

TripAdvisor E-Management

College: 7155 - PSG Institute of Technology and Applied Research

Team ID: NM2024TMID00709

Team Lead: Isaac Abraham Thottathil (8E1079B851E30E5BDA64150BBCADDD14)

Team Members:

Jaivant B R	BE0F3F136D0D338817A43AE83CAA7FF1
Kamal S	FDAAF47F3405A428A1F41E420FF950DF
Kamal Chander R	B3C74B6CBE49996AD054319C8AEDAF61
Aniruddh Muralidaran	FC8E682D7DA11E289494F1395905B067
Isaac Abraham Thottathil	8E1079B851E30E5BDA64150BBCADDD14

1. Project Overview

The TripAdvisor E-Management app integrates with Salesforce to create a comprehensive travel companion. The app enables users to plan, book, and optimize their travel experiences by managing information related to hotels, flights, and food options. The platform facilitates informed travel decisions, leveraging millions of reviews and insights to support the best choices in accommodations, dining, attractions, and deals.

2. Objectives

Business Goals:

- Enhance the efficiency and user experience of the travel management process.

- Automate data management tasks, discount application, and email notifications for timely customer engagement.
- Provide seamless tracking and updates to ensure accurate information on hotels, food options, and flight details.

Specific Outcomes:

- Automated synchronization between food options and hotels to ensure accurate hotel data.
- A dynamic discount system for customers based on their spending, enhancing customer satisfaction.
- Scheduled email alerts for flight bookings to ensure timely notifications, improving customer travel experience.

3. Salesforce Key Features and Concepts Utilized

This project leverages key Salesforce functionalities and concepts to create a seamless and effective food distribution system:

- **Custom Objects and Fields**
 - **Hotel:** Stores hotel details, including associated food options.
 - **Food Option:** Tracks available food choices per hotel (Auto Number: FO-{0000}).
 - **Flight:** Records customer flight details (Auto Number: FL-{0000}).
 - **Customer:** Manages customer details for discount eligibility.
- **Flow for Discounts**
Created a Flow to apply automatic discounts based on customer spending:
 - **Spending > 3000:** Apply higher discount rate.
 - **Spending between 1500 and 3000:** Apply lower discount rate.
- **Apex Triggers for Data Synchronization**
 - **Hotel-Food Option Synchronization:** Developed an Apex trigger that updates hotel information whenever a new food option is added or modified, ensuring accurate food count per hotel.
- **Apex Schedulable Class for Flight Reminders**
Created an **Apex Schedulable class** to automate email reminders for customers with booked flights.
 - **Reminder Schedule:** Sends an email notification 24 hours before departure.
 - **Confirmation:** System provides confirmation that the email was sent successfully.

These Salesforce features collectively ensure that the project operates with high efficiency, transparency, and data-driven decision-making to maximize food distribution effectiveness.

4. Detailed Steps to Solution Design

❖ Created objects

- In the salesforce developer platform, we created custom objects that were required for the project.
- There were 4 main objects
- They were Hotel, Flight, Food Option, Customer.
- This was done by using the object manager

The screenshot shows the Salesforce Object Manager interface for a custom object named 'Hotel'. The browser tabs at the top include 'Object Manager | Salesforce', 'Food Option | Salesforce', and 'Hotel | Salesforce'. The URL bar shows a development environment address. The interface has a top navigation bar with 'Setup', 'Home', and 'Object Manager' (selected). Below this is a search bar labeled 'Search Setup'. The main content area is titled 'SETUP > OBJECT MANAGER' and 'Hotel'. On the left is a sidebar with a 'Details' section and a list of configuration options: 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, and Flow Triggers. The main panel is titled 'Edit Custom Object Hotel' and contains the 'Custom Object Definition Edit' form. This form includes sections for 'Custom Object Information' (with fields for Label 'Hotel', Plural Label 'Hotels', and a checkbox for 'Starts with vowel sound'), 'Object Name' (set to 'Hotel'), and 'Description'. It also has radio buttons for 'Context-Sensitive Help Setting' (selected as 'Open the standard Salesforce.com Help & Training window') and a 'Content Name' dropdown set to 'None'. The bottom section is 'Enter Record Name Label and Format', with 'Record Name' set to 'Hotel Name' and 'Data Type' set to 'Text'. A warning message at the bottom states: 'Warning: If you plan to insert a high volume of records in this object via the'.

