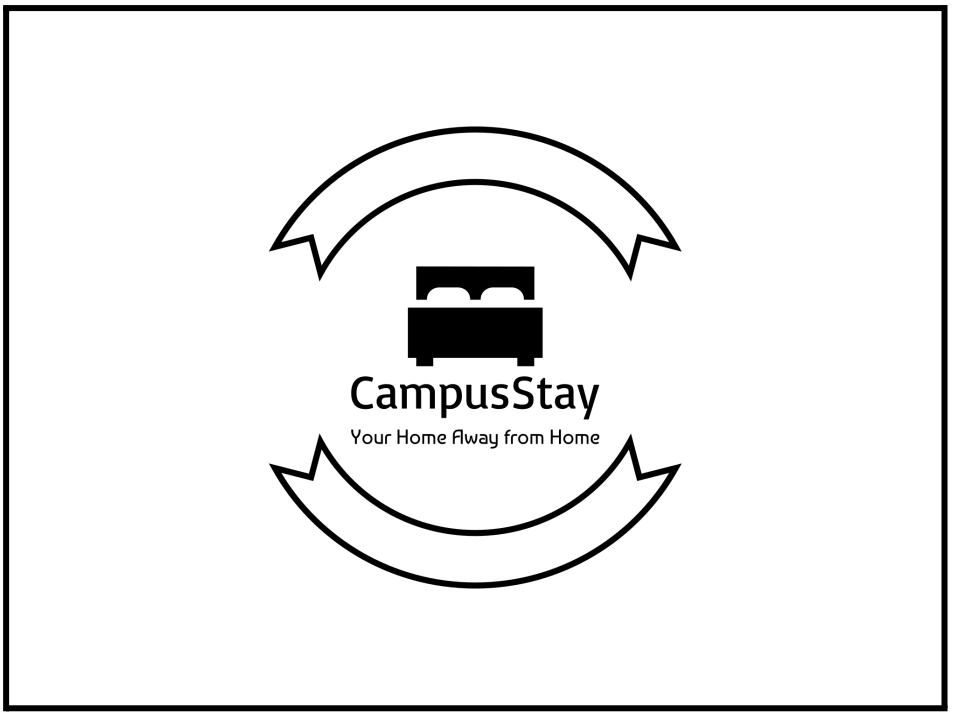

Project Title: CampusStay – A Salesforce-Based Hostel Booking System

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1. Project Overview

The **CampusStay** project is designed to help students book hostel rooms on a cot basis using Salesforce. The application streamlines the hostel booking process, ensuring students can easily reserve cots in either Boys' or Girls' hostels on campus. It also provides hostel managers with a tool to monitor bookings, manage room availability, and track payments. The system is built to ensure an efficient, user-friendly experience for both students and managers while automating much of the administrative process.

Through this project, we aim to enhance operational efficiency by automating the booking process, reducing manual effort, and minimizing errors in hostel room allocation and payment tracking.

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2. Objectives

- **Business Goals:**
    - Simplify and automate the hostel booking process for students.
    - Ensure accurate tracking of available and booked cots in hostels.
    - Provide hostel managers with tools to manage availability and payments efficiently.
- **Specific Outcomes:**
    - A complete booking system that allows students to book cots in on-campus hostels.
    - Automation of payment records once a booking is made.
    - An integrated system for hostel managers to track bookings and availability.

---

3. Salesforce Key Features and Concepts Utilized

1. **Custom Objects**:
    a. **College, Hostel/PG, Booking, Payment**: These custom objects were created to model the entities in the CampusStay application, such as colleges, hostels, bookings, and payments.
    b. Each object has specific fields and relationships to capture the necessary data, such as cot availability, booking details, and payment status.
2. **Flows**:
    a. **Screen Flow**: A visual, step-by-step process guides users through selecting a college, choosing a hostel type, checking cot availability, confirming booking details, and processing payments. Screens like "Booking Confirmation" and "Booking Successful" ensure the user gets feedback at each step.

   b. **Get Hostel Availability**: A record retrieval step in the flow fetches the available cots based on the selected hostel and filters the data by both the **college** and **hostel type**.
   c. **Conditional Logic**: The decision element checks whether enough cots are available and prevents overbooking by showing an error screen if there are not enough cots.
3. **Apex Class and Triggers**:
   a. **CotBookingHandler**: An Apex class that validates the cot availability during bookings, ensuring that users cannot book more cots than are available.
   b. **BookingTrigger**: A trigger that calls the class to run this validation before any new booking is inserted or updated.
4. **Formula Fields and Roll-Up Summary**:
   a. **Available Cots**: A formula field dynamically calculates how many cots are still available by subtracting the booked cots from the total cots.
   b. **Booked Cots**: A roll-up summary field in the **Hostel/PG** object automatically sums up the cots booked from the related **Booking** records, providing real-time data on availability.
5. **Picklists**:
   a. **Picklist Fields**: Used in key fields like **Hostel Type** to streamline data entry and prevent errors.
6. **Lookup Relationships**:
   a. Relationships between objects like **College ↔ Hostel**, **Hostel ↔ Booking**, and **Booking ↔ Payment** are managed through lookup fields, which make navigation and reporting easier while ensuring data integrity.
7. **Validation Rules**:
   a. Automatically enforce business logic, such as ensuring that the booking dates, cot availability, and booking details meet certain criteria before being processed.
8. **Profiles and Role Hierarchy**:

    a. **Profiles**: Control access to specific objects and fields for different users, ensuring that students, hostel managers, and admins have the appropriate permissions.
    b. **Roles**: Define the hierarchy within the system, for example, **Admin** (full control), **Hostel Manager** (can manage hostels and bookings), and **Student** (can only create bookings).
9. **Formula Fields for Payment**:
    a. The **Total Cost** and **Total Amount** fields automatically calculate the final payment amount by multiplying the number of cots booked by the cost per cot. This automation simplifies the payment process for users.

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4. Detailed Steps to Solution Design

