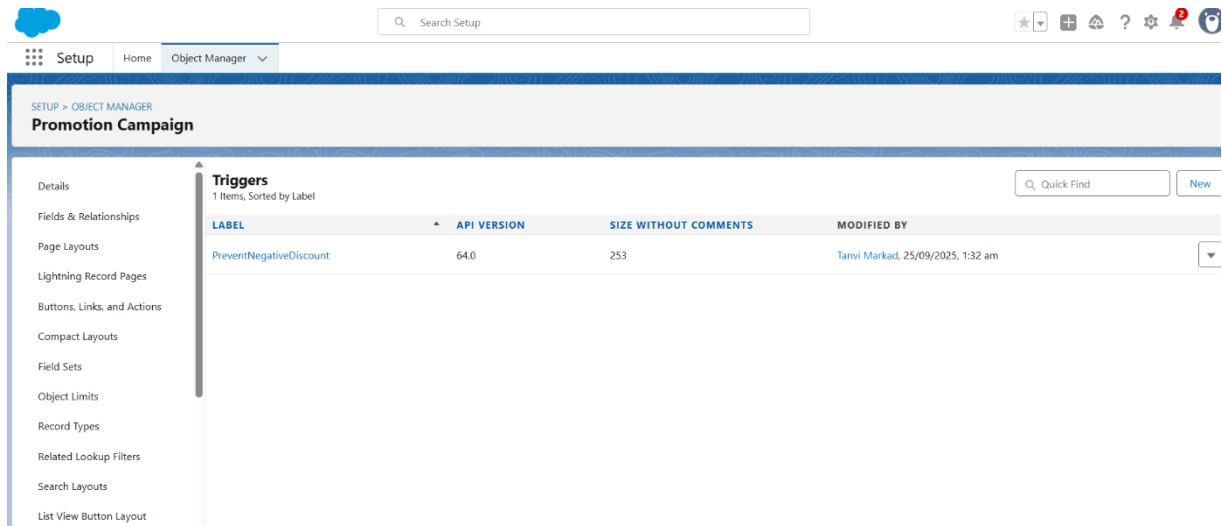


# Phase 5: Apex Programming

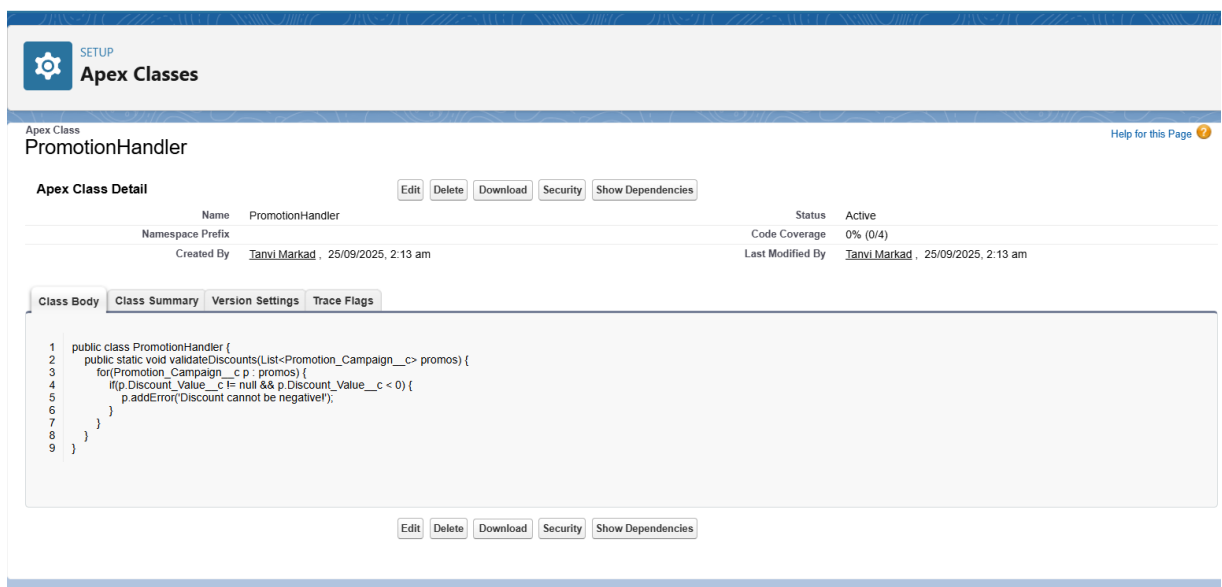
## 1. Apex Trigger

- Setup: Setup → Object Manager → Promotion\_Campaign\_\_c → Triggers
  - a. **Promotion Trigger** – e.g., validate negative discounts before insert/update.
  - b. **Discount Trigger** – e.g., enforce max discount limits or auto-update related records.