Object Manager | Salesforce

Food Option | Salesforce

Food Option | Salesforce

+

—

□

×

psginstituteoftechnology-b3-dev-ed.develop.lightning.force.com/lightning/setup/ObjectManager/01Qy00...

☆

K

⋮

M HTML

M CSS

M Java

tommy

ML

NM

View Study Material

DBMS Project - Cre...

Trip_Estimation

»

☁

★

+

🏠

?

⚙️

12

🐙

🔍 Search Setup

Setup

Home

Object Manager

SETUP > OBJECT MANAGER

Food Option

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

Flow Triggers

Edit Custom Object

Food Option

Help for this Page

Custom Object Definition

Edit

Save

Save & New

Cancel

Custom Object Information

The singular and plural labels are used in tabs, page layouts, and reports. Be careful when changing the name or label as it may affect existing integrations and merge templates.

Label

Food Option

Example: Account

Plural Label

Food Options

Example: Accounts

Starts with vowel sound

☐

The Object Name is used when referencing the object via the API.

Object Name

Food_Option

Example: Account

Description

Context-Sensitive Help Setting

☒ Open the standard Salesforce.com Help & Training window

☐ Open a window using a Visualforce page

Content Name

--None--

Enter Record Name Label and Format

The Record Name appears in page layouts, key lists, related lists, lookups, and search results. For example, the Record Name for Account is "Account Name" and for Case it is "Case Number". Note that the Record Name field is always called "Name" when referenced via the API.

Record Name

Food Option Name

Example: Account Name

Data Type

Auto Number

Warning: If you plan to insert a high volume of records in this object via the

❖ Created fields for hotel object

- TotalFoodOptions with datatype as number
- Date with datatype as date

The screenshot shows the Salesforce Object Manager interface for the 'Hotel' object. The left sidebar contains a navigation menu with options like Details, Fields & Relationships (selected), 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, and Flow Triggers.

The main content area displays a table of fields for the 'Hotel' object. The table has columns for FIELD LABEL, FIELD NAME, DATA TYPE, CONTROLLING FIELD, and INDEXED. The fields listed are:

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedById	Lookup(User)		
Date	Date__c	Date		
Hotel Name	Name	Text(80)	✓	
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)	✓	
TotalFoodOptions	TotalFoodOptions__c	Number(18, 0)		

The bottom of the screen shows the Windows taskbar with various application icons and the system clock indicating 17:32 on 14-10-2024.

❖ Create Fields for Food Option

- Food Amount
- Hotel
- Name

The screenshot shows the Salesforce Object Manager interface for the 'Food Option' object. The browser address bar indicates the URL: `psginstituteoftechnology-b3-dev-ed.develop.lightning.force.com/lightning/setup/ObjectManager/01IQy00...`. The page title is 'Food Option'. The left sidebar contains a navigation menu with the following items: Details, Fields & Relationships (selected), 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, and Flow Triggers.

The main content area displays a table of fields for the 'Food Option' object. The table has the following columns: FIELD LABEL, FIELD NAME, DATA TYPE, CONTROLLING FIELD, and INDEXED. The fields listed are:

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedById	Lookup(User)		
Food Amount	Food_Amount__c	Currency(18, 0)		
Food Option Name	Name	Auto Number		✓
Hotel	Hotel__c	Lookup(Hotel)		✓
Last Modified By	LastModifiedById	Lookup(User)		
Name	Name__c	Text(30)		
Owner	OwnerId	Lookup(User,Group)		✓

The bottom of the screen shows the Windows taskbar with the date and time: 17:31, 14-10-2024.

❖ Created Fields for Flight object

- Name
- DepartureDateTime

The screenshot shows the Salesforce Object Manager interface for the 'Flight' object. The 'New Custom Field' setup is in progress, specifically 'Step 2. Enter the details'. The 'Field Label' and 'Field Name' are both set to 'Name'. The 'Description' and 'Help Text' fields are empty. The 'Required' checkbox is checked, and the 'Auto add to custom report type' checkbox is also checked. The 'Default Value' field is empty, and the 'Show Formula Editor' button is visible. The interface includes a sidebar with navigation options like 'Details', 'Fields & Relationships', 'Page Layouts', etc. The top navigation bar shows 'Setup', 'Home', and 'Object Manager'. The bottom status bar displays the system time as 17:33 on 14-10-2024.

