

Phase 5: Apex Programming (Online Laptop Booking)

Apex is Salesforce's **proprietary programming language**, used when **declarative tools (Flows, Workflow Rules)** are not sufficient. For your laptop ordering system, Apex is used to handle **complex business logic, automation, and asynchronous processing**.

1. Classes & Objects

- **Example:** LaptopOrderHandler.cls
- **Purpose:** Encapsulates the logic for laptop orders, such as:
 - Validating order data
 - Updating laptop stock
 - Triggering related service/testing processes
- **Why it matters:**
 - Promotes **reusability** – the same logic can be called from **triggers, batch jobs, or flows**.
 - Keeps code **organized and maintainable**.

The screenshot shows the Salesforce Setup page for Apex Classes. The left sidebar contains navigation links for Setup, Home, Object Manager, and a search bar. The main content area is titled 'Apex Classes' and includes a summary of Apex usage, a table of classes, and a section for Dynamic Apex Classes.

Apex Classes Summary:

- Percent of Apex Used: 0.12%
- You are currently using 7,169 characters of Apex Code (excluding comments and @isTest annotated classes) in your organization, out of an allowed limit of 6,000,000 characters. Note that the amount in use includes both Apex Classes and Triggers defined in your organization.

Table of Apex Classes:

Action	Name	Namespace Prefix	Api Version	Status	Size Without Comments	Last Modified By	Has Trace Flags
Edit Del Security	AppointmentServiceController		64.0	Active	109	SIDDARTHA.B.V. 9/25/2025, 9:05 PM	<input type="checkbox"/>
Edit Del Security	AppointmentServiceControllerTest		64.0	Active	117	SIDDARTHA.B.V. 9/25/2025, 9:05 PM	<input type="checkbox"/>
Edit Del Security	LaptopOrderBatch		64.0	Active	1,673	SIDDARTHA.B.V. 9/26/2025, 12:10 AM	<input type="checkbox"/>
Edit Del Security	LaptopOrderBatchScheduler		64.0	Active	227	SIDDARTHA.B.V. 9/26/2025, 12:12 AM	<input type="checkbox"/>
Edit Del Security	LaptopOrderTriggerHandler		64.0	Active	2,313	SIDDARTHA.B.V. 9/25/2025, 11:57 PM	<input type="checkbox"/>
Edit Del Security	LightningConnectQuickstart		32.0	Active	497	SIDDARTHA.B.V. 9/17/2025, 12:07 PM	<input type="checkbox"/>
Edit Del	TestLightningConnectQuickstart		32.0	Active	769	SIDDARTHA.B.V. 9/17/2025, 12:07 PM	<input type="checkbox"/>

Dynamic Apex Classes

Dynamic Apex extends your programming reach by interacting with Lightning Platform components.

2. Triggers

Triggers are **pieces of Apex code that execute automatically before or after DML operations (Insert, Update, Delete, Undelete)**.

Project Examples:

1. LaptopOrderTrigger

- **Purpose:** Runs before insert/update of orders
- **Logic:**
 - Validate order quantity
 - Update available laptop stock
 - Prevent orders if stock is insufficient
- **Type:** before insert / before update

2. LaptopTestingTrigger

- **Purpose:** Runs after insert/update of testing or service records
- **Logic:**
 - Log testing results
 - Update related order status
- **Type:** after insert / after update

Impact:

- Ensures **data integrity** and **automates business rules** without manual intervention.
- Triggers enable **real-time updates** in your system.

The screenshot shows the Salesforce 'Apex Triggers' setup page. The left sidebar contains navigation links for Setup, Home, Object Manager, and a search bar. The main content area displays the 'Apex Triggers' page with a header, a description, and a table of triggers. A green banner indicates that 0.12% of the Apex code limit is used. The table lists two triggers: 'LaptopOrderTrigger' and 'SendAppointmentEmail'.

Action	Name	Namespace Prefix	sObject Type	Api Version	Status	Size Without Comments	Last Modified By	Has Trace Flags
Edit Del	LaptopOrderTrigger		Laptop_Order	64.0	Active	313	SIDDARTHA B.V. 9/26/2025, 12:02 AM	<input type="checkbox"/>
Edit Del	SendAppointmentEmail		Appointment	64.0	Active	1,920	SIDDARTHA B.V. 9/25/2025, 12:19 PM	<input type="checkbox"/>

3. Collections: Lists, Sets, and Maps

- **Purpose:** Handle multiple records efficiently.
- **Usage Examples:**
 - **List:** Store multiple orders to update in bulk

- **Set:** Track unique customer IDs to avoid duplicates
- **Map:** Map Order ID → Laptop for easy lookup during processing
- **Why it matters:**
 - Supports **bulk processing**, essential to avoid Salesforce governor limits.
 - Improves **performance and code maintainability**.

4. Batch Apex / Queueable / Scheduled Apex

Used for asynchronous or large-scale processing.

1. **Batch Apex:**
 - Example: Update all pending laptop testing records nightly
 - Splits records into manageable batches to process large volumes
2. **Queueable Apex:**
 - Example: Process complex order logic asynchronously after a trigger
 - More flexible than future methods; supports chaining
3. **Scheduled Apex:**
 - Example: Nightly batch job to check pending orders or testing records
 - Can schedule jobs at specific times or intervals

Impact:

- Handles **large datasets without hitting governor limits**
- Automates **recurring processes** (like updating stock or checking testing status)

Summary of Phase 5

- **Classes & Objects:** Centralize business logic for reusability
- **Triggers:** Automate real-time actions during record insert/update
- **SOQL & SOSL:** Efficiently retrieve Salesforce data
- **Collections:** Handle bulk operations while avoiding governor limits
- **Batch / Queueable / Scheduled Apex:** Automate large-volume or recurring processes