

# Project Title: A CRM Application for Laptop Rentals

## 1. Project overview

This Laptop Rental Management application aims to optimize and improve the process of short-term laptop rentals. The primary objective is to harness Salesforce's Customer Relationship Management capabilities to enhance customer interactions, leading to a superior overall experience. By integrating customer information, rental transactions, and inventory management into a single platform, this project streamlines store operations, reduces manual effort, and increases overall productivity. Additionally, the CRM enables effective communication with customers through automated email updates, keeping them informed about their bookings, billing, and other essential notifications. This results in a comprehensive solution that enhances rental management, boosts customer satisfaction, and promotes operational excellence.

### Goals:

- Elevate customer satisfaction by providing customized services.
- Simplify and automate the processes for booking rentals and managing inventory.
- Boost team productivity while minimizing manual tasks.
- Generate data-driven insights to support informed decision-making.
- Maintain secure and efficient management of data across different user roles.

### Benefits:

- Consolidates customer data for personalized service and effective relationship management.
- Streamlines repetitive tasks, enhancing overall productivity and efficiency.
- Offers real-time insights through customizable analytics and reports.
- Facilitates easy integration with other tools, improving data flow and reducing fragmentation.
- Provides mobile accessibility, ensuring flexibility and quick responsiveness.

## 2. Objectives

- **Enhance Sales Workflows:** Leverage Salesforce solutions to automate and refine sales processes, reducing manual efforts and improving lead management effectiveness.

- **Boost Customer Interaction:** Utilize Salesforce tools to create a personalized experience for customers, improving communication and overall satisfaction.
- **Data-Driven Insights:** Employ Salesforce analytics to gather valuable insights and effectively track performance metrics.
- **Optimize Marketing Efforts:** Use Salesforce marketing automation features to create targeted campaigns, enhance outreach, and measure their effectiveness in real-time.

### 3. Salesforces key features and concepts utilized

This Salesforce CRM project incorporates various concepts and features:

- **Custom Objects:** Defined unique custom objects such as Consumer, Laptop Bookings, Total Laptops, and Billing Process to address specific needs in managing customer data, rental transactions, and inventory. These custom objects facilitate precise data organization beyond standard Salesforce offerings.
- **Custom Tabs:** Developed custom tabs for each object to provide straightforward access to Consumer, Laptop Bookings, Billing Process, and Total Laptops information, allowing the team to navigate and manage data directly within the Salesforce app interface.
- **Creating Lightning Apps:** Built custom Lightning apps for the Laptop Rentals CRM to create a tailored user interface, streamline workflows, and enhance user experience by consolidating all necessary tabs, reports, and dashboards within one cohesive application.
- **Validation Rules:** Implemented validation rules to ensure data integrity and enforce business requirements. For instance, customers must provide contact information via either email or phone number.
- **Profile Cloning and Custom Permissions:** Cloned the standard User profile to create Owner and Agent profiles, customizing permissions to control access to specific objects and data fields based on user roles. This approach ensured proper access management and protection of sensitive information.
- **Role Hierarchy and Role Creation:** Established a role hierarchy by creating an Owner role beneath the CEO and an Agent role under the Owner.
- **User Creation:** Set up two user accounts: Owner and Agent. The Owner has elevated permissions for comprehensive control, while the Agent can manage customer interactions and bookings within the permissions defined by their profile.
- **Flows for Laptop Models:** Created a Record Trigger for Laptop Models to automate the selection process for model type, processor type, rental duration, and associated charges based on user inputs.
- **Apex Programming:** Developed Apex classes and triggers to execute complex business logic and send email notifications following a laptop booking.

- **Reports and Report Sharing:** Generated a custom report to deliver insights into rental activity, filtering data based on different versions, and shared this report with the Owner.
- **Dashboard Folder and Dashboard Creation:** Designed a Dashboard to visually represent the report as a donut chart, enabling analysis of rental amounts for each version.