The screenshot shows the Salesforce Setup interface. The breadcrumb trail is Setup > OBJECT MANAGER > Promotion Campaign. The left sidebar contains a navigation menu with options like Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, and List View Button Layout. The main content area is titled 'Triggers' and shows a table with 1 item, sorted by Label. The table has columns for LABEL, API VERSION, SIZE WITHOUT COMMENTS, and MODIFIED BY. The single entry is 'PreventNegativeDiscount' with API version 64.0, size 253, and modified by Tanvi Markad on 25/09/2025 at 1:32 am.

LABEL	API VERSION	SIZE WITHOUT COMMENTS	MODIFIED BY
PreventNegativeDiscount	64.0	253	Tanvi Markad, 25/09/2025, 1:32 am



The screenshot shows the Salesforce Setup interface for the Apex Class 'PromotionHandler'. The breadcrumb trail is SETUP > Apex Classes > PromotionHandler. The left sidebar contains a navigation menu with options like Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, and List View Button Layout. The main content area is titled 'PromotionHandler' and shows the 'Apex Class Detail' tab. The class is named 'PromotionHandler' and is in the 'PromotionHandler' namespace. It is created by Tanvi Markad on 25/09/2025 at 2:13 am. The class is active and has 0% code coverage (0/4). The 'Class Body' tab is selected, showing the following code:

```
1 public class PromotionHandler {
2     public static void validateDiscounts(List<Promotion_Campaign__c> promos) {
3         for(Promotion_Campaign__c p : promos) {
4             if(p.Discount_Value__c != null && p.Discount_Value__c < 0) {
5                 p.addError('Discount cannot be negative!');
6             }
7         }
8     }
9 }
```

## 2.Apex Class

- **Setup: Setup → Apex Classes → New Apex Class**
  - a. **PromotionHandler** – Handles trigger logic (e.g., validation, auto-update).
  - b. **DiscountHandler** – Handles complex discount calculations, approvals.

The screenshot shows the Salesforce Setup interface for the Apex Class 'PromotionBatchExpire'. The page has a header with the 'Apex Classes' section and a sub-header 'PromotionBatchExpire'. Below the header, there are tabs for 'Apex Class Detail', 'Class Body', 'Class Summary', 'Version Settings', and 'Trace Flags'. The 'Apex Class Detail' tab is active, showing the class name 'PromotionBatchExpire', its status 'Active', and its code coverage '0% (0/9)'. The class was created by 'Tanvi Markad' on '25/09/2025, 2:16 am'. The 'Class Body' tab is also visible, showing the following code:

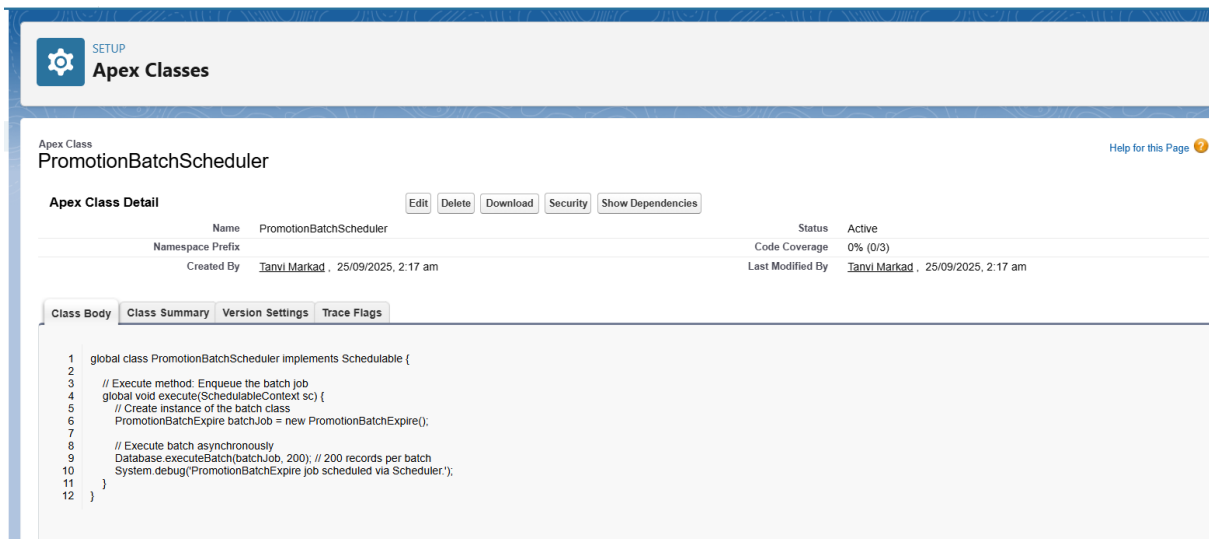
```
1 global class PromotionBatchExpire implements Database.Batchable<Object> {
2
3     // Start method: Select all active promotions that have expired
4     global Database.QueryLocator start(Database.BatchableContext BC) {
5         return Database.getQueryLocator([
6             SELECT Id, Name, Status__c
7             FROM Promotion_Campaign__c
8             WHERE End_Date__c < Date.today()
9             AND Status__c = 'Active'
10        ]);
11    }
12
13    // Execute method: Update the status of each promotion to 'Expired'
14    global void execute(Database.BatchableContext BC, List<Promotion_Campaign__c> scope) {
15        for(Promotion_Campaign__c p : scope) {
16            p.Status__c = 'Expired';
17        }
18    }
19 }
```

