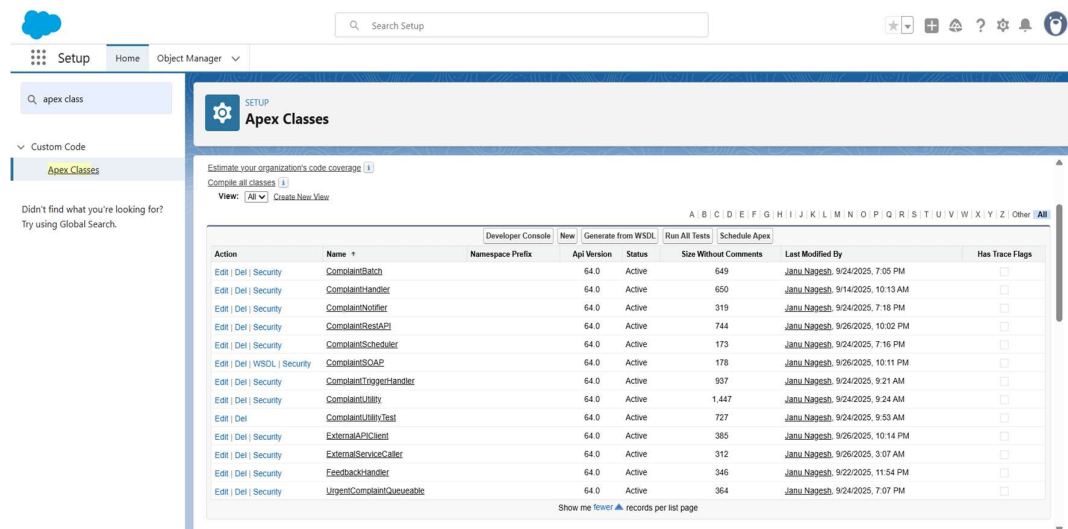


Phase 5: Apex Programming (Developer)

1. Apex Classes & Objects

- **Where:** Setup → Apex Classes → New, or create in VS Code under force-app/main/default/classes.
- **Created Classes:**
 - ComplaintUtility.cls: contains complaint logic (status, SLA calculation).
 - ComplaintNotifier.cls: future method for async notifications.
 - UrgentComplaintQueueable.cls: queueable job for escalation.
 - ComplaintScheduler.cls: runs daily via cron expression.
 - FeedbackHandler.cls: handles feedback insert.
- **Values:** Add public with sharing to enforce sharing rules.

