

# A CRM APPLICATION FOR LAPTOP RENTALS

## 1. Project Review

This project focuses on creating a comprehensive **CRM application for managing laptop rentals** for a business on the Salesforce platform. The objective is to address the operational challenges of managing rental requests, tracking inventory, and ensuring smooth communication with customers. By utilising Salesforce's capabilities in automation, workflow management, and data storage, this project aims to:

- **Streamline the rental process:** Automate booking and return processes, reducing the time and manual work required to manage each rental.
- **Enhance customer experience:** Provide timely email updates to customers about booking confirmation and return reminders.
- **Improve data accuracy and reporting:** Maintain real-time insights on laptop inventory and rental statuses, helping staff make informed decisions quickly.

This CRM application provides the **Laptop Rentals team** with an efficient way to manage and monitor all rental activities, supporting their mission to deliver high-quality service and optimised resource management.

## 2. Objectives

### **Business Goals:**

- Automate the laptop rental and return process to minimize manual intervention.
- Improve customer relationship management and enhance service quality for rental customers.
- Ensure accurate tracking and reporting of laptop inventory.

## Specific Outcomes:

- A custom Salesforce CRM application for managing rentals, with a streamlined interface for users to view, manage, and track rentals.
- Automated workflows to handle rental requests, status updates, and email notifications.
- Reports and dashboards for real-time insights on inventory, rentals, and customer activity.

## 3. Salesforce Key Features and Concepts Utilized

This section outlines the core Salesforce functionalities and tools applied within the CRM application for Laptop Rentals.

- **Custom Objects and Fields:**
  - Created a custom object Laptop\_Bookings\_\_c to manage each rental booking, with fields such as Customer Name, Email\_\_c, Amount\_\_c, Core\_\_c, Laptop\_Type\_\_c, and Status.
  - Set up a Laptops\_\_c object to represent inventory items, tracking details like model, specifications, and availability status.
- **Apex Triggers and Classes:**
  - Developed an **AfterInsert Trigger** (LaptopBooking) to automatically send emails when a booking is made. The LaptopBookingHandler class contains methods to format and dispatch these emails, personalising them with customer details.
- **Process Builder and Flows:**
  - Implemented a Process Builder flow to manage the lifecycle of each booking, automating actions such as status changes (e.g., from "Booked" to "In Use" to "Returned") without requiring manual updates.
- **Validation Rules:**
  - Added validation rules to ensure data quality, such as requiring certain fields to be filled (e.g., Email\_\_c for customer contact and Amount\_\_c for booking costs), preventing incomplete records from being saved.
- **Reports and Dashboards:**
  - Created dashboards with reports on metrics such as **current inventory**

levels, total rentals over time, top laptop models in demand, and customer demographics. These reports are accessible to management for strategic planning and resource allocation.

## 4. Detailed Steps to Solution Design

The solution was carefully designed in multiple steps, covering data models, user interface, and business logic. Here’s an overview:

- **Data Model Design:**
  - Created Laptop\_Bookings\_\_c and Laptops\_\_c custom objects.
  - Established relationships between Laptop\_Bookings\_\_c and standard Salesforce objects (like Account or Contact) to connect customers with their respective bookings.
  - Additional fields like Email\_\_c, Amount\_\_c, Cores\_\_c, and Laptop\_Type\_\_c are used to store booking-specific data. Relationships between objects are established to link the Laptop\_Bookings\_\_c object with other standard or custom objects (e.g., Account, Contact) to enhance data integrity and support comprehensive reporting.

**Screenshot:** Fields included in laptop bookings object are

Search Setup

Setup

Home

Object Manager

SETUP > OBJECT MANAGER

Laptop Bookings

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

List View Button Layout

Restriction Rules

Scoping Rules

Object Access

Triggers

Fields & Relationships

11 Items. Sorted by Field Label

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__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)                     |                   | ✓       |
| Laptop names        | Laptop_type__c         | Picklist                     |                   |         |
| Laptops Available   | Laptops_Available__c   | Formula (Number)             |                   |         |
| Last Modified By    | LastModifiedById       | Lookup(User)                 |                   |         |
| name                | name__c                | Master-Detail(consumer)      |                   | ✓       |
| Total No Of Laptops | Total_No_Of_Laptops__c | Master-Detail(Total Laptops) |                   | ✓       |

## User Interface (UI) Design:

The custom Lightning app "Laptop Rentals" features easy navigation with tabs for key components such as bookings, reports, and dashboards.