The screenshot shows the Salesforce Setup interface for the Apex Class 'DiscountHandler'. The page has a header with the 'Apex Classes' section and a sub-header 'DiscountHandler'. Below the header, there are tabs for 'Apex Class Detail', 'Class Body', 'Class Summary', 'Version Settings', and 'Trace Flags'. The 'Apex Class Detail' tab is active, showing the class name 'DiscountHandler', its status 'Active', and its code coverage '0% (0/19)'. The class was created by 'Tanvi Markad' on '25/09/2025, 2:15 am'. The 'Class Body' tab is also visible, showing the following code:

```
1 public class DiscountHandler {
2
3     // Maximum allowed discount (adjustable)
4     public static final Decimal MAX_DISCOUNT = 5000;
5
6     // Validate discount values before insert/update
7     public static void validateDiscounts(List<Promotion_Campaign__c> promos) {
8         for(Promotion_Campaign__c p : promos) {
9             // Prevent negative discounts
10            if(p.Discount_Value__c != null && p.Discount_Value__c < 0) {
11                p.addError('Discount cannot be negative!');
12            }
13            // Prevent discount exceeding maximum allowed
14            if(p.Discount_Value__c != null && p.Discount_Value__c > MAX_DISCOUNT) {
15                p.addError('Discount cannot exceed ' + MAX_DISCOUNT);
16            }
17        }
18    }
19
20    // Optional: Auto-adjust discount values to safe limits
21    public static void adjustDiscounts(List<Promotion_Campaign__c> promos) {
22        for(Promotion_Campaign__c p : promos) {
23            // Adjust discount values to safe limits
24            if(p.Discount_Value__c != null && p.Discount_Value__c < 0) {
25                p.Discount_Value__c = 0;
26            }
27            if(p.Discount_Value__c != null && p.Discount_Value__c > MAX_DISCOUNT) {
28                p.Discount_Value__c = MAX_DISCOUNT;
29            }
30        }
31    }
32 }
```

### 3. Batch Apex

- **Setup->Apex Classes->New Class**
  - a. **PromotionBatchExpire** – Updates expired promotions.
  - b. **PromotionBatchScheduler** – Schedules the batch job to run nightly or monthly.