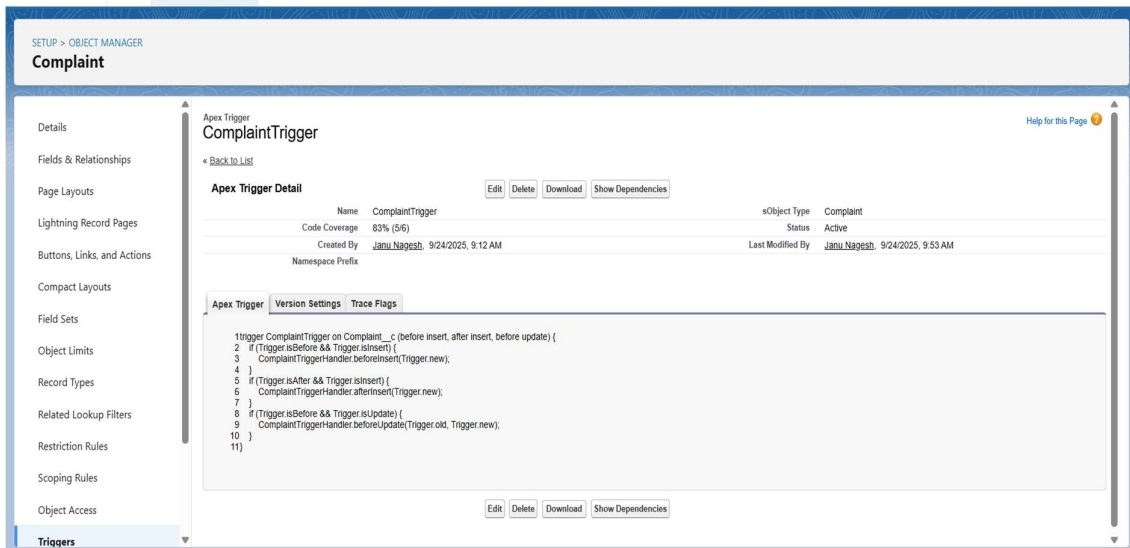


The screenshot shows the Salesforce Setup interface. The left sidebar has a search bar with 'apex class' and a list of custom code items including 'Apex Classes'. The main content area is titled 'Apex Classes' and shows a table of classes. The table has columns for Action, Name, Namespace Prefix, Api Version, Status, Size Without Comments, Last Modified By, and Has Trace Flags. The table lists 15 classes, all of which are active and have trace flags enabled. The classes are: ComplaintBatch, ComplaintHandler, ComplaintNotifier, ComplaintRestAPI, ComplaintScheduler, ComplaintSOAP, ComplaintTriggerHandler, ComplaintUtility, ComplaintUtilityTest, ExternalAPIClient, ExternalServiceCaller, FeedbackHandler, and UrgentComplaintQueueable. The table also includes a 'Developer Console' button and a 'New' button. The bottom of the table shows a pagination bar with 'Show me fewer records per list page'.

Action	Name	Namespace Prefix	Api Version	Status	Size Without Comments	Last Modified By	Has Trace Flags
Edit Del Security	ComplaintBatch		64.0	Active	649	Janu.Nagesh: 9/24/2025, 7:05 PM	<input type="checkbox"/>
Edit Del Security	ComplaintHandler		64.0	Active	650	Janu.Nagesh: 9/14/2025, 10:13 AM	<input type="checkbox"/>
Edit Del Security	ComplaintNotifier		64.0	Active	319	Janu.Nagesh: 9/24/2025, 7:18 PM	<input type="checkbox"/>
Edit Del Security	ComplaintRestAPI		64.0	Active	744	Janu.Nagesh: 9/26/2025, 10:02 PM	<input type="checkbox"/>
Edit Del Security	ComplaintScheduler		64.0	Active	173	Janu.Nagesh: 9/24/2025, 7:16 PM	<input type="checkbox"/>
Edit Del WSDL Security	ComplaintSOAP		64.0	Active	178	Janu.Nagesh: 9/26/2025, 10:11 PM	<input type="checkbox"/>
Edit Del Security	ComplaintTriggerHandler		64.0	Active	937	Janu.Nagesh: 9/24/2025, 9:21 AM	<input type="checkbox"/>
Edit Del Security	ComplaintUtility		64.0	Active	1,447	Janu.Nagesh: 9/24/2025, 9:24 AM	<input type="checkbox"/>
Edit Del	ComplaintUtilityTest		64.0	Active	727	Janu.Nagesh: 9/24/2025, 9:53 AM	<input type="checkbox"/>
Edit Del Security	ExternalAPIClient		64.0	Active	385	Janu.Nagesh: 9/26/2025, 10:14 PM	<input type="checkbox"/>
Edit Del Security	ExternalServiceCaller		64.0	Active	312	Janu.Nagesh: 9/26/2025, 3:07 AM	<input type="checkbox"/>
Edit Del Security	FeedbackHandler		64.0	Active	346	Janu.Nagesh: 9/22/2025, 11:54 PM	<input type="checkbox"/>
Edit Del Security	UrgentComplaintQueueable		64.0	Active	364	Janu.Nagesh: 9/24/2025, 7:07 PM	<input type="checkbox"/>

2. Apex Triggers

- **Where:** Setup → Object Manager → Complaint__c → Triggers → New.
- **Trigger:** ComplaintTrigger → Before Insert, After Insert.
- **Logic:** Calls ComplaintUtility instead of writing inline code.