Objects and Fields :-

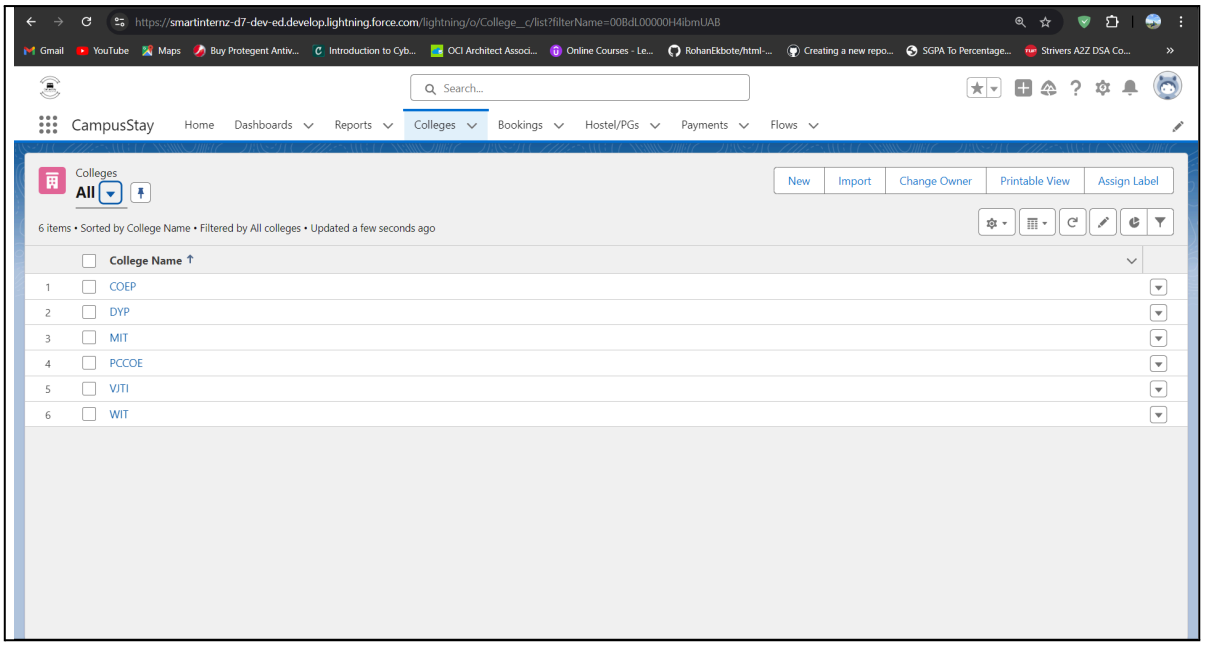
1. College

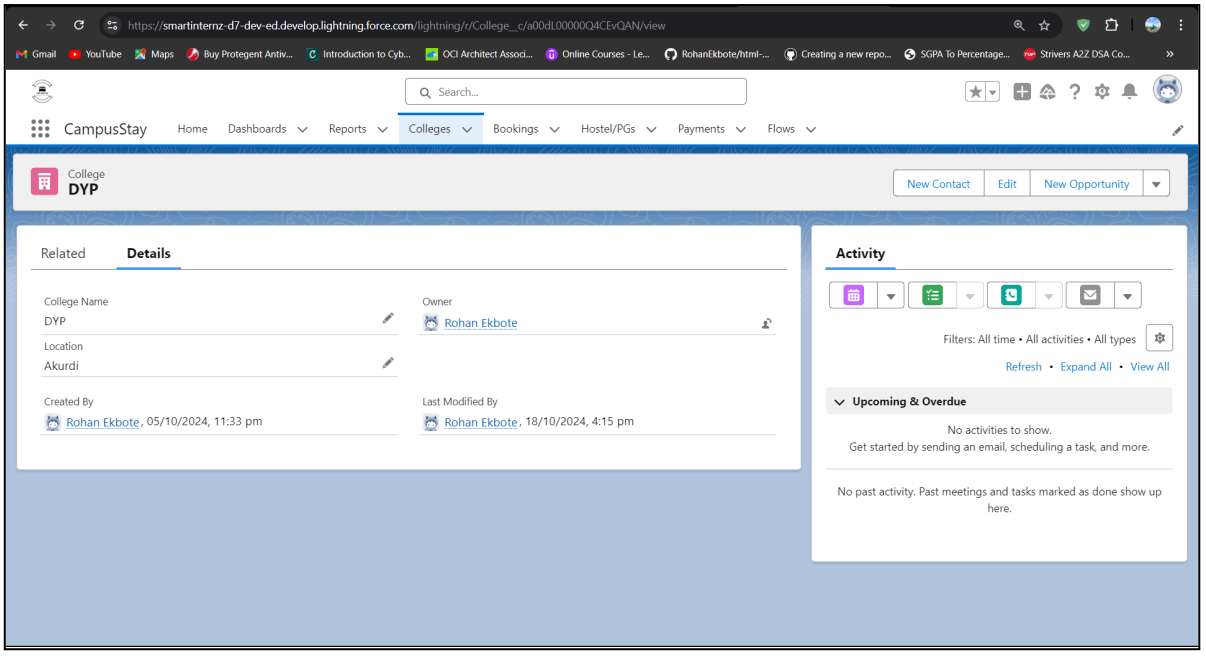
2. Hostel/PG

3. Booking

4. Payment

1. College (Custom Object)

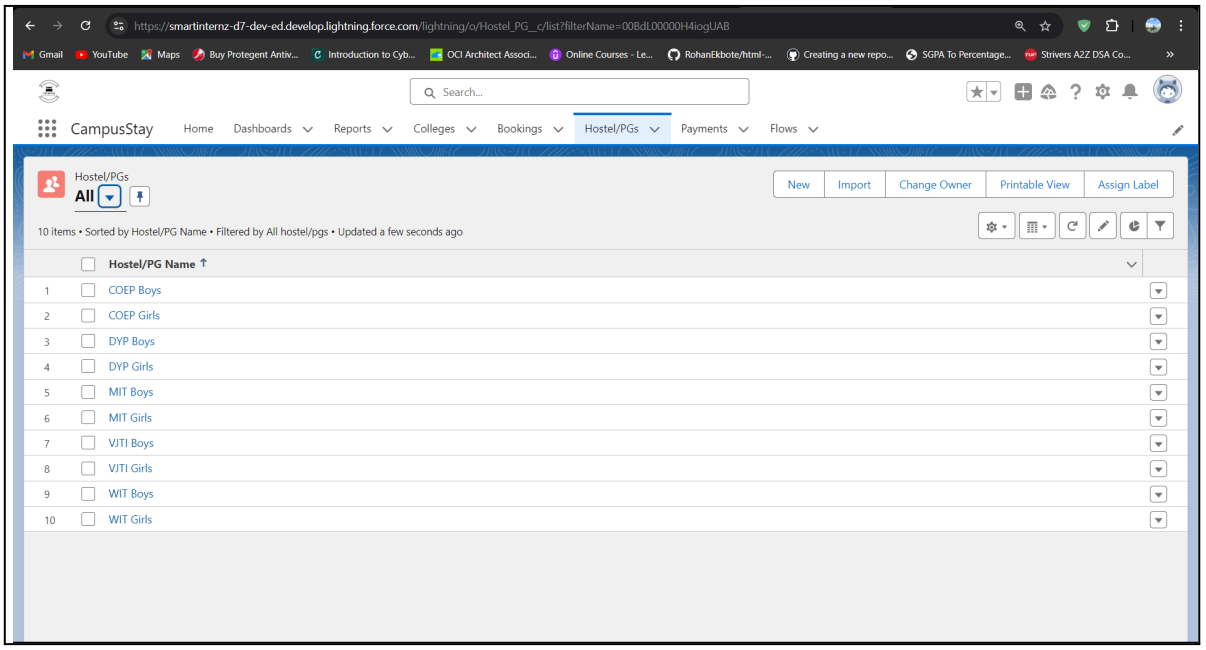


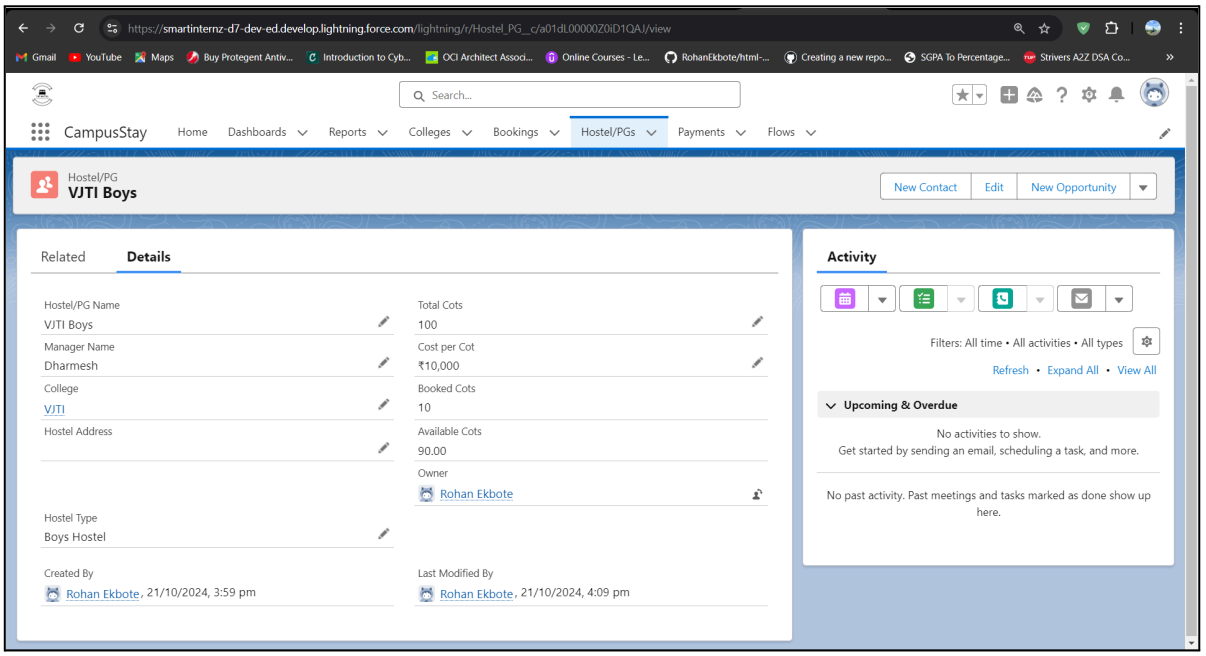


College Name : The name of the college (e.g., DYP , PCCOE , MIT , COEP).
Location (Text): The physical location of the college.