## 4. Detailed steps to Solution Design:

### Step-by-Step Outline for the Solution Design of the Laptop Rentals CRM

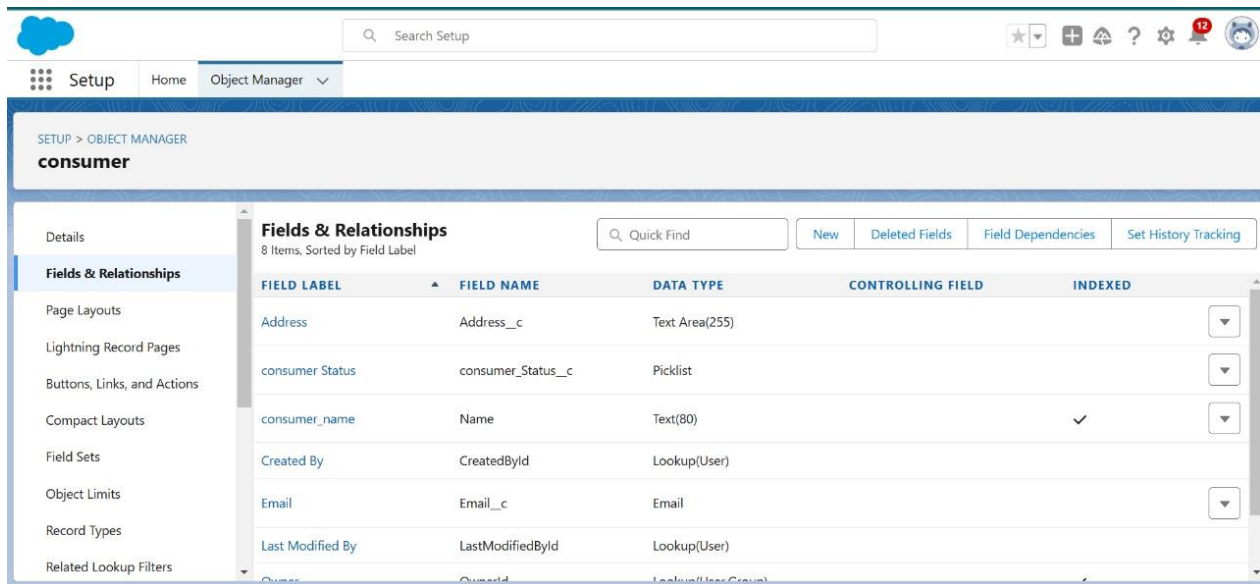
#### Step 1: Creating Objects and Required Fields

Developed objects such as Consumer, Laptop Bookings, Total Laptops, and Billing Process, along with the necessary fields and relationships for each object.

- **Consumer Object:** The Consumer object is intended to store and manage customer information within the Laptop Rentals CRM system. It serves as a centralized repository for customer details, enabling quick access to essential information for each rental transaction.

#### Fields and Relationships Created:

- **Phone\_number\_\_c:** Stores the customer's contact number for efficient communication.
- **Email\_\_c:** Records the customer's email address for notifications and follow-ups.
- **Address\_\_c:** Holds the customer's physical address for delivery or identification purposes.
- **Consumer\_Status\_\_c:** Indicates the current status of the customer (e.g., student, employee, or others) to help track engagement.



**Laptop Bookings Object:** The Laptop Bookings custom object is designed to store and manage details about each rental booking made by customers. It is linked to the Consumer object to associate bookings with specific customers and connects with the Total Laptops object to monitor inventory.

#### Fields and Relationships Created:

- **Name:** A text field that stores the booking name for each rental.
- **Laptop\_names\_\_c:** A picklist field that allows consumers to select the desired laptop model.
- **Core\_type\_\_c:** A picklist field that specifies the processor type for the laptop models selected by consumers.
- **Amount\_\_c:** The amount the consumer agrees to pay for the chosen laptop model.
- **Email\_\_c:** Captures the customer's email address.
- **Name\_\_c:** A lookup field that links to the Consumer object, indicating which customer is renting the laptop.
- **Total\_No\_Of\_Laptops\_\_c:** A lookup field that connects to the Total Laptops object, specifying the number of laptops the consumer wishes to rent.

