Performance Testing Phase

Performance Testing

Date	01-11-2025
Team ID	NM2025TMID08208
Project Name	**Garage Management System**

1. Introduction

Objective:

Performance testing ensures that the Garage Management System (GMS) performs reliably, efficiently, and accurately under various operational conditions. In automobile service centers, slow or unstable systems can lead to delays, billing errors, or customer dissatisfaction. Therefore, testing is essential to guarantee system stability, scalability, and responsiveness.

Key Goals of Performance Testing:

- Validate system response time for real-time operations.
- Ensure scalability for multiple users and large service datasets.
- Measure data accuracy and reliability under load.
- Identify potential bottlenecks and optimize system performance.

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Scope:

Testing focuses on critical functions of GMS:

1. Real-time service and appointment updates
2. Billing and feedback management
3. Mechanic performance tracking
4. Customer record operations
5. Reporting and analytics

2. Types of Performance Testing

Testing Type	Purpose	Scenario Example
Load Testing	Evaluate system under expected user load	50 users simultaneously updating service records and generating bills
Stress Testing	Test system beyond normal capacity	200 users accessing dashboards during peak hours
Endurance Testing	Check system stability over time	24-hour continuous use of service scheduling and billing
Spike Testing	Test sudden surge in traffic	Sudden 50% increase in customer service entries
Scalability Testing	Assess system growth handling	Adding 1000+ new customer and vehicle records
Latency Testing	Measure response time	Fetching billing or vehicle data in less than 2 seconds

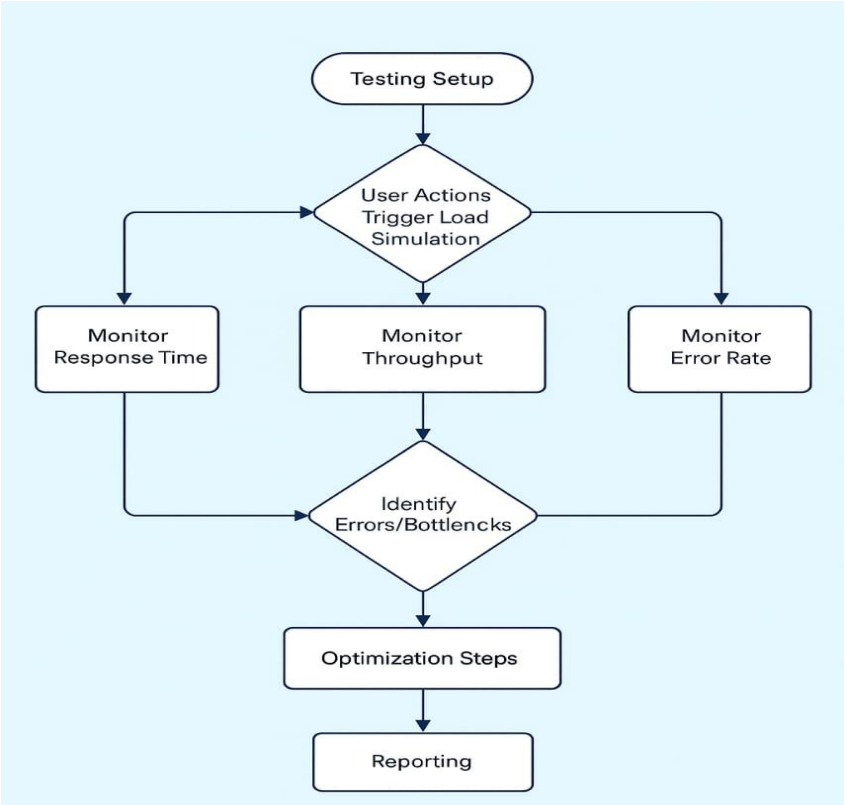

Figure 1: GMS Performance Testing Setup

3. Performance Metrics

Critical Metrics to Measure:

1. Response Time

Average time to fetch or update service data.
Expected benchmark: Less than 2 seconds per query.

2. Throughput

Number of service records processed per second.
Example: 100 billing operations processed per minute without delay.

3. Error Rate

Percentage of failed operations under load.
Target: Less than 1% failure rate.

4. Resource Utilization

CPU, memory, and database usage under load.
Aim: Balanced usage to prevent system slowdown or crashes.

5. Scalability

System must handle increasing customers, vehicles, and service requests without performance degradation.

6. Data Accuracy

All billing, feedback, and service details must remain accurate under concurrent usage.

4. Testing Workflows and Scenarios

Example Scenario:

- 50 users simultaneously update service records, schedule appointments, and generate reports.
- Measure response time and identify any bottlenecks in Salesforce Apex classes or database queries.

Expected Outcome:

- All dashboards and operations respond within **2 seconds**.
- No data loss or errors in service, vehicle, or billing records.

5. Conclusion

Performance testing ensures that the **Garage Management System (GMS):**

- Handles high concurrent users efficiently.
- Maintains real-time service and billing data accuracy.
- Generates dashboards and reports without delay.
- Scales effectively as the organization expands.

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