Relationships:
One-to-Many: A college can have multiple hostels.

2. Hostel/PG (Custom Object)



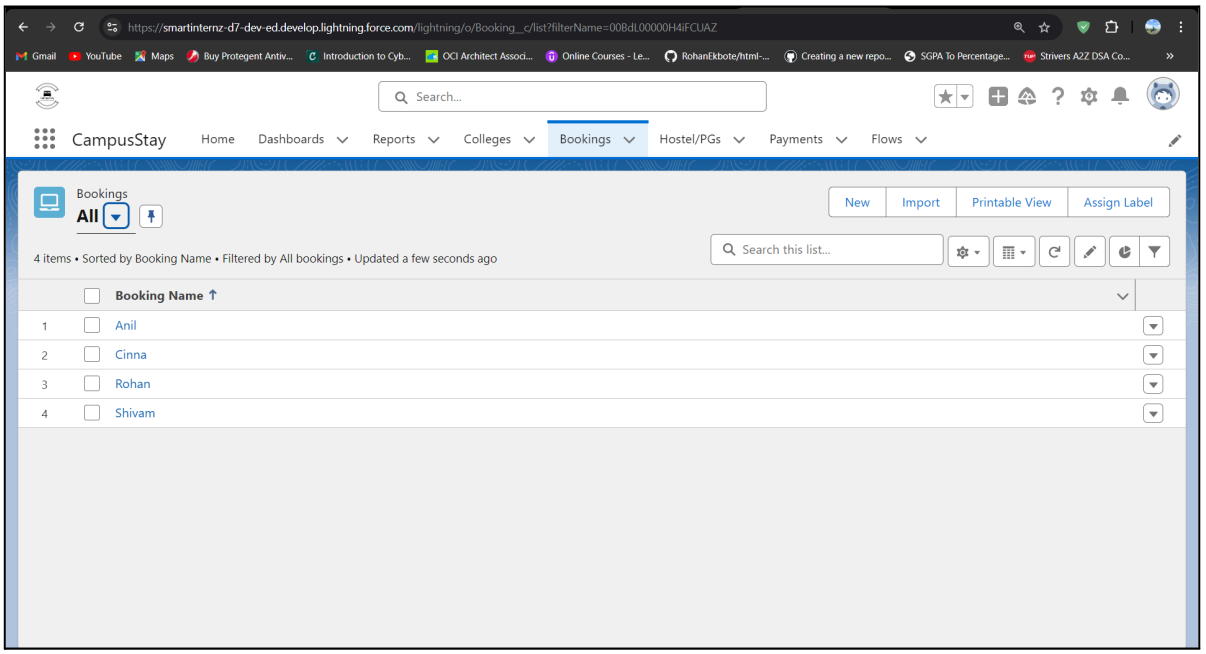


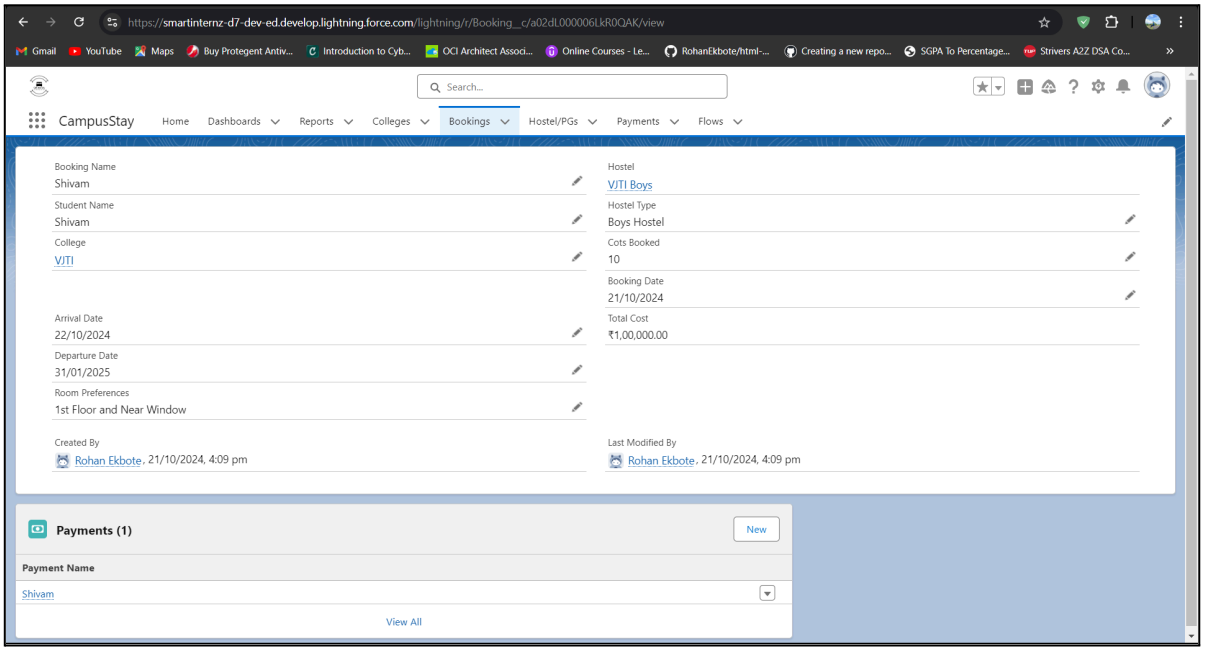
2.1 Hostel/PG Name : The name of the hostel (e.g., Boys Hostel or Girls Hostel).
2.2 College (Lookup to College): Links the hostel to a specific college.
2.3 Total Cots (Number): The total number of cots available in the hostel.
2.4 Available Cots (Formula, Number): Calculated as Total Cots__c - Booked Cots__c. Shows how many cots are still available for booking.
2.5 Cost per Cot (Currency): The price per cot for booking.
2.6 Booked Cots (Roll-Up Summary, Number): Automatically sums the total booked cots from related Booking records. This prevents overbooking.
2.7 Manager Name (Text): The manager responsible for the hostel.

2.8 Hostel Address (Text): The address or location of the hostel.

Relationships:
One-to-Many: Each hostel is linked to a college, and it can have multiple bookings.

3. Booking (Custom Object)





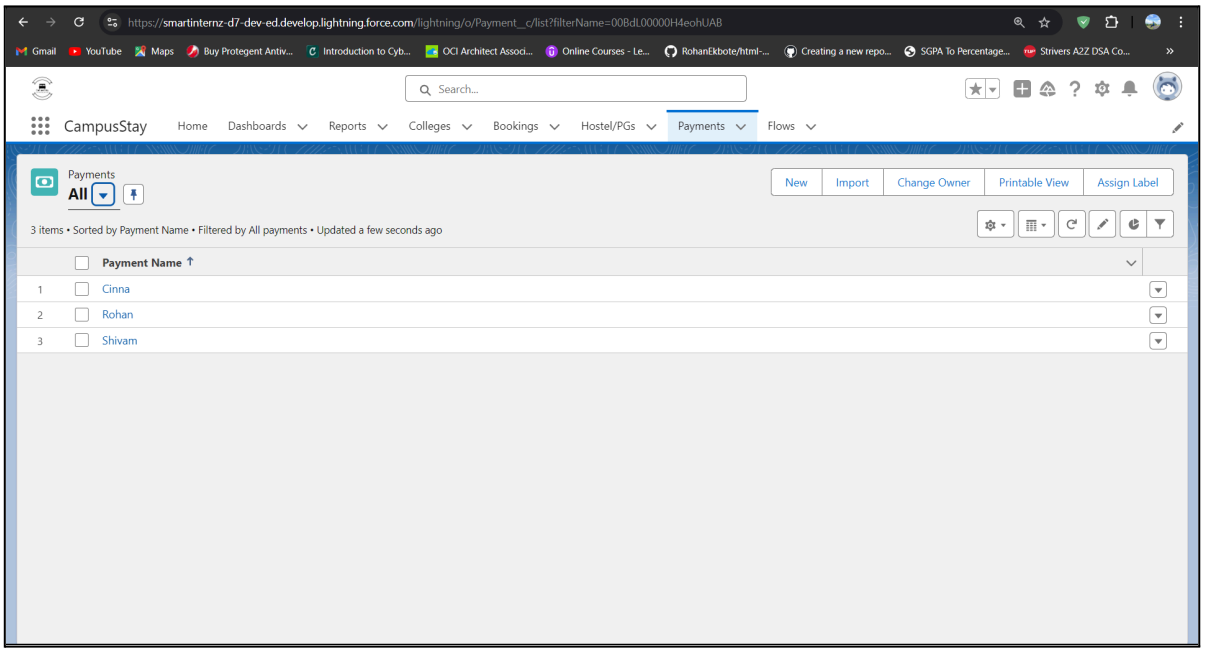
3.1 Booking Name
3.2 Student Name
3.3 College (Lookup to College): The selected college for the booking.