- Configured **Page Layouts** for Laptop\_Bookings\_\_c and Laptops\_\_c with relevant fields, sections, and related lists for ease of access.
- Designed dashboards for quick visual insights on active rentals, availability, and top-performing laptops.
- Custom Lightning components may be added to enhance specific sections, such as displaying a chart of most rented laptop models.

### Screenshot: Navigation items in the laptop rentals app

The screenshot displays the user interface of the 'Laptop Rentals' Lightning app. At the top, a navigation bar includes a search bar, a star icon, a plus icon, a home icon, a question mark icon, a settings icon, a notification bell with '12' alerts, and a user profile icon. Below the navigation bar, a breadcrumb trail shows the path: 'LAPTOP RENTALS' > 'Total Laptops' > 'consumer' > 'Laptop Bookings' > 'Billing Process' > 'Reports' > 'Recent | Dashboards'. The main content area is titled 'Dashboards' and shows a list of 'Recent' dashboards. The list has columns for 'Dashboard Name', 'Description', 'Folder', 'Created By', 'Created On', and 'Subscribed'. One dashboard is listed: 'data analytics of laptops' with a description of 'total amount of data in dashboards' and 'total rent amount', created by 'Chinimilli R S S Pavan Kumar' on '27/10/2024, 9:51 am'. The left sidebar contains navigation links for 'Dashboards' (Recent, Created by Me, Private Dashboards, All Dashboards), 'Folders' (All Folders, Created by Me, Shared with Me), and 'Favorites' (All Favorites).

| DASHBOARD | Dashboard Name            | Description                        | Folder            | Created By                   | Created On          | Subscribed |
|-----------|---------------------------|------------------------------------|-------------------|------------------------------|---------------------|------------|
| Recent    | data analytics of laptops | total amount of data in dashboards | total rent amount | Chinimilli R S S Pavan Kumar | 27/10/2024, 9:51 am |            |

Search...

LAPTOP RENTALS Total Laptops consumer Laptop Bookings Billing Process Reports \* Recent | Dashboards

Laptop Bookings Recently Viewed

5 items • Updated a few seconds ago

Search this list...

|   | <input type="checkbox"/> Laptop Bookings |  |
|---|--|--|
| 1 | <input type="checkbox"/> cart            |  |
| 2 | <input type="checkbox"/> Rent now        |  |
| 3 | <input type="checkbox"/> flipkart        |  |
| 4 | <input type="checkbox"/> SmartInternz    |  |
| 5 | <input type="checkbox"/> Amazon          |  |

Search...

LAPTOP RENTALS Total Laptops consumer Laptop Bookings Billing Process Reports \* Recent | Dashboards

consumer Recently Viewed

5 items • Updated a few seconds ago

Search this list...

|   | <input type="checkbox"/> consumer_name |  |
|---|--|--|
| 1 | <input type="checkbox"/> Surya         |  |
| 2 | <input type="checkbox"/> Rohith        |  |
| 3 | <input type="checkbox"/> Ram           |  |
| 4 | <input type="checkbox"/> Kalyan        |  |
| 5 | <input type="checkbox"/> Pavan         |  |

## Business Logic Design:

- Developed the LaptopBookingHandler class to handle email notifications using Messaging.SingleEmailMessage.
- Added the AfterInsert trigger on Laptop\_Bookings\_c to initiate the

sendEmailNotification method, ensuring customers receive a welcome and confirmation email after booking.

## Screenshot:Flow Automation

The screenshot displays the Flow Builder interface for a process named "Laptop distributions - V1". The top navigation bar includes a back arrow, the "Flow Builder" title, and the process name. Below the navigation bar, there is a toolbar with icons for "Select Elements", undo, redo, delete, and settings, along with a dropdown menu for "Auto-Layout". The status bar indicates the flow is "Active" and was "Last saved on 25/10/2024, 08:29 pm". Action buttons for "Run", "Debug", "View Tests", "Save As New Version", "Save", and "Deactivate" are also present.

The flow diagram on the left shows a "Record-Triggered Flow Start" event leading to a "Run Immediately" action, which then leads to a "Field should be Updated" decision. The decision is currently selected, and its configuration is shown in the right-hand panel.