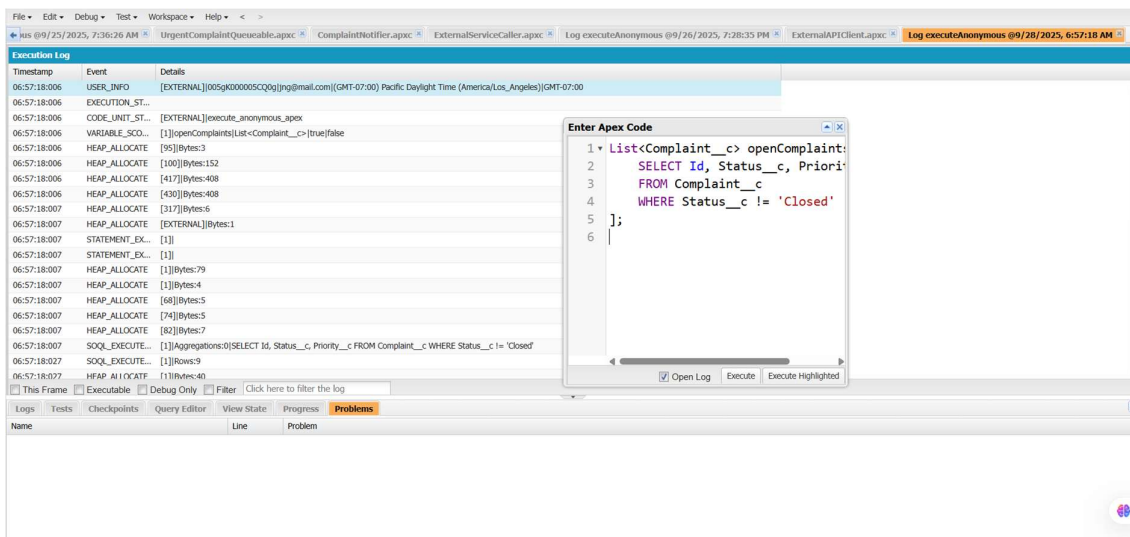


3.SOQL & Collections

- **SOQL Example:**

```
List<Complaint__c> openComplaints = [
    SELECT Id, Status__c, Priority__c
    FROM Complaint__c
    WHERE Status__c != 'Closed'
];
```

- **Collections:** Used Lists (List<Complaint__c>), Maps (Map<Id, Complaint__c>), Sets (Set<String>).



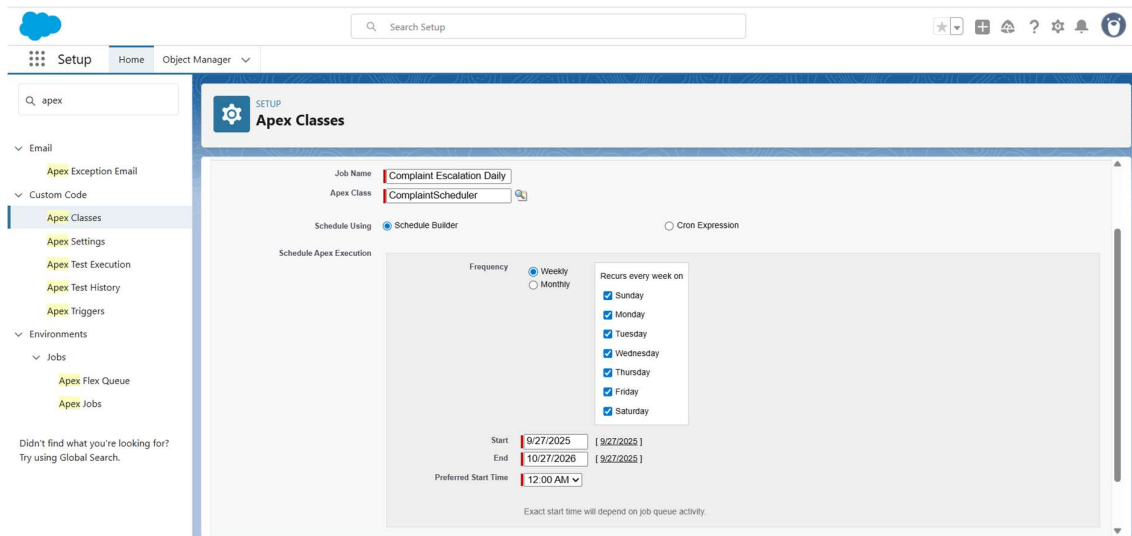
4. Asynchronous Apex

- **Queueable Apex:**

- Class: UrgentComplaintQueueable.
- Run via: `System.enqueueJob(new UrgentComplaintQueueable());`.

- **Scheduled Apex:**

- Class: ComplaintScheduler.
- Setup → Apex Classes → Schedule Apex → Name = "Complaint Escalation Daily".
- CRON: Run every day at 12:00 AM.



5. Exception Handling

```
try {  
    insert comp;  
} catch (DmlException e) {  
    throw new AuraHandledException('Error creating complaint: ' + e.getMessage());  
}
```

6. Test Classes

- **Where:** force-app/main/default/classes/
- **Command:**

sf apex run test --test-class-name ComplaintUtilityTest --target-org SmartCityMain