Setup Home Object Manager

SETUP > OBJECT MANAGER

### Laptop Bookings

Details

**Fields & Relationships**  
11 Items, Sorted by Field Label

Q, Quick Find New Deleted Fields Field Dependencies Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Amount	Amount__c	Currency(18, 0)		
core type	core_type__c	Picklist	Laptop Names	
Created By	CreatedById	Lookup(User)		
Email	Email__c	Email		
how many months	how_many_months__c	Picklist		
Laptop Bookings	Name	Text(80)		✓

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- **Total Laptops Object:** This custom object maintains an inventory of all available laptops for rental. It tracks details like the specifications of each laptop, its availability status, and usage history.

**Laptops\_Available\_\_c:** Keeps track of the number of laptops available in the inventory. This is a formula field in which the value will be updated when laptops are to be shipped from the inventory.

Setup Home Object Manager

SETUP > OBJECT MANAGER

### Total Laptops

Details

**Fields & Relationships**  
6 Items, Sorted by Field Label

Q, Quick Find New Deleted Fields Field Dependencies Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedById	Lookup(User)		
Laptops Available	Laptops_Available__c	Formula (Number)		
Laptops delivered	Laptops_delivered__c	Roll-Up Summary (COUNT Laptop Bookings)		
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		✓
Total Laptops	Name	Text(80)		✓

## Step - 2: Creating a Lightning App

A new Lightning App called **Laptop Rentals** was designed to centralize and simplify the entire laptop rental management process within Salesforce. This app provides a dedicated platform to manage customer information, handle laptop rental bookings, track inventory, and oversee billing activities—all within a single interface.

The screenshot shows the 'App Details & Branding' configuration page in the Lightning App Builder. The left sidebar lists 'App Settings' with sub-items: 'App Details & Branding' (selected), 'App Options', 'Utility Items (Desktop Only)', 'Navigation Items', and 'User Profiles'. The main content area is divided into two columns: 'App Details' and 'App Branding'. In 'App Details', there are fields for 'App Name' (LAPTOP RENTALS), 'Developer Name' (LAPTOP\_RENTALS), and 'Description' (placeholder: Enter a description...). In 'App Branding', there is an 'Image' field with a laptop icon, a 'Primary Color Hex Value' field (#0070D2), and an 'Org Theme Options' checkbox (unchecked). At the bottom, an 'App Launcher Preview' shows the app icon and name.

## Step - 3: Creating Validation Rules

A validation rule was implemented to require consumers to provide at least one form of contact information, either a phone number or an email address.

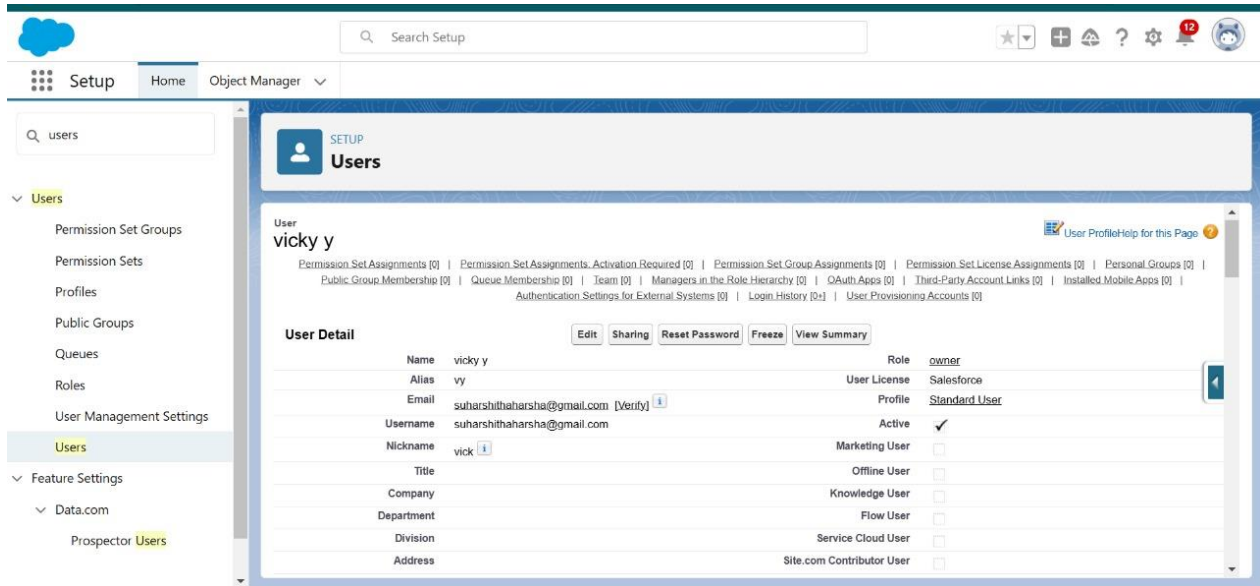
The screenshot shows the Salesforce Setup page for the 'consumer' object. The left sidebar lists various setup options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, and Related Lookup Filters. The main content area is titled 'consumer Validation Rule' and includes a 'Validation Rule Detail' table. The table has columns for Rule Name, Error Condition Formula, Error Message, Description, Created By, Active, Error Location, and Modified By. The rule is named 'Phonenumberoremailblankrule', is active, and has an error message 'please fill the phone number and email id'. The error condition formula is 'OR( ISBLANK( Phone\_number\_\_c ) , ISBLANK( Email\_\_c ) )'. The description is 'phone number and email number should not be blank'. The rule was created by 'Cherukuri Suharshitha' on 26/10/2024 at 5:51 pm. The error location is 'Top of Page'.

