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## Phase 5: Apex Programming (Developer)

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### 2. Data Model Changes

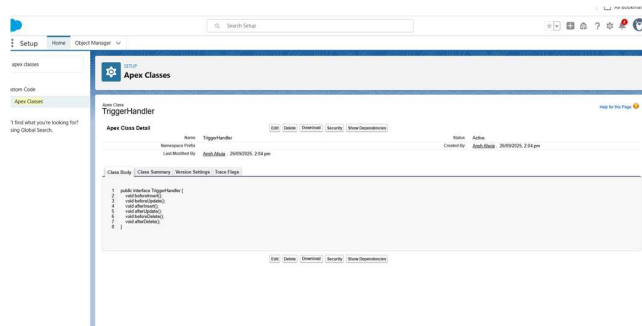
Object / Field	API Name	Type	Description
Usage Metric	Usage_Metric__c	Custom Object	Stores product usage metrics per account
- Account	Account__c	Lookup(Account)	Related Account
- Usage Value	Usage_Value__c	Number(16,2)	Metric value
- Metric Type	Metric_Type__c	Picklist	Daily_Usage, Weekly_Usage, Monthly_Usage, API_Fetch, Feature_Usage
- Metric Date	Metric_Date__c	Date	Date of metric
Onboarding Task	Onboarding_Task__c	Custom Object	Stores onboarding tasks
- Account	Account__c	Lookup(Account)	Related Account
- Task Name	Task_Name__c	Text(255)	Name of onboarding task
- Status	Status__c	Picklist	Not Started, In Progress, Completed, On Hold
- Due Date	Due_Date__c	Date	Task due date
- Priority	Priority__c	Picklist	Low, Medium, High
Account.Health Score	Health_Score__c	Number(5,2)	Calculated customer health score
Case.Escalated To	Escalated_To__c	Lookup(User)	User to whom the case was escalated
Case.Escalated Date	Escalated_Date__c	Date/Time	Date and time of escalation

### 3. Architecture and Patterns

#### Trigger-Handler Framework

- TriggerHandler (interface) defines methods for each trigger context.

- AbstractTriggerHandler (base class) routes execution based on Trigger.isBefore/isAfter and Trigger.isInsert/isUpdate/isDelete.
- Each object has a single trigger that instantiates its handler.



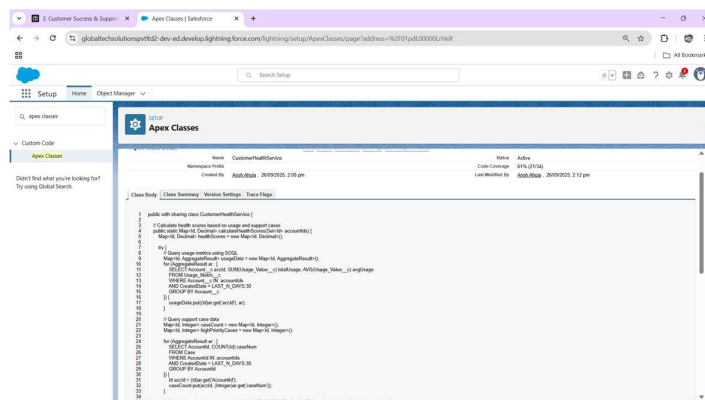
## 4. Service Classes

### 4.1 CustomerHealthService

- Method: calculateHealthScores(Set<Id> accountIds)
- Aggregates usage metrics and case counts via SOQL.
- Applies formula:  

$$\text{Score} = \max(0, \min(100, 10 \times \text{avgUsage} - 2 \times \text{caseCount} - 5 \times \text{highPriorityCount}))$$