Object Manager | Salesforce x Flight | Salesforce x +

psginstituteoftechnology-b3-dev-ed.develop.lightning.force.com/lightning/setup/ObjectManager/01IQy00... ☆ K

M HTML M CSS M Java tommy ML NM View Study Material DBMS Project - Cre... Trip_Estimation >>

Search Setup

Setup Home Object Manager

SETUP > OBJECT MANAGER
Flight

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
Flow Triggers

Flight
New Custom Field [Help for this Page](#)

Step 2. Enter the details Step 2 of 4

Previous Next Cancel

Field Label Name ⓘ

Field Name Name ⓘ

Description

Help Text

Required ☐ Always require a value in this field in order to save a record

Auto add to custom report type ☒ Add this field to existing custom report types that contain this entity ⓘ

Default Value [Show Formula Editor](#)

Use formula syntax: Enclose text and picklist value API names in double quotes: ("the_text"), include numbers without quotes: (25), show percentages as decimals: (0.10), and express date calculations in the standard format: (Today() + 7). To reference a field from a Custom Metadata type record use: \$CustomMetadata.Type__mdt.RecordAPIName.Field__c

Previous Next Cancel

❖ Created fields for customer object

- Customer name
- Discount amount
- Discount percentage

The screenshot shows the Salesforce Object Manager interface for creating a new custom field on the 'Customer' object. The browser address bar indicates the URL: `psginstituteoftechnology-b3-dev-ed.develop.lightning.force.com/lightning/setup/ObjectManager/01IQy00...`. The page title is 'Customer' under 'SETUP > OBJECT MANAGER'. The left sidebar lists various setup options, with 'Fields & Relationships' selected. The main content area is titled 'New Custom Field' and shows 'Step 2. Enter the details' of a 4-step process. The field is named 'Discount Amount' with a length of 18 and 0 decimal places. The field name is 'Discount_Amount'. The 'Required' checkbox is unchecked, and the 'Add this field to existing custom report types that contain this entity' checkbox is checked. The 'Default Value' section shows a 'Show Formula Editor' button and a text area for the formula. The bottom status bar shows the system time as 17:38 on 14-10-2024.

Customer | Salesforce

psginstituteoftechnology-b3-dev-ed.develop.lightning.force.com/lightning/setup/ObjectManager/01IQy00...

HTML CSS Java tommy ML NM View Study Material DBMS Project - Cre... Trip_Estimation

Search Setup

Setup Home Object Manager

SETUP > OBJECT MANAGER

Customer

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

Flow Triggers

Customer

New Custom Field

Help for this Page

Step 2. Enter the details Step 2 of 4

Previous Next Cancel

Field Label Discount Amount

Please enter the length of the number and the number of decimal places. For example, a number with a length of 18 and 0 decimal places can accept values up to "12345678.90".

Length 18 Decimal Places 0

Number of digits to the left of the decimal point Number of digits to the right of the point