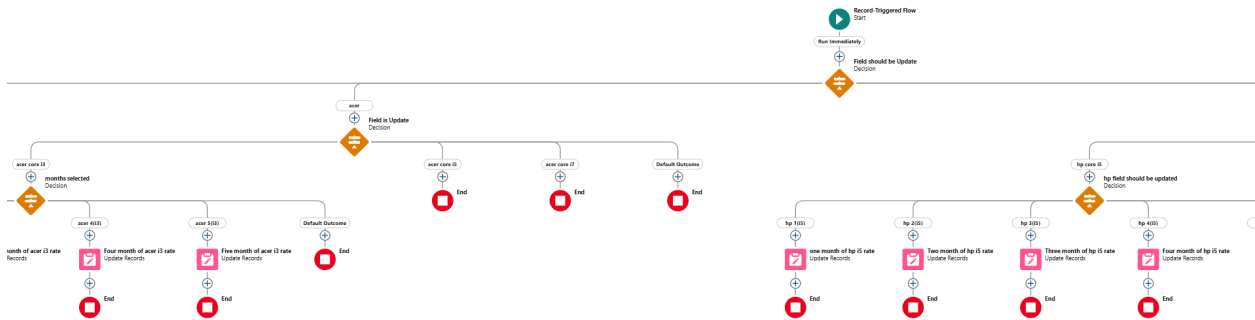
The configuration panel for the "Field should be Updated" decision includes the following fields:

- \* Label:** Field should be Updated
- \* API Name:** Field\_should\_be\_Updated
- Description:** (Empty text area)
- Outcomes:** For each path the flow can take, create an outcome. For each outcome, specify the conditions that must be met for the flow to take that path.


The "Outcomes" section is expanded, showing a list of outcomes: "dell", "acer", "hp", and "mac". The "dell" outcome is selected, and its configuration is shown in the "OUTCOME DETAILS" section:








- \* Label:** dell
- \* Outcome API Name:** dell
- Condition Requirements to Execute Outcome:** All Conditions Are Met (AND)
- Resource:** ...\_Bookings\_c > Laptop names
- Operator:** Equals
- Value:** Dell

The flow diagram also shows a "Default Outcome" section with a list of outcomes: "dell", "acer", "hp", and "mac". The "hp" outcome is selected as the default outcome.



## Validation rules:





SetupHomeObject Manager

SETUP > OBJECT MANAGER

consumer

DetailsFields & RelationshipsPage LayoutsLightning Record PagesButtons, Links, and ActionsCompact LayoutsField SetsObject LimitsRecord TypesRelated Lookup FiltersSearch LayoutsList View Button Layout

### consumer Validation Rule

[Back to consumer](#)