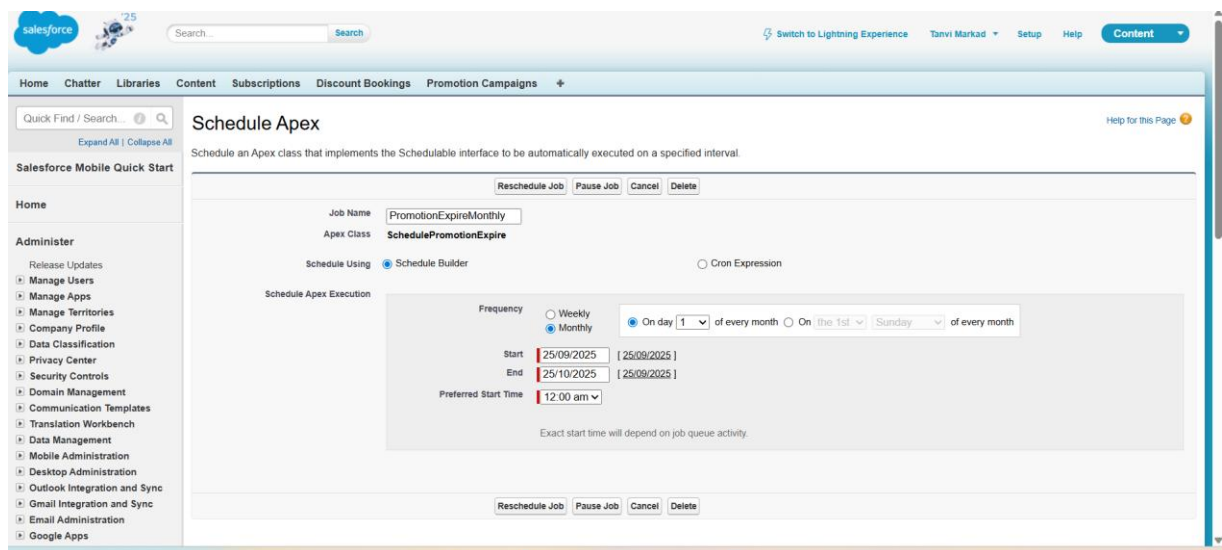


The screenshot shows the Salesforce Setup page for Apex Classes. The class name is **PromotionBatchScheduler**. It is an Apex Class that implements the **Schedulable** interface. The class body is visible, showing the **execute** method which creates a **PromotionBatchExpire** batch job and executes it asynchronously. The class was created by **Tanvi Markad** on 25/09/2025 at 2:17 am. The status is **Active** and the code coverage is **0% (0/3)**.

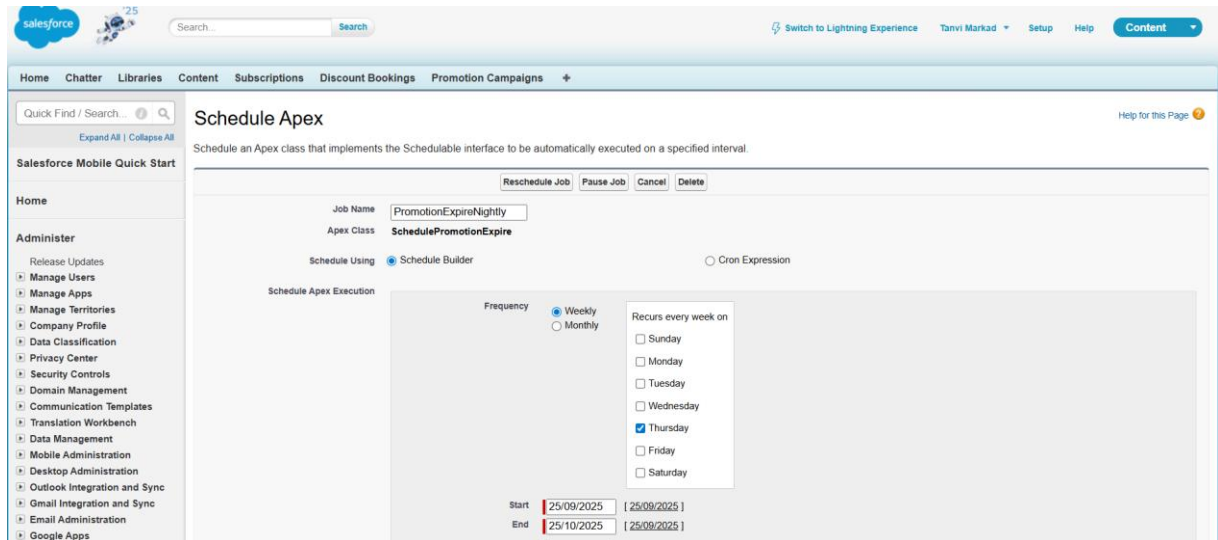
```
1 global class PromotionBatchScheduler implements Schedulable {
2
3     // Execute method: Enqueue the batch job
4     global void execute(SchedulableContext sc) {
5         // Create instance of the batch class
6         PromotionBatchExpire batchJob = new PromotionBatchExpire();
7
8         // Execute batch asynchronously
9         Database.executeBatch(batchJob, 200); // 200 records per batch
10        System.debug('PromotionBatchExpire job scheduled via Scheduler');
11    }
12 }
```

### 4. Scheduled Apex

- **Setup->Scheduled Jobs->New Job**
  - a. **PromotionExpireMonthly** – Runs monthly to expire old promotions.
  - b. **PromotionExpireNightly** – Runs nightly to update recently ended promotions.