Field Name Discount_Amount

Description

Help Text

Required

☐ Always require a value in this field in order to save a record

☒ Add this field to existing custom report types that contain this entity

Auto add to custom report type

Default Value

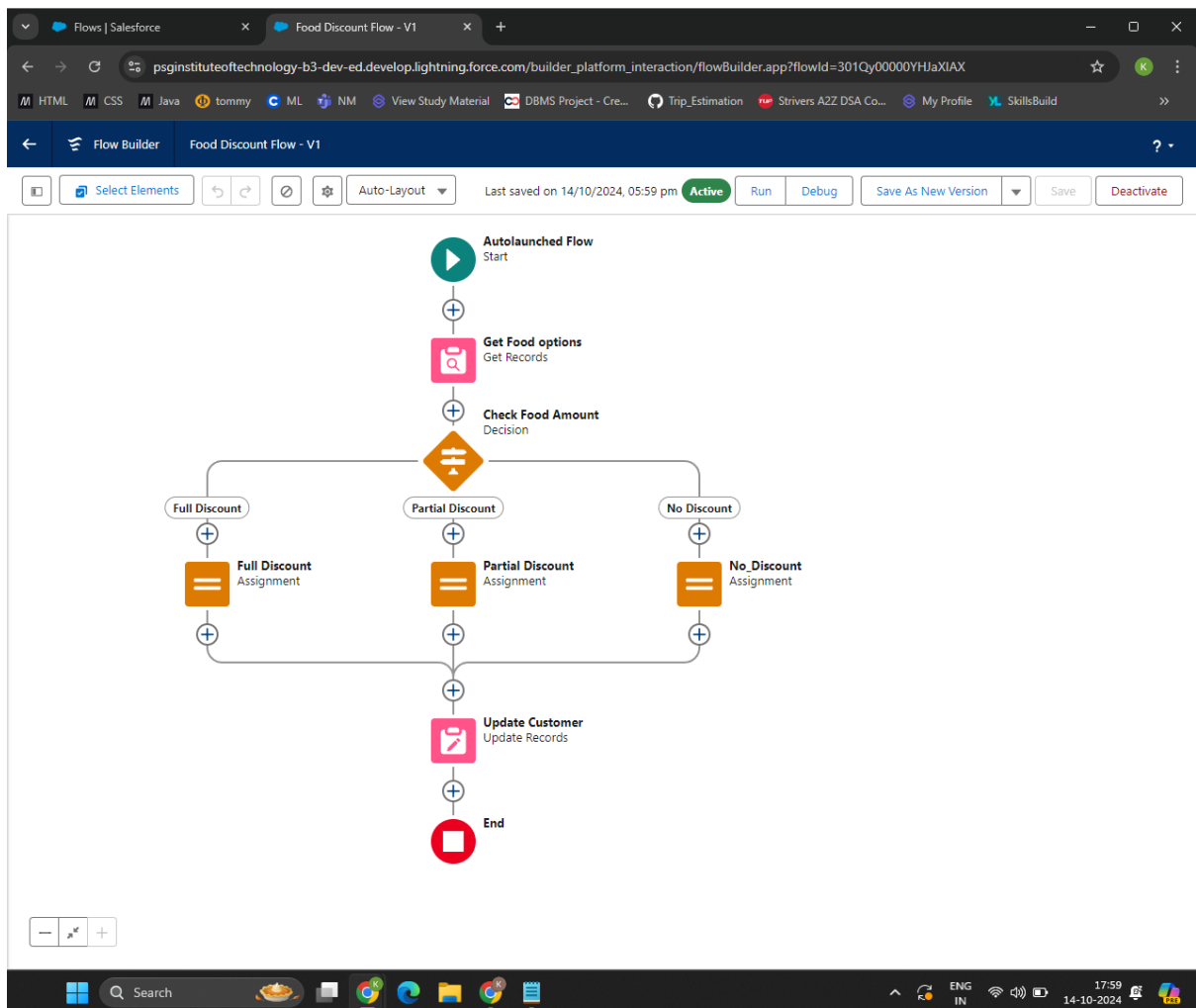
Show Formula Editor

Use formula syntax: Enclose text and picklist value API names in double quotes: ("the_text"), include numbers without quotes: (25), show percentages as decimals: (0.10), and express date calculations in the standard format: (Today() + 7). To reference a field from a Custom Metadata type record use: \$CustomMetadata.Type__mdt.RecordAPIName.Field__c