Rule Name	Error Condition Formula	Error Message	Description	Created By	Active	Error Location	Modified By
Phonenumberoremailblankrule	OR( ISBLANK( Phone_number__c ) , ISBLANK( Email__c ) )	please fill the phone number and email id	phone number and email number should not be blank	Cherukuri Suharshitha, 26/10/2024, 5:51 pm	✓	Top of Page	Cherukuri Suharshitha, 26/10/2024, 5:51 pm

## Step - 4: Cloned the Profiles

The Standard User profile was cloned to create \*Owner\* and \*Agent\* profiles, and custom object permissions were assigned to each role. After establishing the role hierarchy, two users were created, one with the \*Owner\* role and the other with the \*Agent\* role.

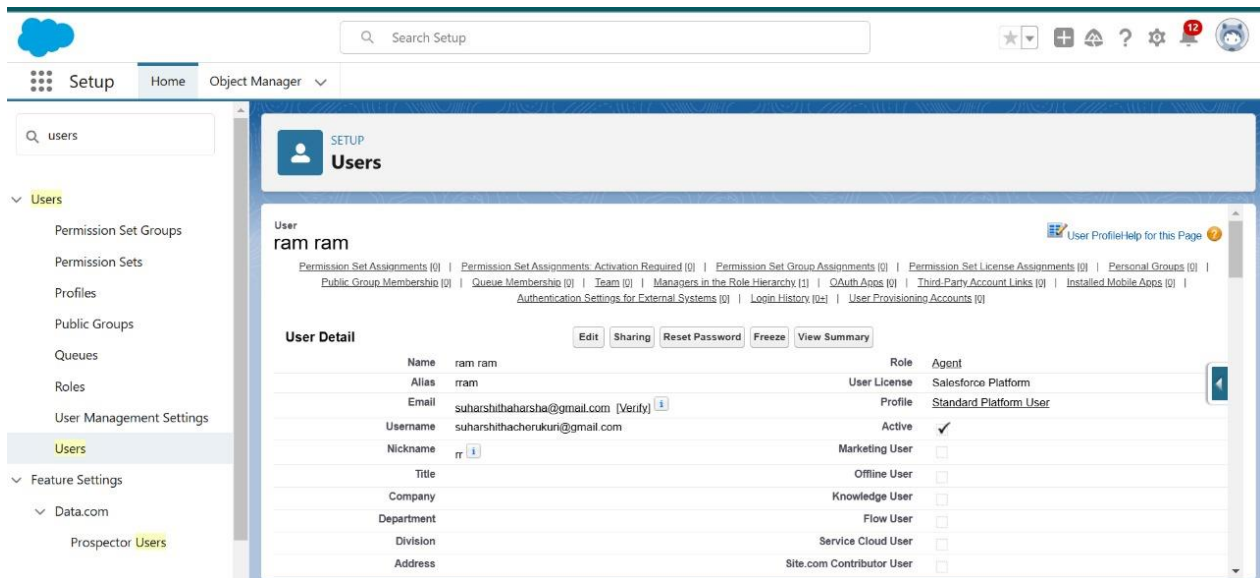
### Owner:



The screenshot shows the Salesforce Setup interface. The left sidebar contains a navigation menu with 'Users' selected. The main content area displays the 'User Detail' for 'vicky y'. The user's role is 'owner', and their profile is 'Standard User'. The user is active, and their license is 'Salesforce'. The user's email is 'suharshithaharsha@gmail.com' and their nickname is 'vick'.

