/admin/book/:id | 350 | 900 | ≥ 98.5% |
| GET /api/admin/popular | 300 | 700 | ≥ 99% |

# 5. Infrastructure Monitoring

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| --- | --- | --- | --- |
| Metric | Normal Range | Alert Threshold | Tool |
| CPU Usage | 20-60% | > 80% | AWS CloudWatch |
| Memory Usage | 40-70% | > 85% | New Relic |
| MongoDB Connections | 50-150 | > 200 | MongoDB Atlas |
| Network Latency | 50-150ms | > 300ms | Pingdom |
| Disk I/O | < 70 MB/sec | > 120 MB/sec | Datadog |

# 6. Key Performance Indicators (KPIs)

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| --- | --- | --- |
| KPI | Target Value | Measurement Interval |
| Page Load Time (Login) | < 2 sec | Per deployment |
| Book Purchase Error Rate | < 0.5% | Hourly |
| Concurrent Active Users | Up to 1,000 | Peak hours |
| Popular Book Stats Accuracy | ≥ 98% | Daily |
| Balance Accuracy Post-Purchase | 100% | Per transaction |