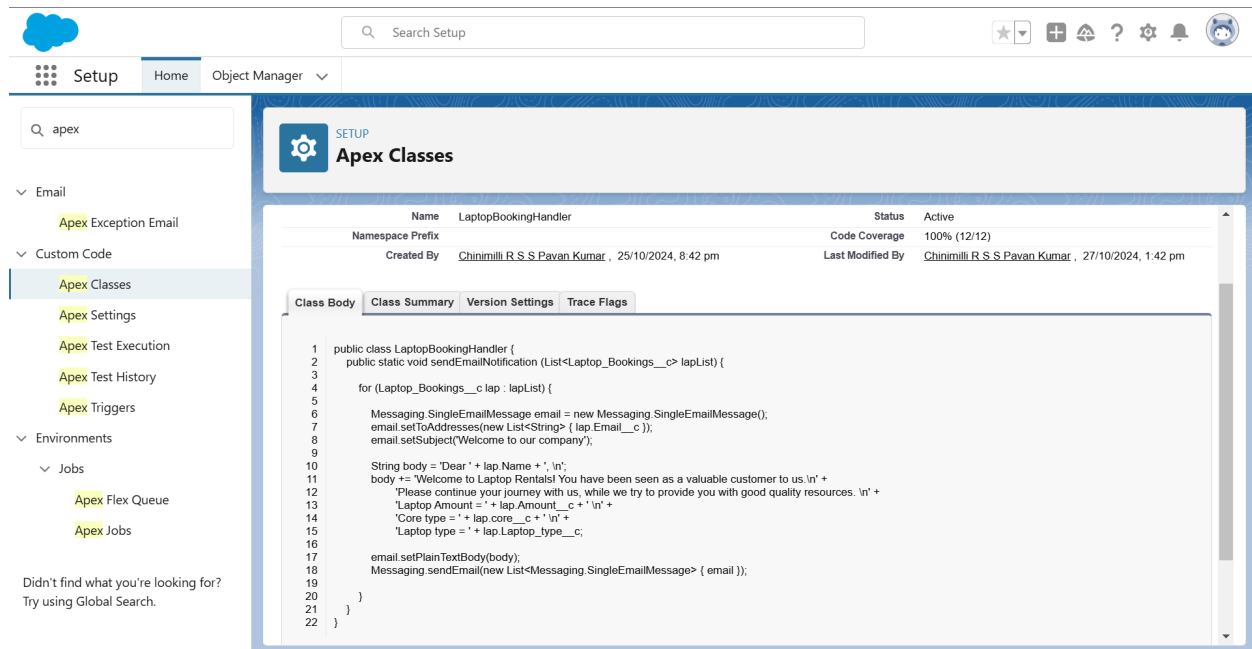
**Validation Rule Detail**

EditClone

|                         |   |                |   |
|-------------------------|---|----------------|---|
| Rule Name               | Phonenumberoremailblankrule                           | Active         | ✓   |
| Error Condition Formula | OR( ISBLANK( Phone_number__c ), ISBLANK( Email__c ) ) |                |   |
| Error Message           | Please fill the phone number and email id             | Error Location | Top of Page                                       |
| Description             | phone number and email number should not be blank     |                |   |
| Created By              | Chinimilli R S S Pavan Kumar, 25/10/2024, 2:03 am     | Modified By    | Chinimilli R S S Pavan Kumar, 25/10/2024, 2:03 am |

EditClone

## Creating the Apex class: class name for the apex class is LaptopBookingHandler



The screenshot displays the Salesforce Setup interface. On the left, a navigation menu shows the 'Apex Classes' section selected under 'Custom Code'. The main content area is titled 'Apex Classes' and shows details for the 'LaptopBookingHandler' class. A table at the top provides metadata: Name (LaptopBookingHandler), Status (Active), Code Coverage (100% (12/12)), Created By (Chinimilli R.S.S Pavan Kumar), and Last Modified By (Chinimilli R.S.S Pavan Kumar). Below this, the 'Class Body' tab is active, displaying the following Apex code:

```
1 public class LaptopBookingHandler {
2     public static void sendEmailNotification (List<Laptop_Bookings__c> lapList) {
3
4         for (Laptop_Bookings__c lap : lapList) {
5
6             Messaging.SingleEmailMessage email = new Messaging.SingleEmailMessage();
7             email.setToAddresses(new List<String> { lap.Email__c });
8             email.setSubject('Welcome to our company');
9
10            String body = 'Dear ' + lap.Name + ', \n';
11            body += 'Welcome to Laptop Rentals! You have been seen as a valuable customer to us.\n' +
12                'Please continue your journey with us, while we try to provide you with good quality resources. \n' +
13                'Laptop Amount = ' + lap.Amount__c + ' \n' +
14                'Core type = ' + lap.Core__c + ' \n' +
15                'Laptop type = ' + lap.Laptop_type__c;
16
17            email.setPlainTextBody(body);
18            Messaging.sendEmail(new List<Messaging.SingleEmailMessage> { email });
19
20        }
21    }
22 }
```

## Creating apex trigger: LaptopBooking trigger



The screenshot shows the Salesforce Setup interface for Apex Triggers. The left sidebar contains a search bar and a list of setup items, with 'Apex Triggers' highlighted. The main panel shows the 'Apex Trigger Detail' for a trigger named 'LaptopBooking'. The trigger is active and has 100% code coverage. The code editor shows the following logic:

```

1 trigger LaptopBooking on Laptop_Bookings__c (After insert,after update) {
2
3
4
5 if(trigger.isAfter && ( trigger.isInsert || trigger.isupdate))
6
7 {
8
9 LaptopBookingHandler.sendEmailNotification(trigger.new);
10
11 }
12
13
14
15}

```

## Reports and Dashboards:


Reports and dashboards in Salesforce provide valuable insights into the Laptop Rentals CRM application, helping the business monitor bookings, revenue, and customer trends effectively.








### Reports

- **Tabular Reports:** Used for simple lists, such as a full list of active laptop bookings or consumer records, giving a quick snapshot of data.
- **Summary Reports:** Offers data with grouped subtotals, such as revenue grouped by laptop type, making it easy to identify high-performing categories.

### Dashboards

- **Revenue Overview:** Shows total rental revenue over time, helping track financial performance.
- **Popular Laptops:** Displays the most rented laptop types, aiding in inventory and marketing decisions.
- **Customer Insights:** Provides data on customer types, helping target future marketing campaigns more effectively.