17:38 14-10-2024

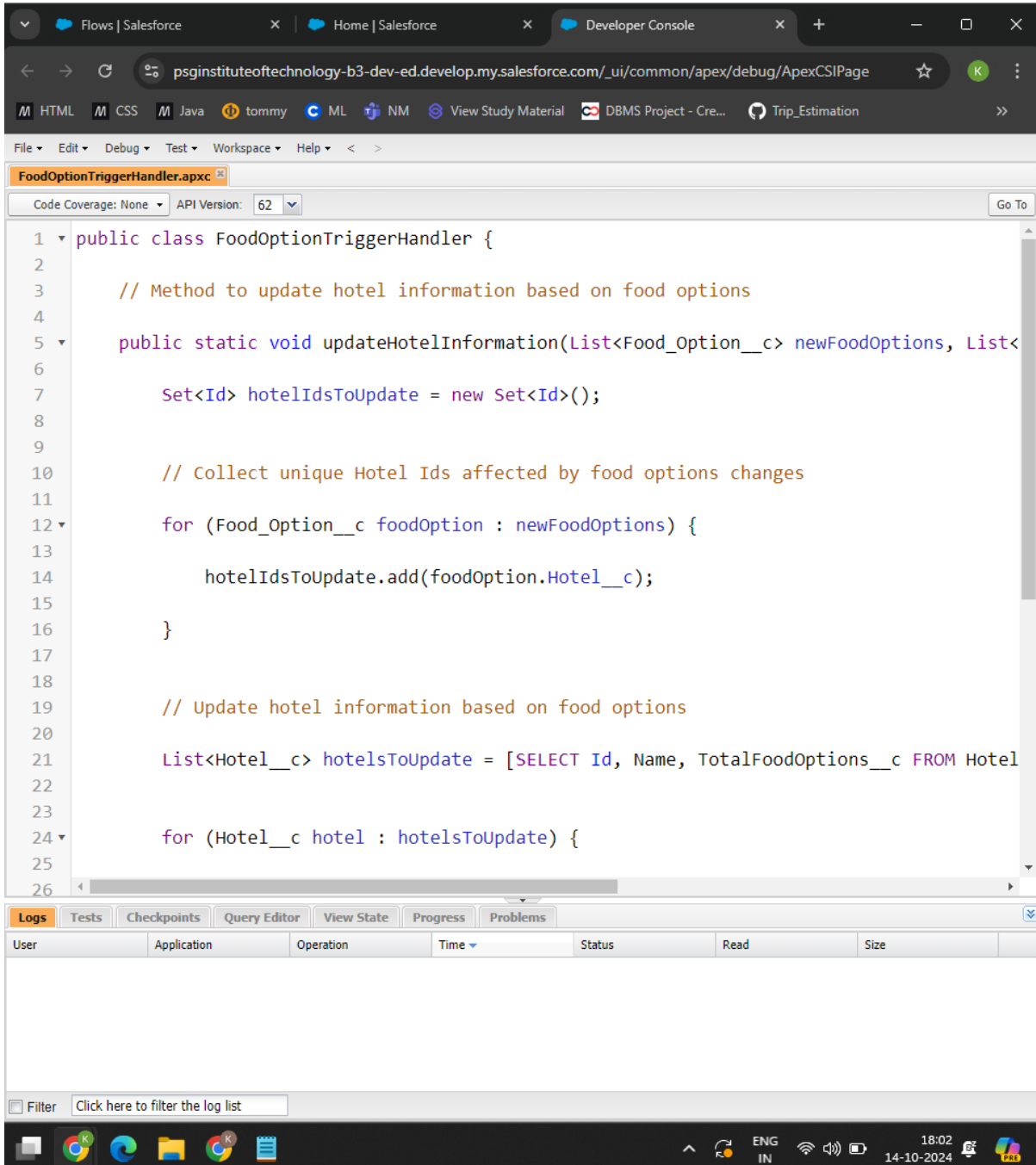
❖ Created Flow

- Developed a **Discount Flow** to automatically apply discounts based on customer purchase amounts. This flow applies discounts in a step-by-step format to ensure ease of entry and accuracy.
- **Flow Conditions:** The flow is triggered when the customer purchase **Amount** meets specific thresholds:
 - For purchases greater than **3000**, a high discount rate is applied.
 - For purchases between **1500 and 3000**, a medium discount rate is applied.



❖ Created Apex Trigger for Food Option

- Developed an **Apex Trigger** to ensure synchronization between **Hotel** and **Food Option** records, maintaining clear and manageable records of food options available at each hotel.
- Trigger Conditions: The trigger is activated whenever a **Food Option** record is added or updated to reflect changes in the associated **Hotel** record.



The screenshot displays the Salesforce Developer Console interface. The top navigation bar shows tabs for 'Flows | Salesforce', 'Home | Salesforce', and 'Developer Console'. The browser address bar indicates the URL: `puginstituteoftechnology-b3-dev-ed.develop.my.salesforce.com/_ui/common/apex/debug/ApexCSIPage`. The main editor area shows the code for `FoodOptionTriggerHandler.apxc`. The code is as follows:

```
1 public class FoodOptionTriggerHandler {
2
3     // Method to update hotel information based on food options
4
5     public static void updateHotelInformation(List<Food_Option__c> newFoodOptions, List<
6
7         Set<Id> hotelIdsToUpdate = new Set<Id>();
8
9
10    // Collect unique Hotel Ids affected by food options changes
11
12    for (Food_Option__c foodOption : newFoodOptions) {
13
14        hotelIdsToUpdate.add(foodOption.Hotel__c);
15
16    }
17
18
19    // Update hotel information based on food options
20
21    List<Hotel__c> hotelsToUpdate = [SELECT Id, Name, TotalFoodOptions__c FROM Hotel
22
23
24    for (Hotel__c hotel : hotelsToUpdate) {
25
26
```