User Detail	
Name	vicky y
Alias	vy
Email	suharshithaharsha@gmail.com [Verify]
Username	suharshithaharsha@gmail.com
Nickname	vick
Title	
Company	
Department	
Division	
Address	
Role	owner
User License	Salesforce
Profile	Standard User
Active	<input checked="" type="checkbox"/>
Marketing User	<input type="checkbox"/>
Offline User	<input type="checkbox"/>
Knowledge User	<input type="checkbox"/>
Flow User	<input type="checkbox"/>
Service Cloud User	<input type="checkbox"/>
Site.com Contributor User	<input type="checkbox"/>

### Agent:

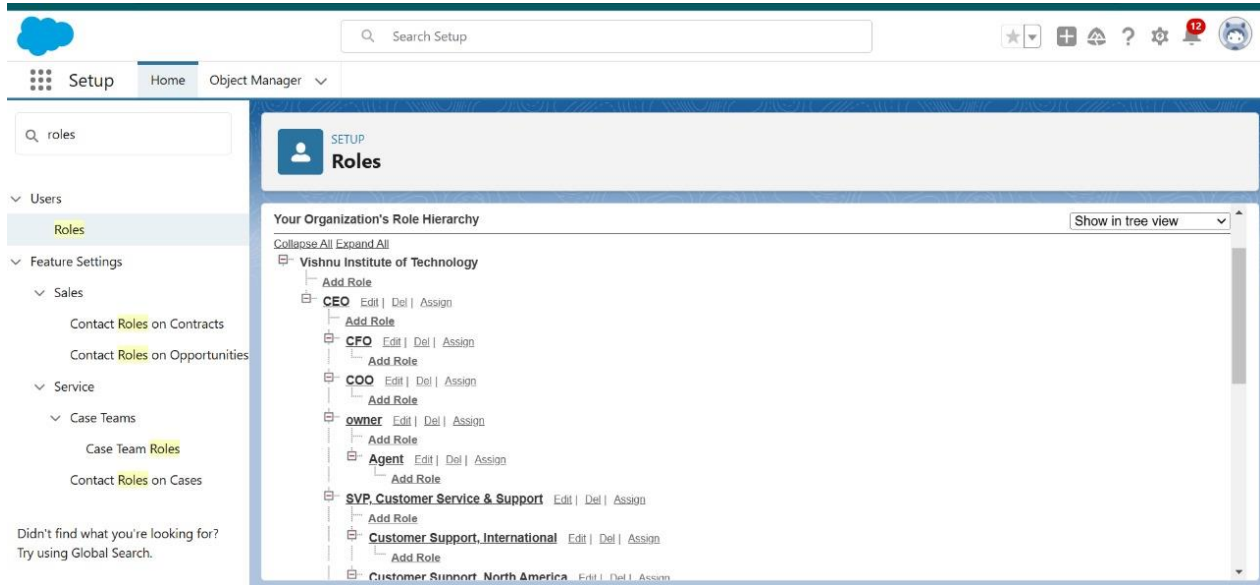


The screenshot shows the Salesforce Setup interface. The left sidebar contains a navigation menu with 'Users' selected. The main content area displays the 'User Detail' for 'ram ram'. The user's role is 'Agent', and their profile is 'Standard Platform User'. The user is active, and their license is 'Salesforce Platform'. The user's email is 'suharshithaharsha@gmail.com' and their nickname is 'rr'.