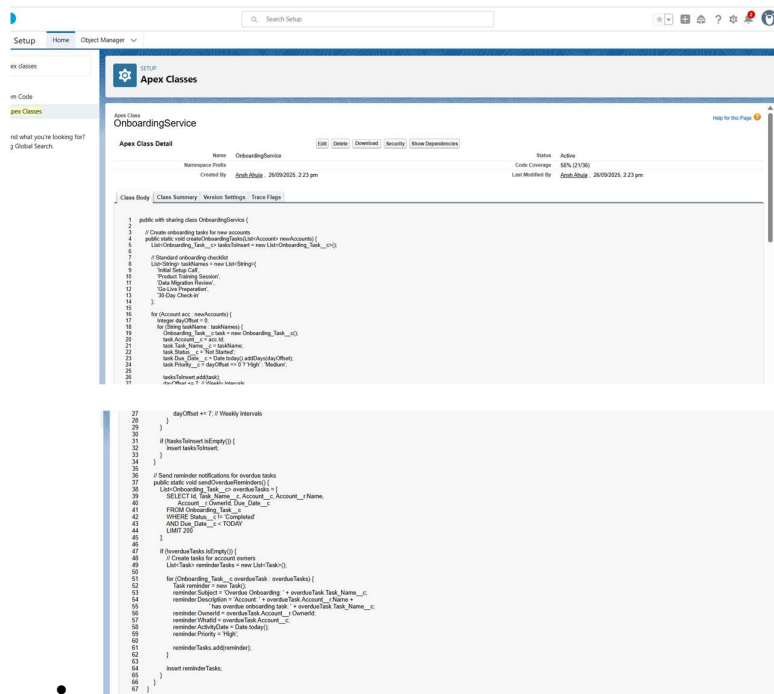
$$\text{Score} = \max(0, \min(100, 10 \times \text{avgUsage} - 2 \times \text{caseCount} - 5 \times \text{highPriorityCount}))$$
- Throws custom HealthCalculationException.



### 4.2 OnboardingService

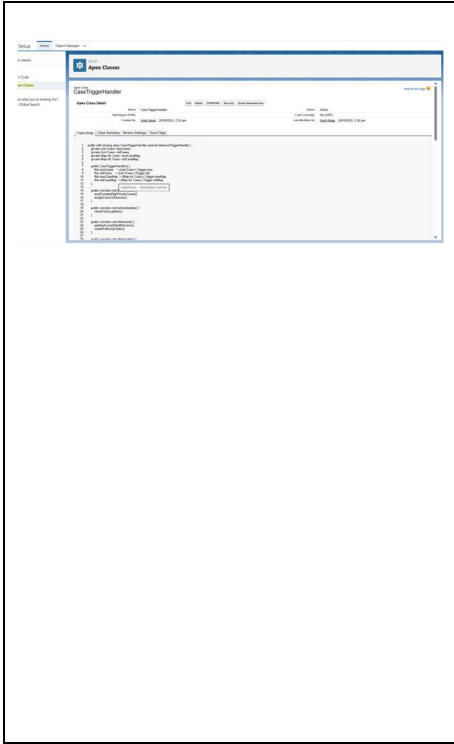
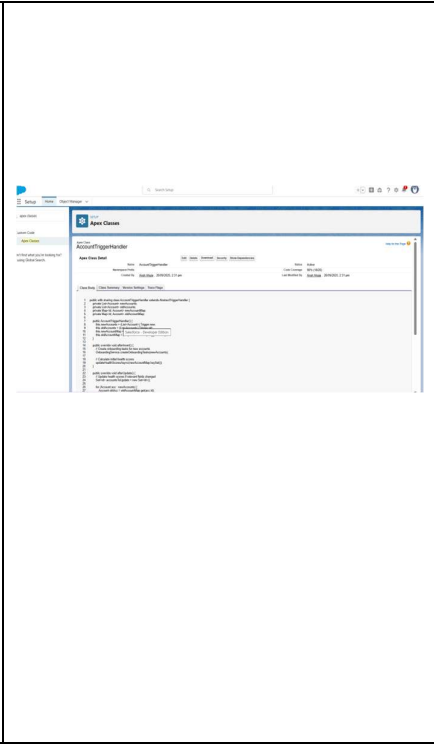
- createOnboardingTasks(List<Account> newAccounts)
  - Inserts five standard tasks per account, spaced weekly.

- `sendOverdueReminders()`
  - Queries overdue `Onboarding_Task__c` records and creates high-priority Task reminders.