Below the code editor, there are tabs for 'Logs', 'Tests', 'Checkpoints', 'Query Editor', 'View State', 'Progress', and 'Problems'. The 'Logs' tab is selected, showing a table with columns: User, Application, Operation, Time, Status, Read, and Size. The table is currently empty. At the bottom of the console, there is a 'Filter' button and a text input field with the placeholder 'Click here to filter the log list'. The system tray at the bottom of the screen shows the date and time as 14-10-2024, 18:02.

Flows | Salesforce | Home | Salesforce | Developer Console

psginstituteoftechnology-b3-dev-ed.develop.my.salesforce.com/_ui/common/apex/debug/ApexCSIPage

HTML CSS Java tommy ML NM View Study Material DBMS Project - Cre... Trip_Estimation

File Edit Debug Test Workspace Help

FoodOptionTriggerHandler.apxc

Code Coverage: None API Version: 62 Go To

```
1 public class FoodOptionTriggerHandler {
2
3     // Method to update hotel information based on food options
4
5     public static void updateHotelInformation(List<Food_Option__c> newFoodOptions, List<
6
7         Set<Id> hotelIdsToUpdate = new Set<Id>();
8
9
10    // Collect unique Hotel Ids affected by food options changes
11
12    for (Food_Option__c foodOption : newFoodOptions) {
13
14        hotelIdsToUpdate.add(foodOption.Hotel__c);
15
16    }
17
18
19    // Update hotel information based on food options
20
21    List<Hotel__c> hotelsToUpdate = [SELECT Id, Name, TotalFoodOptions__c FROM Hotel
22
23
24    for (Hotel__c hotel : hotelsToUpdate) {
25
26
```

Logs Tests Checkpoints Query Editor View State Progress Problems

User	Application	Operation	Time	Status	Read	Size
------	-------------	-----------	------	--------	------	------