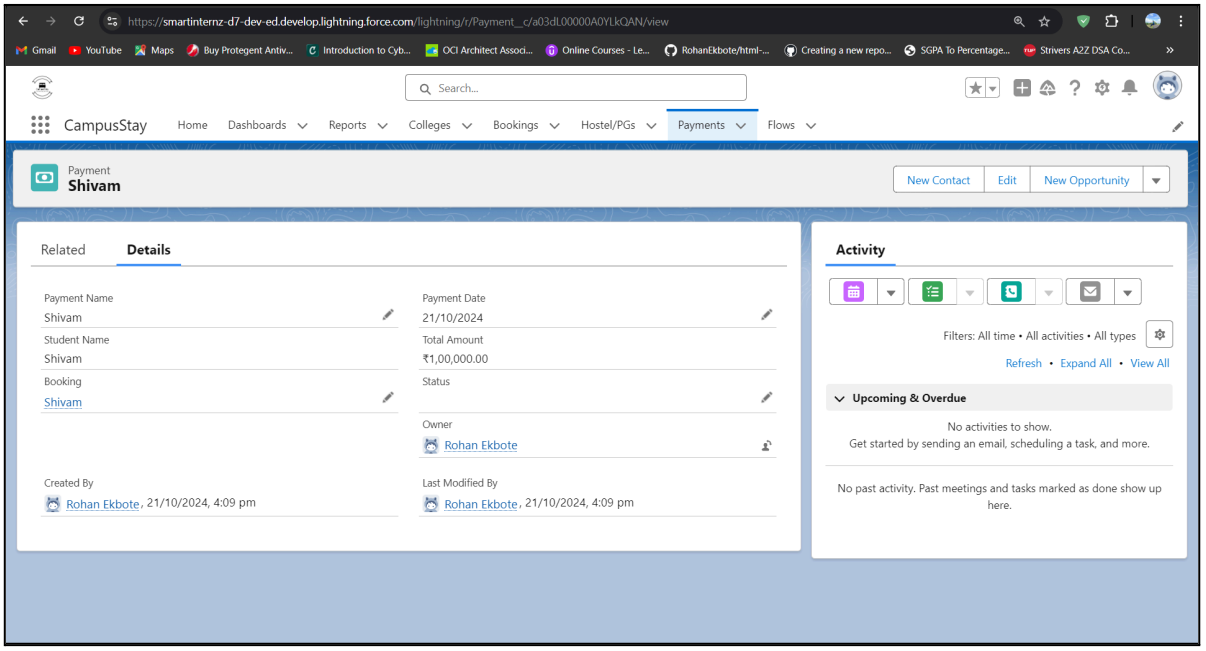
3.4 Hostel Type (Picklist): Two options - Boys Hostel and Girls Hostel.
3.5 Hostel (Lookup to Hostel/PG): Automatically filled based on the selected hostel type.
3.6 Cots Booked (Number): The number of cots the student wants to book.
3.7 Total Cost (Formula, Currency): Booked Cots__c * Hostel.Cost per Cot__c. Calculates the total cost based on the number of cots booked.
3.8 Booking Date (Date): The date when the booking is made.
3.9 Arrival Date (Date): The date the student plans to arrive at the hostel.
3.10 Departure Date (Date): The date the student plans to vacate the hostel.
3.11 Room Preferences (Long Text Area): Any specific requests (e.g., cot near a window, first floor).

Relationships:

- Many-to-One: Each booking links to a hostel and student.
- Roll-Up Summary in Hostel object for managing cot availability.

4. Payment (Custom Object)





4.1 Payment Name
4.2 Booking (Lookup to Booking): Links the payment to the booking.
4.3 Student Name (Formula, Text from Booking): Auto-filled from the booking's Student Name.
4.4 Total Amount (Formula, Currency): Same as Total Cost from the Booking object.
4.5 Payment Date (Date): The date when the payment is made.
4.6 Status (Picklist): Status options like "Pending", "Paid", etc.

Relationships:

- One-to-One: Each payment is linked to one booking.
- The total amount is calculated based on the booking.

Overall Relationships Overview of Objects:

1. **College ↔ Hostel/PG (One-to-Many):** A college has multiple hostels (Boys and Girls).
2. **Hostel/PG ↔ Booking (One-to-Many):** A hostel has multiple bookings, but the availability of cots is managed through the roll-up summary on Hostel/PG.
3. **Booking ↔ Payment (One-to-One):** Each booking has one associated payment.

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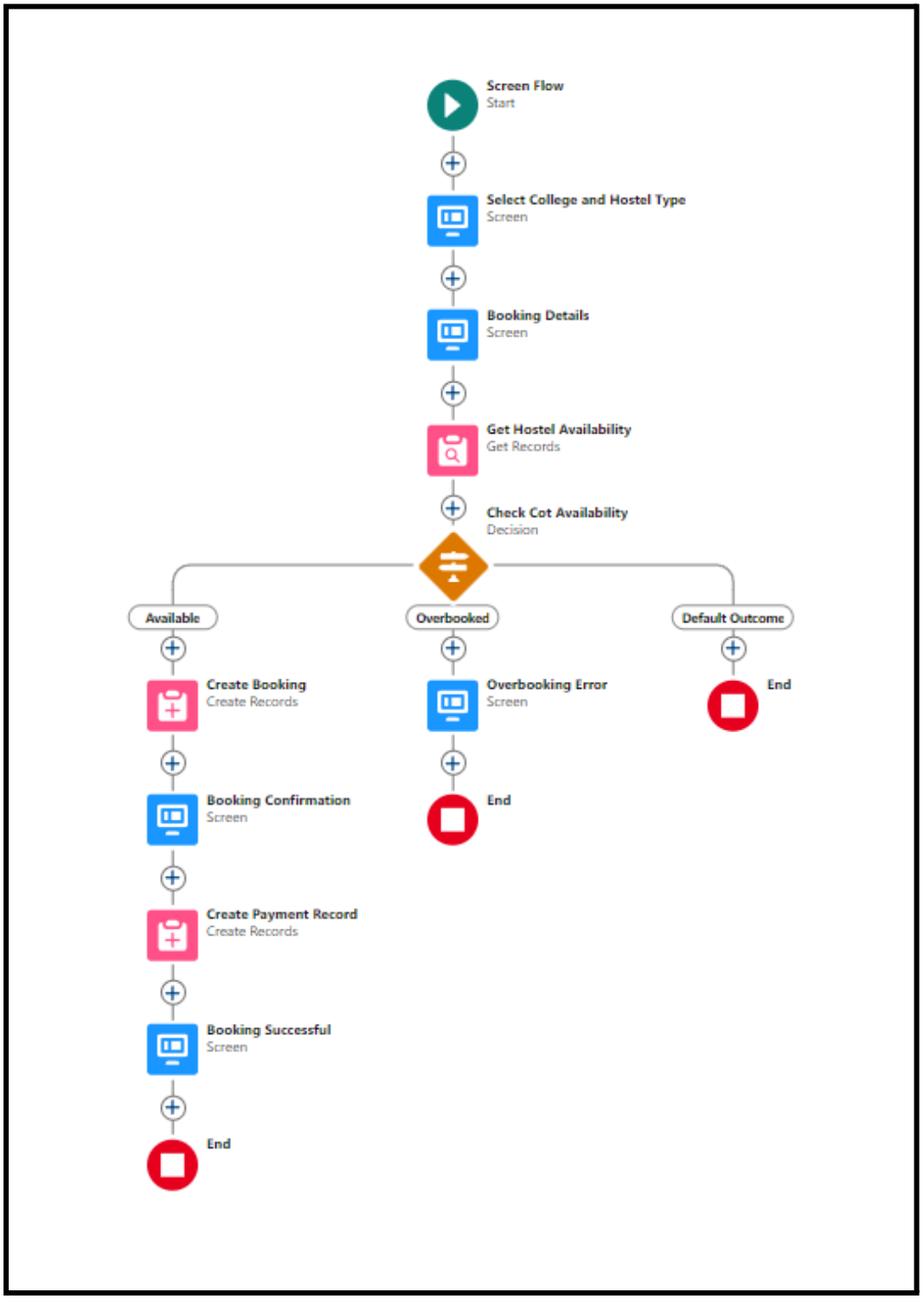
5. Flow Design Overview