LAPTOP RENTALS

Total Laptops
consumer
Laptop Bookings
Billing Process
Reports
Recent | Dashboards

Report: consumer with Laptop Bookings and Total Laptops

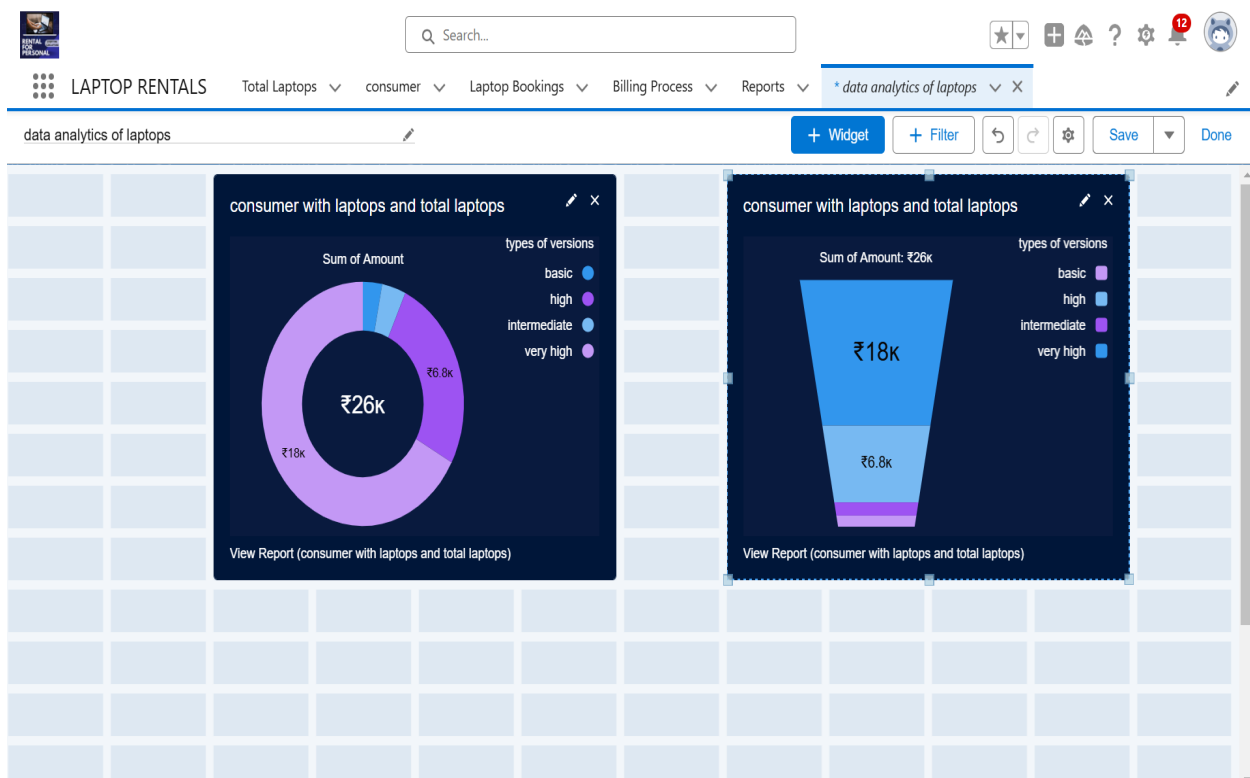
Enable Field Editing
Add Chart
Edit

Total Records: 5

Total Amount: ₹26,100

| types of versions | consumer: consumer_name | Laptop Bookings: Laptop Bookings | Total No Of Laptops: Total Laptops | Laptop names | core type   | Amount  |
|-------------------|-------------------------|----------------------------------|------------------------------------|--------------|-------------|---------|
| basic (1)         | Rohith                  | SmartInternz                     | 1                                  | Acer         | core i5     | ₹800    |
| Subtotal          |                         |                                  |                                    |              |             | ₹800    |
| Intermediate (1)  | Surya                   | Amazon                           | 1                                  | Dell         | core i3     | ₹1,000  |
| Subtotal          |                         |                                  |                                    |              |             | ₹1,000  |
| high (2)          | Ram                     | flipkart                         | 2                                  | Hp           | core i7     | ₹1,700  |
|                   | Kalyan                  | Rent now                         | 3                                  | Mac          | Bionic chip | ₹5,100  |
| Subtotal          |                         |                                  |                                    |              |             | ₹6,800  |
| very high (1)     | Pavan                   | cart                             | 4                                  | Hp           | core i7     | ₹17,500 |
| Subtotal          |                         |                                  |                                    |              |             | ₹17,500 |
| Total (5)         |                         |                                  |                                    |              |             | ₹26,100 |

Row Counts
Detail Rows
Subtotals
Grand Total



# 5. Testing and Validation

## Testing Approaches:

- **Unit Testing:**

- Each Apex class and trigger was thoroughly tested, ensuring at least 75% code coverage. Tests were designed to validate that the booking confirmation emails are sent and inventory statuses update correctly.