User Detail	
Name	ram ram
Alias	ram
Email	suharshithaharsha@gmail.com [Verify]
Username	suharshithaharsha@gmail.com
Nickname	rr
Title	
Company	
Department	
Division	
Address	
Role	Agent
User License	Salesforce Platform
Profile	Standard Platform User
Active	<input checked="" type="checkbox"/>
Marketing User	<input type="checkbox"/>
Offline User	<input type="checkbox"/>
Knowledge User	<input type="checkbox"/>
Flow User	<input type="checkbox"/>
Service Cloud User	<input type="checkbox"/>
Site.com Contributor User	<input type="checkbox"/>

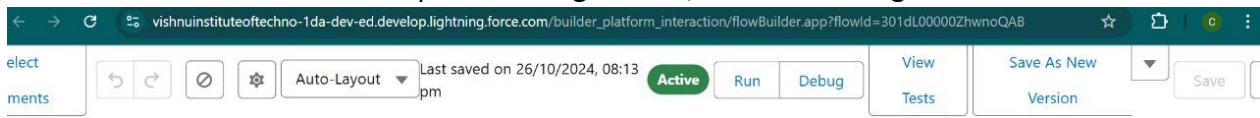
## Step - 5: Creating the Roles in Roles Heirarchy

The **Owner** and **Agent** roles were added to the role hierarchy, with the **Owner** role positioned under the **CEO** role and the **Agent** role placed beneath the **Owner** role.



## Step - 6: Flows

A record-triggered flow was created to automate the laptop booking process initiated by the consumer. This flow automates post-booking actions, such as sending email notifications.