The screenshot shows the Salesforce Setup page for Scheduled Apex Jobs. The job name is **PromotionExpireMonthly** and the Apex class is **SchedulePromotionExpire**. The job is scheduled using the **Schedule Builder** (selected) or **Cron Expression**. The frequency is set to **Monthly**. The start date is **25/09/2025** and the end date is **25/10/2025**. The preferred start time is **12:00 am**. The job is currently in a state where it can be **Reschedule Job**, **Pause Job**, **Cancel**, or **Delete**.

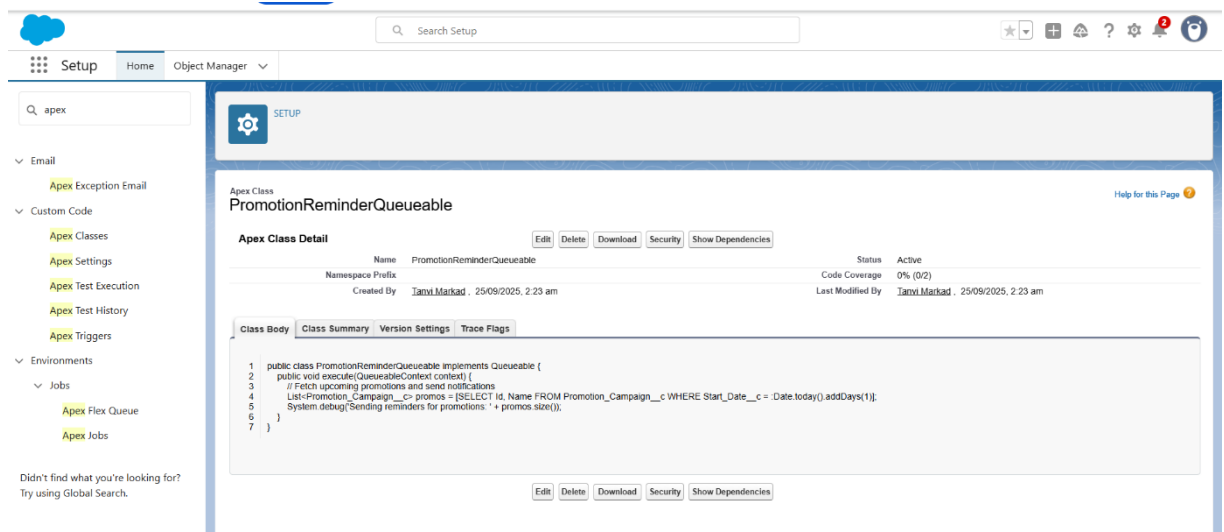


## 5. Queueable Apex

- Setup->Apex classes->New Classes

### PromotionReminderQueueable-

Sends reminder emails for upcoming promotions.



## 6. Test Classes

- Setup->Apex Classes->New Classes
- PromotionTestClass

The screenshot shows the Salesforce Setup interface. The left sidebar contains navigation links for Setup, Home, and Object Manager. The main content area is titled 'Apex Classes' and displays details for the 'PromotionTestClass'. The class is in the 'Active' status, created by 'Tanvi Markad' on 25/09/2025 at 2:23 am. The class body is visible, showing a test method 'testNegativeDiscountTrigger()' and a batch test method 'testBatchJob()'. The class body is highlighted in blue.

Apex Class

### PromotionTestClass

Apex Class Detail

Edit Delete Download Run Test Show Dependencies

Name	Status
PromotionTestClass	Active

Namespace Prefix

Created By Tanvi Markad , 25/09/2025, 2:23 am

Last Modified By Tanvi Markad , 25/09/2025, 2:23 am

Class Body Class Summary Version Settings Trace Flags

```
1 @IsTest
2 public class PromotionTestClass {
3     @IsTest static void testNegativeDiscountTrigger() {
4         Promotion_Campaign__c promo = new Promotion_Campaign__c(
5             Name='Test Promo', Discount_Value__c=-100, Status__c='Active', Start_Date__c=Date.today(), End_Date__c=Date.today().addDays(5)
6         );
7     }
8     try {
9         insert promo;
10        System.assert(false, 'Trigger failed to block negative discount');
11    } catch(DmlException e) {
12        System.assert(e.getMessage().contains('Discount cannot be negative!'));
13    }
14 }
15
16 @IsTest static void testBatchJob() {
```