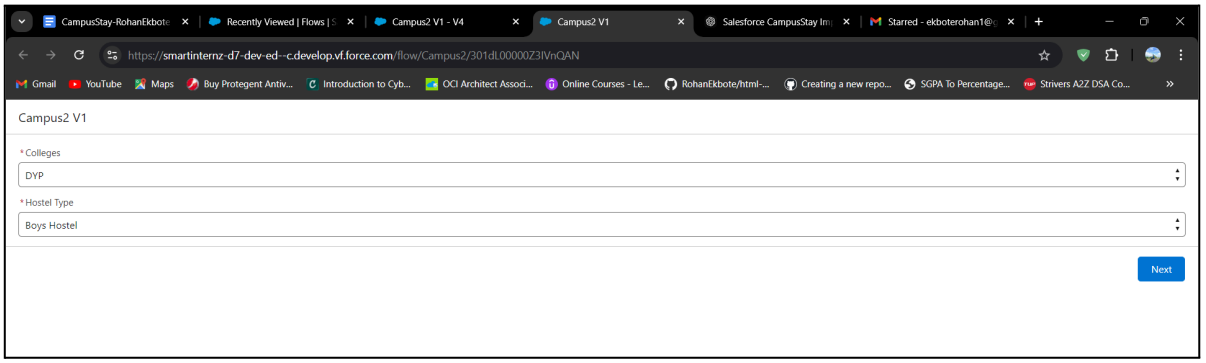


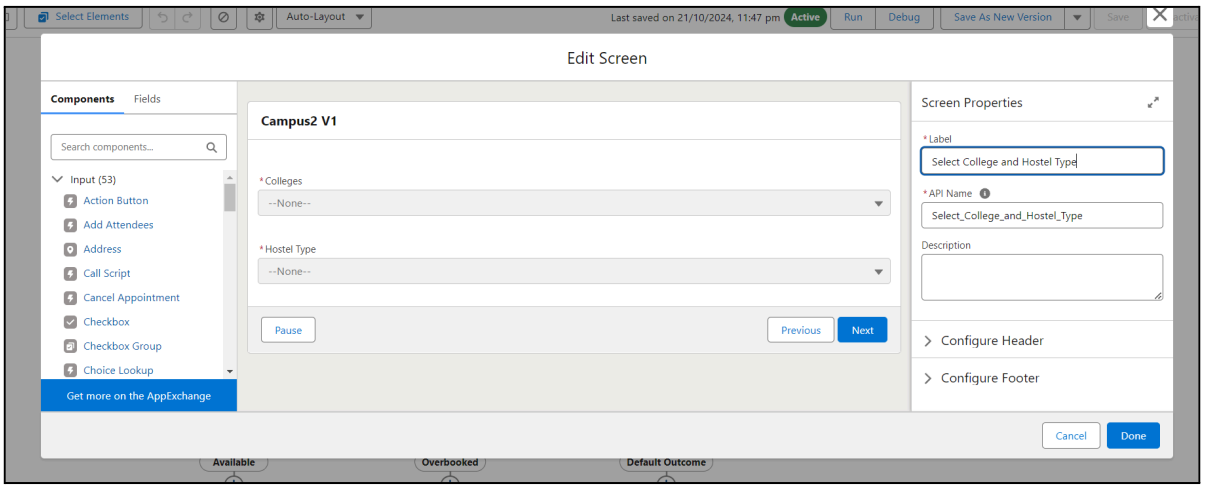
The CampusStay application uses a Salesforce **Screen Flow** to manage the booking process:

1. **Select College and Hostel Type Screen**: The user selects a college and either Boys' Hostel or Girls' Hostel. This selection drives further filtering.

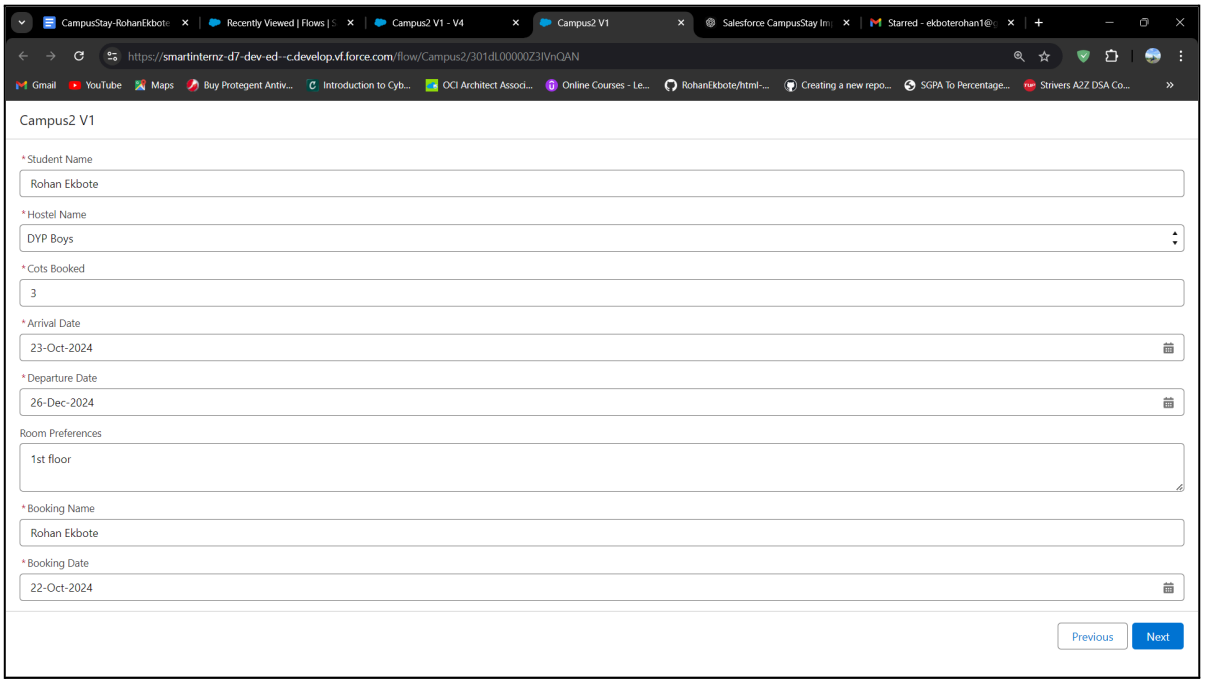
    - **Get Hostel Availability Element**: This element uses the **AND filter** to retrieve available cots based on the selected college and hostel type (filtered from the first screen). It fetches all hostels from the selected college and filters them by the hostel type (Boys or Girls).
2. **Booking Details Screen**: Captures specific booking details, including the number of cots, arrival and departure dates, and room preferences.
3. **Get Hostel Availability**: It filters and selects the required Hostel.
4. **Check Cot Availability (Decision Element)**:
    - **If Available**: Proceeds to create a booking and shows a confirmation screen with total cost details.
    - **If Overbooked**: Displays an error message, informing the user that the requested number of cots is unavailable.
5. **Create Booking and Payment Record**:
    - If cots are available, the booking is created, followed by the creation of the payment record.
6. **Booking Confirmation Screen**: The user sees a screen with booking and payment details, including cost per cot and total amount, before final confirmation.
7. **Booking Successful Screen**: Displays a success message confirming that the booking has been made, and payment details are auto-generated.