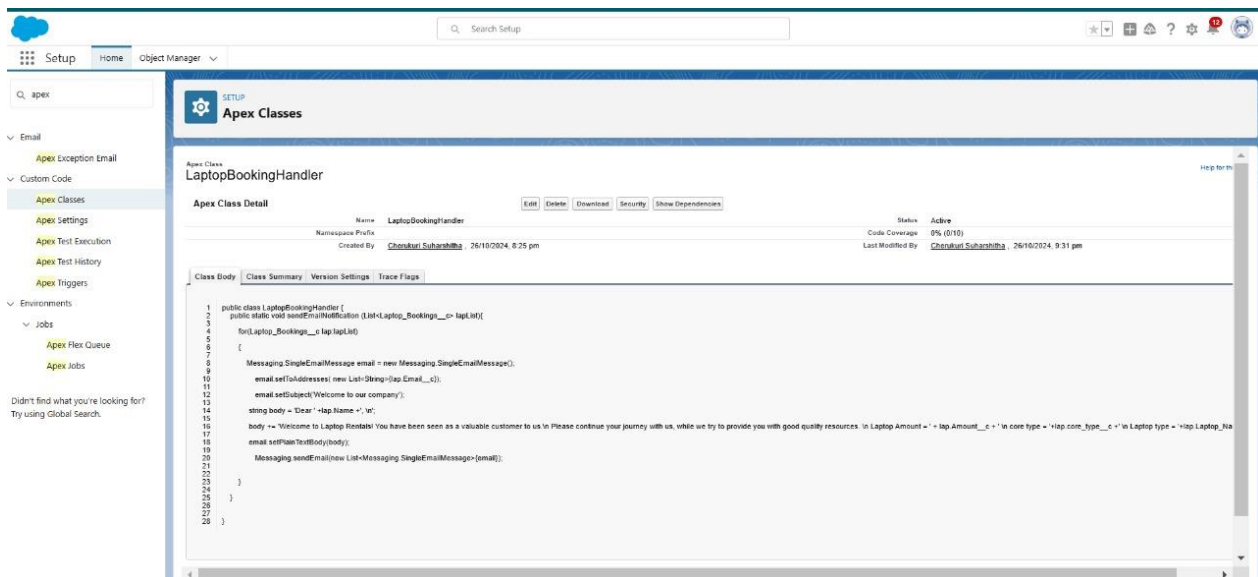


## Step - 6: Apex Programming

### Apex Classes:

#### LaptopBookingHandler.apxc:

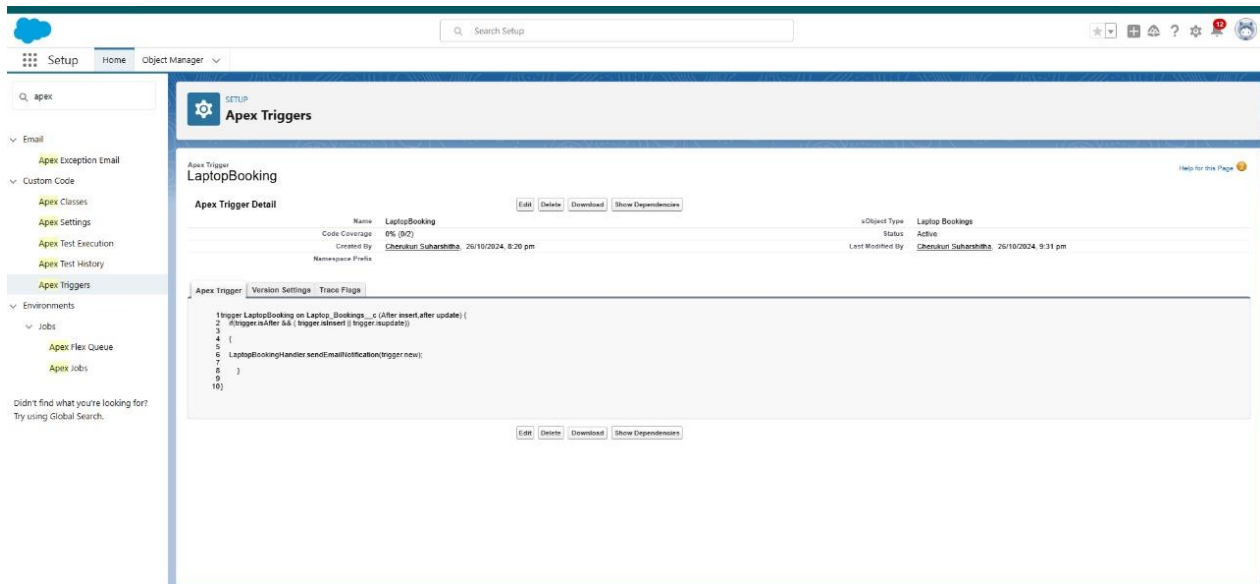
The `sendEmailNotification` method in the `LaptopBookingHandler` class sends a welcome email to customers listed in `Laptop\_Bookings\_\_c`. This method customizes the email body with details such as the customer's name, laptop amount, core type, and model, and then dispatches the email using `Messaging.SingleEmailMessage`.



#### LaptopHandlerTest.apxc:

The `LaptopBookingHandlerTest` test class verifies the `sendEmailNotification` method in `LaptopBookingHandler`. It begins by creating a test consumer and a laptop inventory record. Next, it adds a sample booking to the `Laptop\_Bookings\_\_c` list, linking it to the consumer's email and specifying details like the laptop model and rental period. Using `Test.startTest()` and `Test.stopTest()`, it executes the `sendEmailNotification` method and confirms email delivery by asserting the `Limits.getEmailInvocations()` count, ensuring the method performs as expected.

## Apex Trigger:



## LaptopBooking.apxt:

The `LaptopBooking` trigger runs on the `Laptop\_Bookings\_\_c` object after records are inserted or updated. Upon activation, it verifies if the operation is an after insert or after update, then calls the `sendEmailNotification` method from `LaptopBookingHandler`, passing the newly inserted or updated records. This ensures that customers receive a notification email whenever a new booking is created or an existing booking is updated.

## Step - 7: Creating Report

A report was generated based on **Laptop Bookings**, grouping rental data into buckets based on the **Amount\_\_c** field. Bookings are categorized into **Basic**, **Intermediate**, **High**, and **Very High** tiers, providing a clear summary of booking distributions across price ranges. This setup enables quick insights into customer pricing preferences, supporting analysis of rental demand and optimizing inventory management.