- **User Interface Testing:**

- Verified that the UI elements display correctly on page layouts and that all required fields and related lists are accessible. Ensured users could access only the fields allowed by their profile permissions.

- **Test Scenarios:**

- **Scenario 1:** Create a new booking and verify that an email is sent with the correct booking details.
- **Scenario 2:** Test that inventory adjusts automatically when a booking status is changed from "Booked" to "Returned."
- **Scenario 3:** Check that validation rules enforce required fields like Email\_\_c and Amount\_\_c.

```
File • Edit • Debug • Test • Workspace • Help • <
LaptopBookingHandlerTest.apex • LaptopBookingHandlerTest.apex
Code Coverage: None • API Version: 62
Run Test • Go To

1 // Test Class
2 @IsTest
3 private class LaptopBookingHandlerTest {
4     @IsTest
5     static void testSendEmailNotification() {
6         // Setup test data for consumer
7         consumer__c consumer = new consumer__c(
8             Name = 'John Doe',
9             Phone_number__c = '9887346134',
10            Address__c = 'Paris, France',
11            Email__c = 'JohnDoe@example.com',
12            consumer_Status__c = 'Student'
13        );
14        insert consumer;
15
16        // Setup test data for total laptops
17        Total_Laptops__c totalLaptops = new Total_Laptops__c(
18            Name = '1'
19        );
20        insert totalLaptops;
21
22        // Setup test data for laptop booking
23        Laptop_Bookings__c testBooking = new Laptop_Bookings__c(
24            Name = 'Booking1',
25            name__c = consumer.Id,
26            Email__c = consumer.Email__c,
27            Amount__c = 999,
28            core__c = 'core 13',
29            Laptop_type__c = 'Dell',
30            Total_No_Of_Laptops__c = totalLaptops.Id,
31            How_Many_Months__c = '1'
32        );
33        insert testBooking;
34
35        // Test email notification
36        Test.startTest();
37        // Insert to trigger the notification in the trigger itself
38        insert testBooking;
39        Test.stopTest();
40
41        // Assert email sent count
42        Integer sentEmailCount = Limits.getEmailInvocations();
43        System.assertEquals(1, sentEmailCount, 'One email should have been sent');
44    }
45 }
```

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

This project addresses several critical scenarios to ensure a smooth rental experience for both customers and staff:

- **Automated Notifications:** Automatically send confirmation emails when a booking is created and status updates as the rental progresses. This helps keep customers informed and reduces the workload for staff.
- **Real-Time Inventory Management:** Track the availability of laptops in real-time, updating inventory counts when laptops are rented and returned.
- **Workflow Automation for the Booking Lifecycle:** Manage booking statuses with automation, progressing each booking from "Booked" to "In Use" and finally "Returned" without manual intervention.
- **Role-Based Data Access:** Define roles and permissions so that staff can manage bookings and customers, while customers only have access to their rental information.

## 7. Conclusion

The Laptop Rentals CRM application demonstrates a comprehensive application of Salesforce's capabilities to manage and automate essential processes in a rental business. By leveraging custom objects, Apex programming, and flow automation, this project enables efficient data management and optimises customer interactions. Key functionalities, such as email notifications, automated pricing based on selections, and streamlined booking processes, have significantly enhanced the customer experience and operational efficiency.

Moreover, Salesforce's reporting and dashboard tools provide insightful data analysis, allowing business stakeholders to monitor rental trends, track revenue, and make data-driven decisions. Validation rules and role-based access control further ensure data

integrity and secure handling of customer information, building a reliable foundation for business growth. The integration of these Salesforce features not only helps meet the immediate objectives but also sets up a scalable infrastructure for future enhancements, making it adaptable to evolving business needs.

This project serves as a model for how Salesforce's robust platform can be tailored to a specific business scenario, providing both functional and strategic value. Through this application, the Laptop Rentals team now has a powerful tool to manage inventory, enhance customer satisfaction, and ensure efficient workflow automation, laying a strong foundation for sustained growth and improved customer relations.