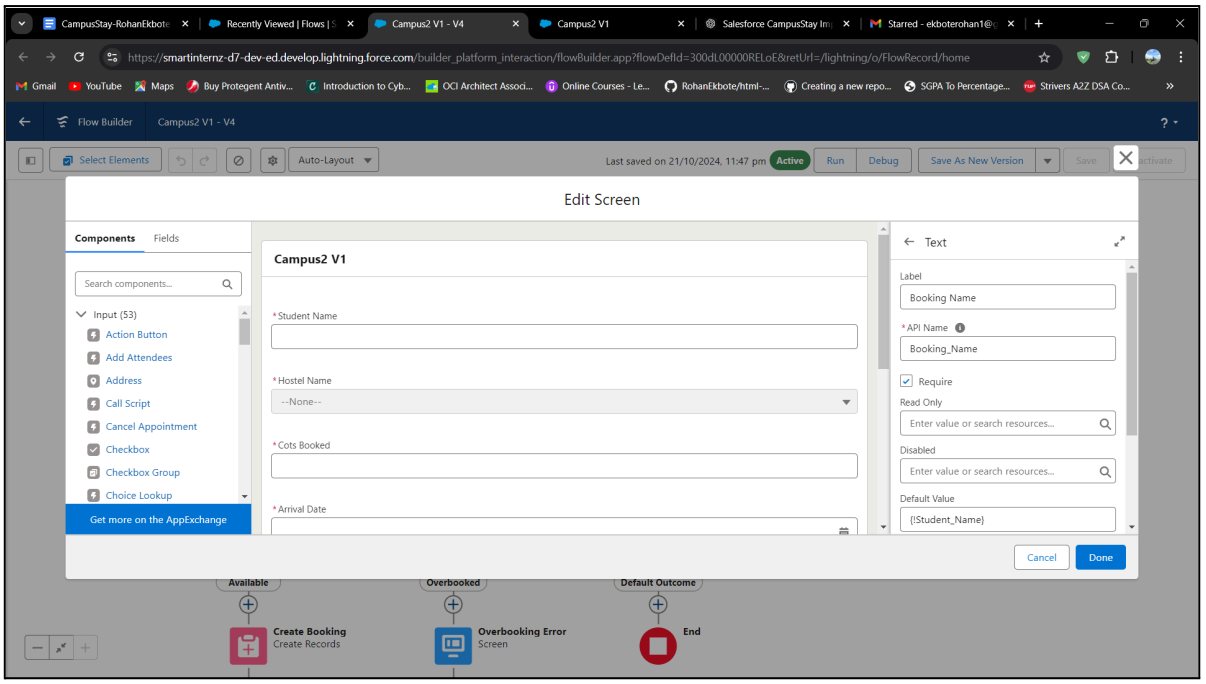
1. Select College and Hostel Type Screen