**Report: consumer with Laptop Bookings and Total Laptops**  
**customers with laptop bookings and total**

Total Records: 5    Total Amount: ₹32,800

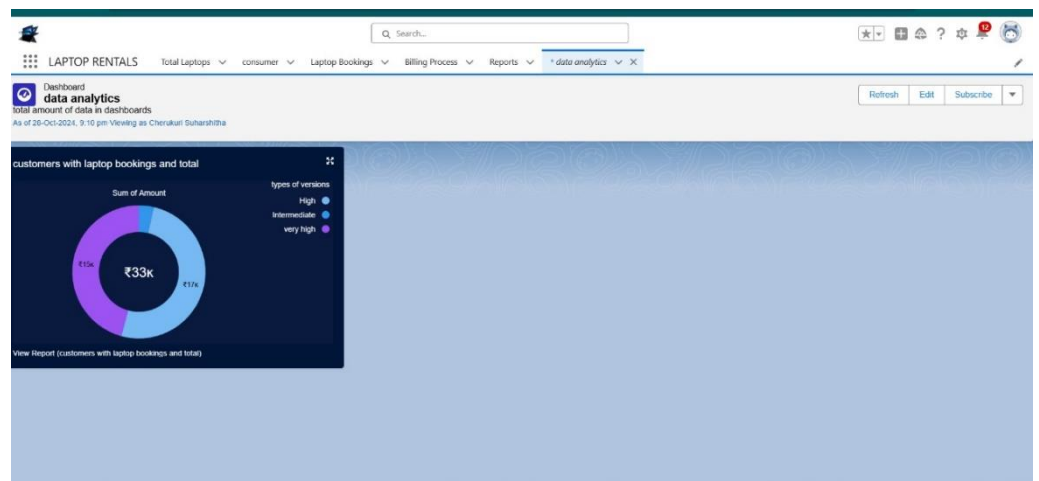
types of versions ↑	consumer: consumer_name	Laptop Bookings: Laptop Bookings	Total No Of Laptops: Total Laptops	Laptop Names	core type	Amount
<input type="checkbox"/> Intermediate (1)	nikki	Deal	1	Dell	core i3	₹1,200
<b>Subtotal</b>						₹1,200
<input type="checkbox"/> High (3)	nara	prime	3	Mac	Bionic chip	₹5,100
	sara	flipkart	2	Dell	core i7	₹8,000
	nanditha	Amazon	2	Acer	core i5	₹3,500
<b>Subtotal</b>						₹16,600
<input type="checkbox"/> very high (1)	kichu	Union	2	Mac	Bionic chip	₹15,000
<b>Subtotal</b>						₹15,000
<b>Total (5)</b>						₹32,800

Row Counts ☒    Detail Rows ☒    Subtotals ☒    Grand Total ☒

## Step - 8: Creating a dashboard

A **donut chart** was added to the dashboard to visually represent the **Laptop Bookings** report, segmented by the pricing buckets—**Basic**, **Intermediate**, **High**, and **Very High**. This chart provides an at-a-glance view of the distribution of bookings across different price tiers, making it easier to understand customer demand patterns and quickly assess which laptop rental options are most popular.

## data analytics of Laptop Bookings Dahsboard



## 5. Testing and Validation

To ensure the application operates effectively, a variety of testing methods were employed:

- **Unit Testing:** All Apex classes and triggers were rigorously tested through unit tests, resulting in complete code coverage.
- **User Interface Testing:** Manual and automated testing scripts were utilized to evaluate UI components, including the laptop booking process, navigation between different tabs, and the accuracy of form validations.

## 6. Key Scenarios Addressed by Salesforce in the Implementation Project

- **Streamlined Customer Management:** Salesforce effectively captures and organizes customer information, facilitating easy access to details such as contact information and booking history.
- **Automated Booking Workflow:** The system leverages custom objects and workflows to automate the booking process, ensuring real-time tracking of available laptops and accurate inventory management.
- **Efficient Billing and Invoicing:** The integration of automated billing features through Apex triggers and workflows guarantees precise billing for each rental, making invoice information readily available for both customers and staff.
- **Improved Customer Communication:** Salesforce provides the capability for personalized and automated email notifications, keeping customers updated throughout their rental experience—from confirmation emails to reminders.

## 7. Conclusion

In conclusion, the *Laptop Rentals* CRM implementation represents a significant advancement in customer relationship management. By integrating automation, personalized communication, and comprehensive analytics, this solution enhances operational efficiency while improving the overall customer experience. This positions the business for long-term growth and success in a competitive rental market.

**CHERUKURI SUHARSHITHA**  
**Vishnu Institute of Technology**