Lead Management & Task Tracking System
Phase 5: Apex Programming (Developer)

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1. Introduction

This phase focuses on implementing **custom business logic** using Apex to automate lead management, task assignment, and tracking processes that cannot be handled solely by declarative tools (Flows, Process Builder). Apex ensures scalability, bulk processing, and integration capabilities.

Objectives:

Automate complex lead and task workflows.

- Ensure scalability and bulk processing.

- Provide asynchronous processing for heavy operations.

- Maintain data integrity and system reliability.

2. Classes & Objects

- Apex classes provide reusable logic for lead and task operations.

Example:

```
public class LeadService {

    public static void updateLeadStatus(Id leadId, String status) {

            Lead l = [SELECT Id, Status FROM Lead WHERE Id = :leadId];

        l.Status = status;

        update l;

    }

}
```

Deliverable:

- Classes to handle lead status updates, task creation, and assignment rules.

3. Apex Triggers (before/after insert/update/delete)

- **Before triggers:** Validate lead and task data before saving.

- **After triggers:** Perform automated actions like task creation after a lead is inserted or updated.

Example:

- After a new lead is inserted → automatically assign a follow-up task to the owner.

4. Trigger Design Pattern

- One trigger per object.

- Delegate logic to a handler class for better maintainability and bulkification.

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5. SOQL & SOSL

- **SOQL:** Query Salesforce records efficiently.

- **SOSL:** Search across multiple objects.

Examples:

- SOQL: Get all open leads assigned to a sales rep.

- SOSL: Search leads by name, email, or company.

6. Collections: List, Set, Map

- **List:** Store multiple leads for batch processing.

- **Set:** Prevent duplicate task assignments.

- **Map:** Map lead IDs to their assigned sales reps.

7. Control Statements

- Use if-else, loops, and switch-case to manage dynamic workflows.

Example:

- Assign high-priority leads automatically to senior sales reps.

8. Batch Apex

- Handle large volumes of records (e.g., bulk updating lead statuses).

- Batch jobs for bulk lead updates or task reassignments.