Filter Click here to filter the log list

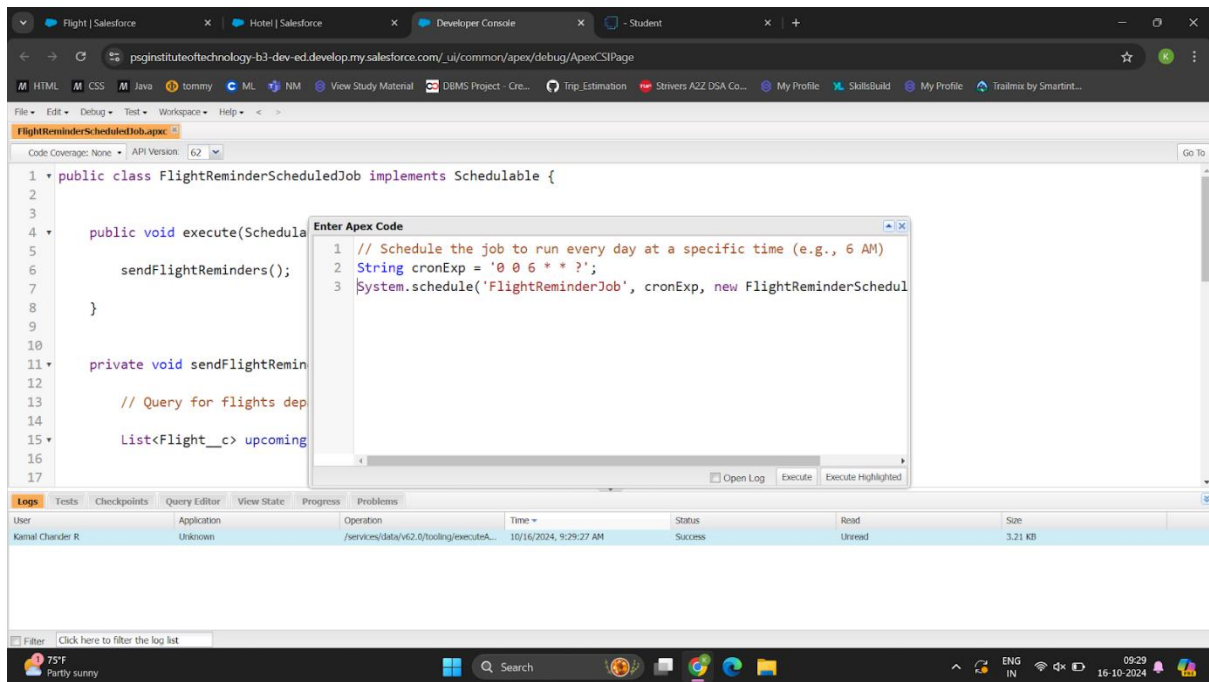
ENG IN 18:02 14-10-2024

❖ Created Apex Schedule

- Developed an **Apex Schedule** to send reminder emails to customers who have booked flights, ensuring they receive a notification 24 hours before their scheduled flight.
- The **Apex Schedule** is set to run daily and check for flight bookings scheduled within the next 24 hours.
- If the booking is within 24 hours, an **email alert** is triggered to remind the customer of their upcoming flight.

The screenshot shows the Salesforce Developer Console with the Apex class `FlightReminderScheduledJob` open. The code implements the `Schedulable` interface. The `execute` method calls `sendFlightReminders`, which runs a SOQL query to find flights departing within the next 24 hours. The query is: `[SELECT Id, Name, DepartureDateTime__c FROM Flight__c WHERE DepartureDateTime__c >= :DateTime.now() AND DepartureDateTime__c <= :DateTime.now().add(Duration.ofHours(24))]`. The code then iterates over the results to send reminder emails. The `Problems` pane at the bottom shows three errors:

Name	Line	Problem
FlightReminderScheduledJob	15	Invalid bind expression type of Datetime for column of type Id
FlightReminderScheduledJob	28	Variable does not exist: ContactEmail__c
FlightReminderScheduledJob	35	Variable does not exist: ContactEmail__c



5. Testing and Validation

Apex Trigger:

trigger FoodOptionTrigger on Food_Option__c (after insert, after update, after delete) {

if (trigger.isInsert && trigger.isAfter) {

FoodOptionTriggerHandler.updateHotelInformation(trigger.new);

}

}

Test Class:

@isTest

private class TestFoodOptionTrigger {

@isTest static void testFoodOptionTrigger() {

// Create a Hotel record for reference

Hotel__c hotel = new Hotel__c(Name = 'Test Hotel');