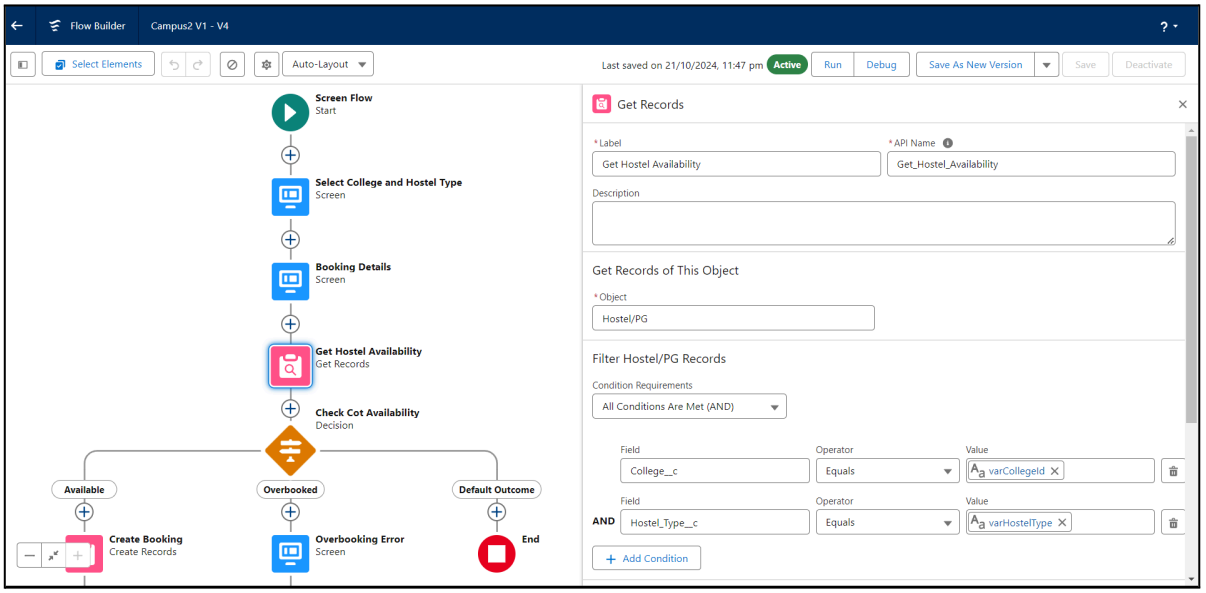


2. Booking Details Screen

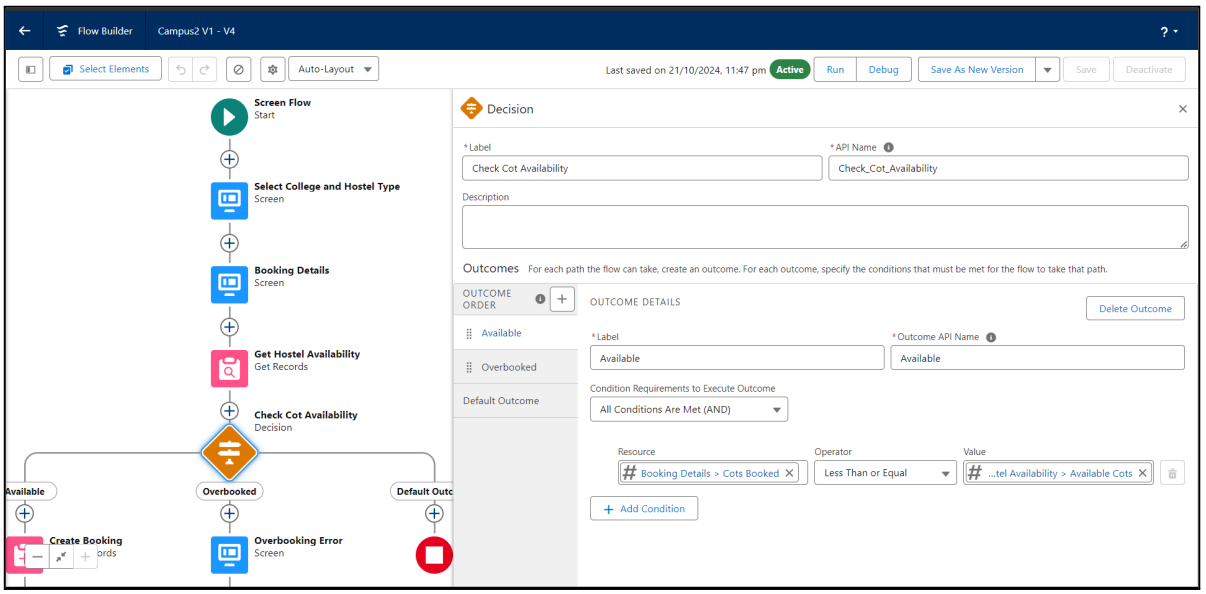


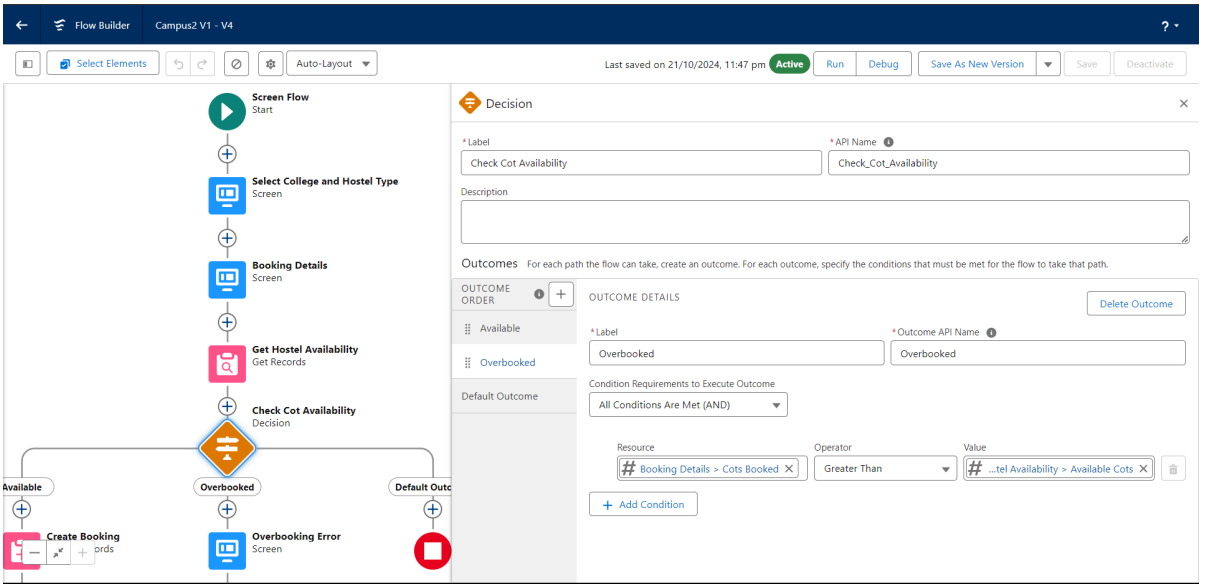


3. Get Hostel Availability

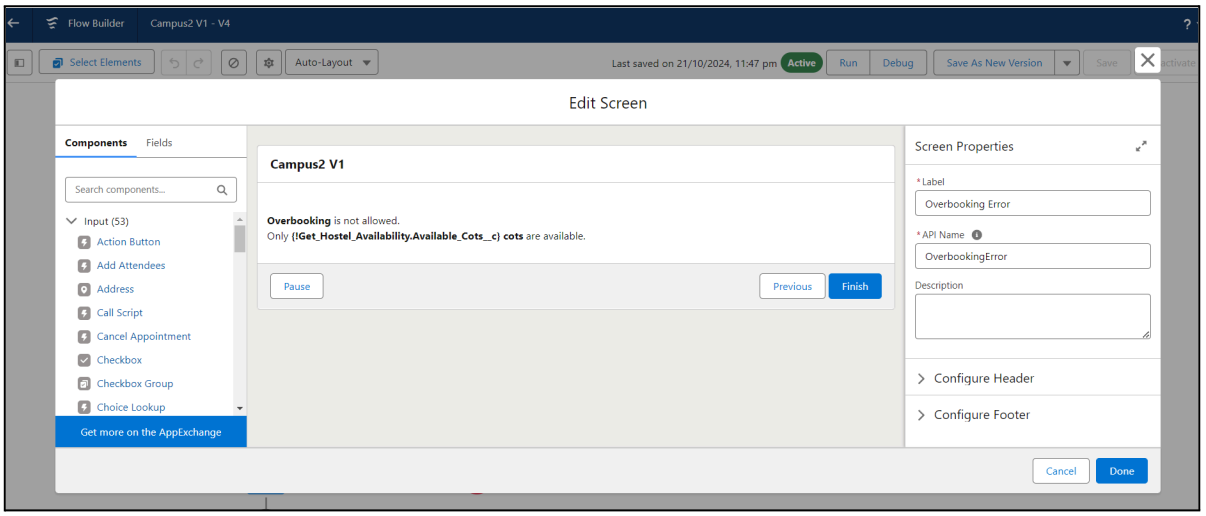


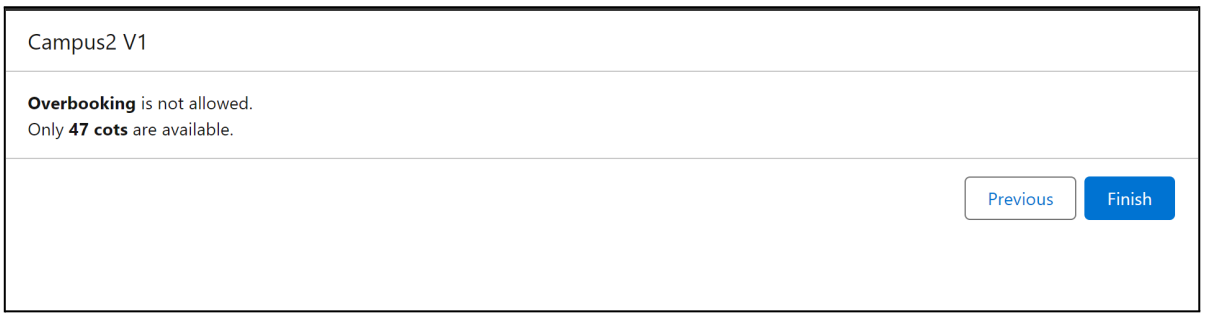
4. Check Cot Availability (Decision Element)



