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

## 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.

## 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.