insert hotel;

```

// Create a Food Option record linked to the Hotel
Food_Option__c foodOption1 = new Food_Option__c(Hotel__c = hotel.Id);
insert foodOption1;

// Verify if Hotel's TotalFoodOptions__c is updated correctly
Hotel__c updatedHotel = [SELECT TotalFoodOptions__c FROM Hotel__c WHERE
Id = :hotel.Id];
System.assertEquals(1, updatedHotel.TotalFoodOptions__c,
'TotalFoodOptions__c should be updated to 1');

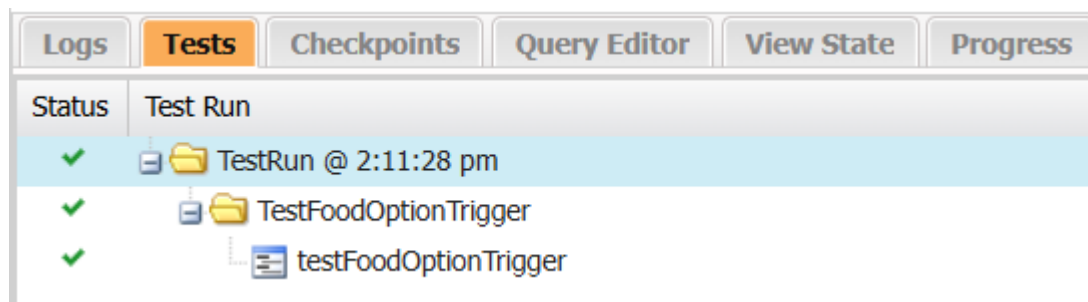
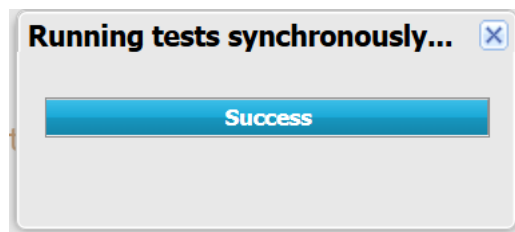
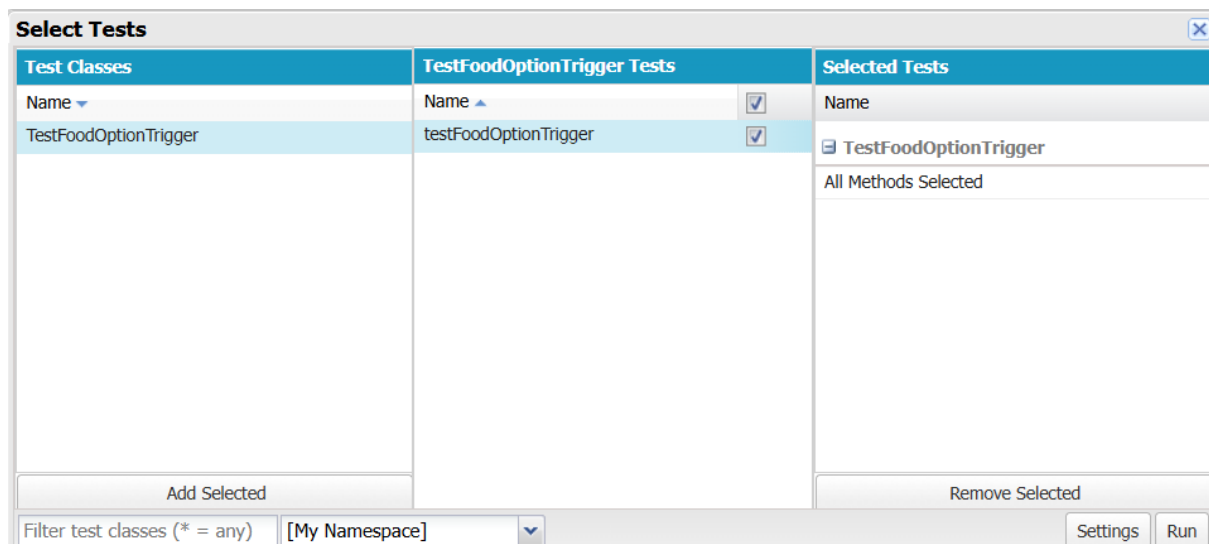
// Create another Food Option and check the count again
Food_Option__c foodOption2 = new Food_Option__c(Hotel__c = hotel.Id);
insert foodOption2;

updatedHotel = [SELECT TotalFoodOptions__c FROM Hotel__c WHERE Id =
:hotel.Id];
System.assertEquals(2, updatedHotel.TotalFoodOptions__c,
'TotalFoodOptions__c should be updated to 2');
}
}

```

STEPS:

- Step 1: Creates a Hotel__c record with TotalFoodOptions__c initialized to 0.
- Step 2: Inserts a Food_Option__c record associated with the hotel.
- Step 3: Verifies that TotalFoodOptions__c on the hotel is updated to 1 after adding the first food option.
- Step 4: Adds another Food_Option__c to check if TotalFoodOptions__c increments to 2.
- Step 5: Updates a food option record to confirm that updates do not affect the count.
- Step 6: Deletes one Food_Option__c and verifies that TotalFoodOptions__c decrements accordingly.



6. Conclusion

Summary of Achievements:

The **TripAdvisor E-Management** project successfully established an all-in-one travel management platform on Salesforce. Key achievements include:

- **Comprehensive Data Management:** Created custom objects and fields to manage essential travel data, supporting organized and accessible records.
- **Automated Processes:** Used flows and Apex triggers to enhance operational efficiency, reducing manual input and improving data accuracy.

- **Enhanced Collaboration:** Configured profiles and public groups to allow secure collaboration, protecting data privacy.
- **Real-Time Monitoring:** Developed custom reports and a centralized dashboard for real-time insights into booking trends and customer preferences.
- **Improved Decision-Making:** Created a streamlined, user-friendly system that supports seamless travel planning and booking, enabling quick, informed decision-making for users.

This project demonstrates the effective use of Salesforce to support a dynamic, user-centered travel management solution, making TripAdvisor an invaluable resource for travelers.