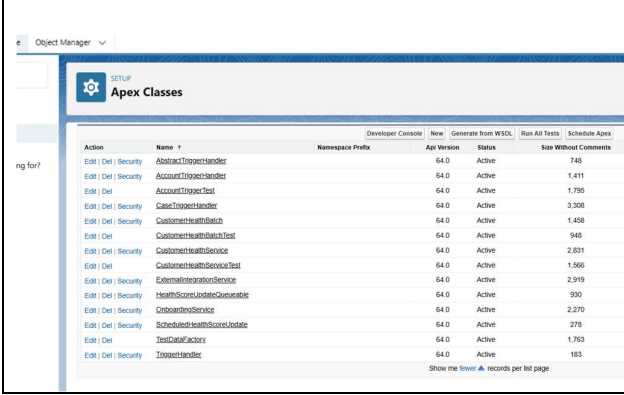
## 5. Trigger Handlers

Handler Class	Trigger Context	Functionality
AccountTriggerHandler	afterInsert	Creates onboarding tasks; enqueues health-score update
	afterUpdate	Enqueues health-score update if revenue or number of employees changed
CaseTriggerHandler	beforeInsert	Auto-escalates high-priority cases; assigns cases to queues
	beforeUpdate	Escalates open cases older than 24 hours to high-priority queue
	afterInsert / afterUpdate	Enqueues health-score update; creates onboarding tasks for high-priority cases

		
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## 6. Asynchronous Processing

Class	Type	Purpose	Schedule / Invocation
HealthScoreUpdateQueueable	Queueable	Updates Health_Score__c for provided Account IDs	Enqueued from triggers
CustomerHealthBatch	Batchable	Backfills health scores for all Accounts	Invoked by scheduler
ScheduledHealthScoreUpdate	Schedulable	Executes CustomerHealthBatch and sends overdue onboarding reminders	Cron: 0 0 2 * * ? (2 AM daily)

ExternalIntegrationService	Future(call out)	Fetches usage metrics from external API; syncs cases to support platform	Invoked from code as needed
			

## 7. Exception Handling & Logging

- **HealthCalculationException** in CustomerHealthService.
- try/catch in asynchronous classes logs errors via System.debug.

## 8. Testing and Code Coverage

- **TestDataFactory**: reusable test records for Accounts, Cases, Usage Metrics.
- **AccountTriggerTest, CaseTriggerTest**: validate trigger logic.
- **CustomerHealthServiceTest, OnboardingServiceTest**: verify service methods.
- **CustomerHealthBatchTest, HealthScoreUpdateQueueableTest**: test asynchronous processing.

**Result:** ≥ 75% overall code coverage.

## 9. Scheduling

### 1. Schedule Batch Job

- Open Developer Console → **Execute Anonymous**
- Run:

java

String cronExpr = '0 0 2 \* \* ?';

System.schedule('Daily Health Score Update', cronExpr, new ScheduledHealthScoreUpdate());

2. Verify in Setup → Scheduled Jobs

- Confirm “Daily Health Score Update” entry with next run at 2 AM daily.

Setup

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Object Manager

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Environments

Jobs

Scheduled Jobs

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SETUP

Scheduled Jobs

All Scheduled Jobs

Help for this Page

The All Scheduled Jobs page lists all of the jobs scheduled by your users. Multiple job types may display on this page. You can delete scheduled jobs if you have the permission to do so.

Scheduled Jobs

Percentage of Scheduled Jobs Used: 1%  
You have currently used 1 scheduled Apex jobs out of an allowed organization limit of 100 active or scheduled jobs. To learn about how this limit is calculated and what contributes to it see the [Lightning Platform Apex Limits](#) topic.

View: All Scheduled Jobs

Create New View

Schedule Apex

Action	Job Name	Submitted By	Submitted	Started	Next Scheduled Run	Type	Cron Trigger ID
Manage   Del   Pause Job	Daily Health Score Update	Ahujia_Ahsh	26/09/2025, 3:12 pm	26/09/2025, 5:02 am	27/09/2025, 2:00 am	Scheduled Apex	08edf.00000R8cOm
Del	Metalytics Data Loader Job for Org: 00DdL00000cvtLzsd	User_Integration	19/09/2025, 1:02 pm	26/09/2025, 8:00 am	27/09/2025, 5:02 am	Autonomous Data Loader Job	08edf.00000QndSe
Del	Overdue_Onboarding_Task_Reminder:1	Ahujia_Ahsh	24/09/2025, 3:36 pm	26/09/2025, 8:00 am	27/09/2025, 8:00 am	Scheduled Flow	08edf.00000R31Eg
Del	Upcoming_Renewal_Flow-1	Ahujia_Ahsh	25/09/2025, 8:11 pm	26/09/2025, 8:00 am	27/09/2025, 8:00 am	Scheduled Flow	08edf.00000R6afa

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