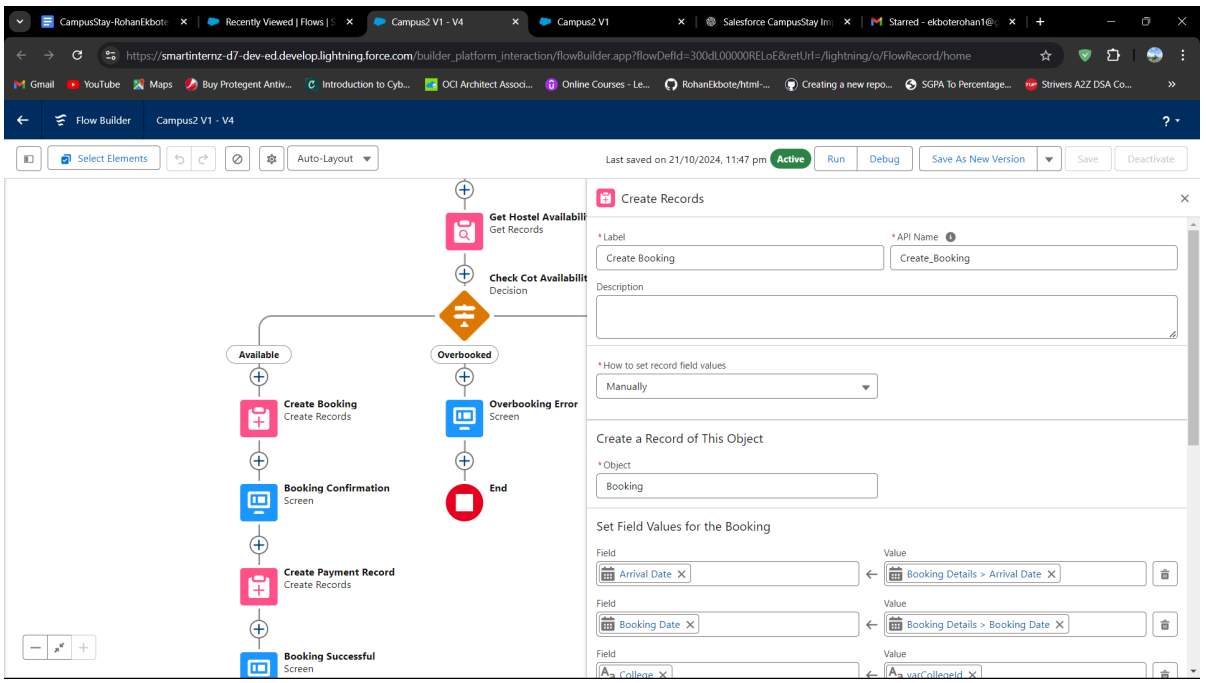


5. Overbooking Error

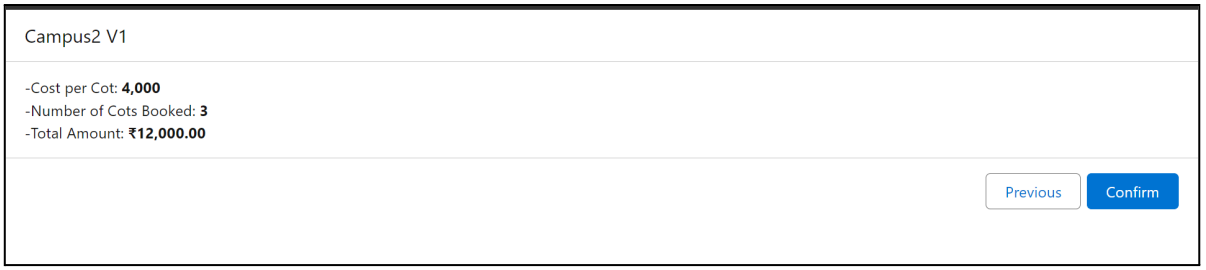




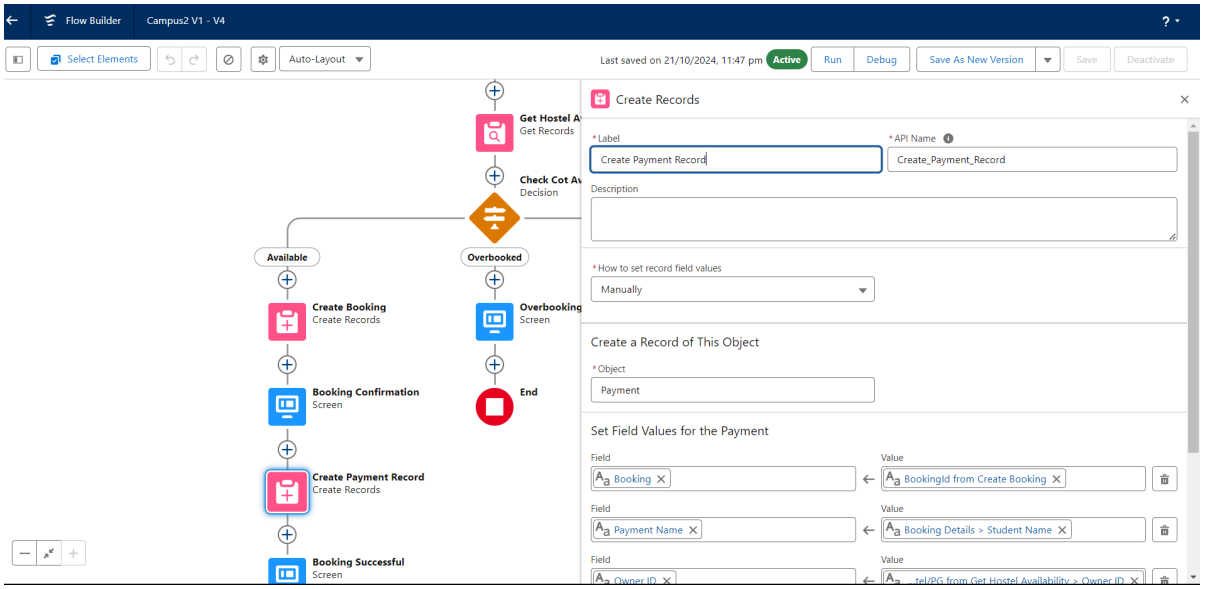
6. Create Booking



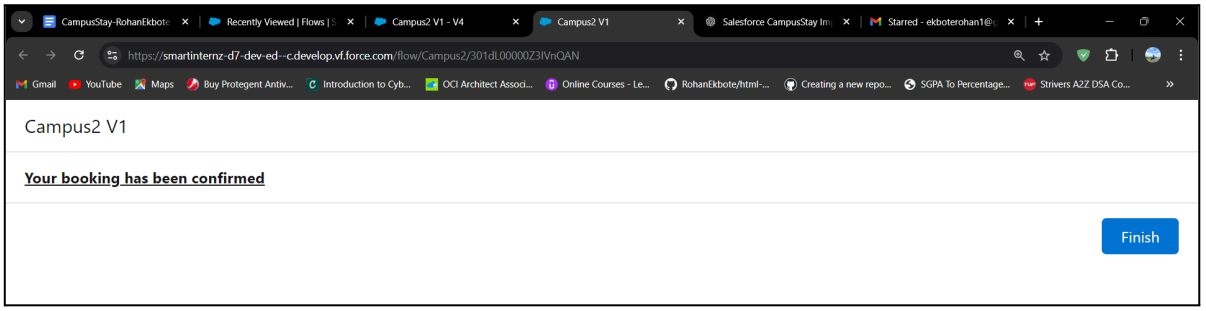
7. Booking Confirmation Screen

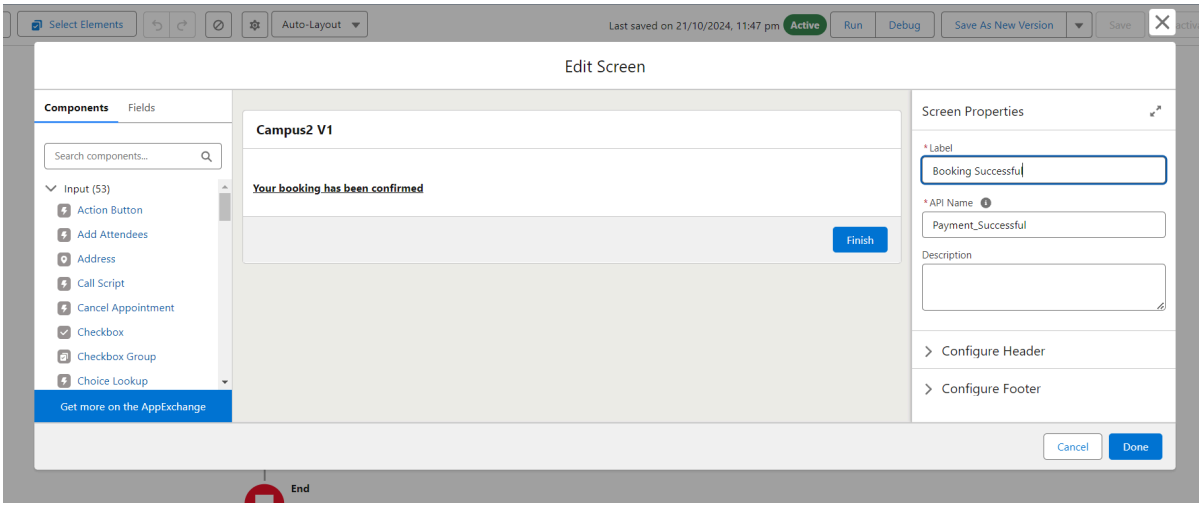


8. Payment Record

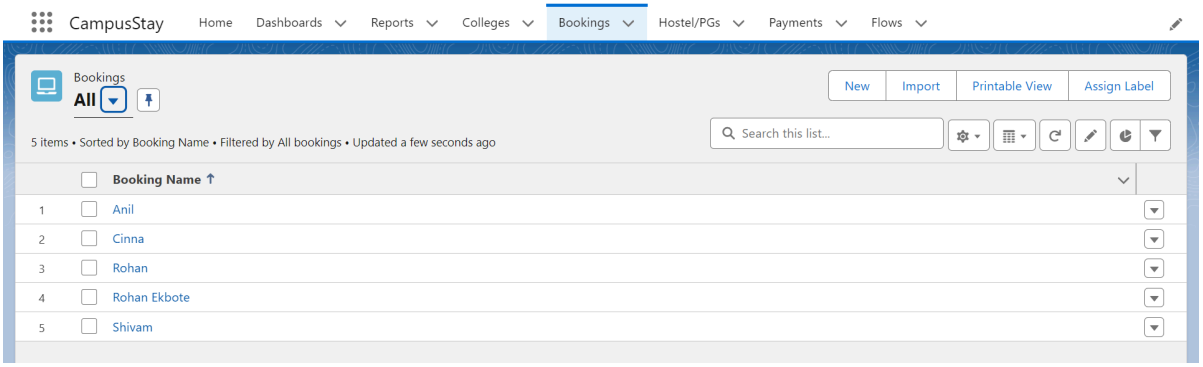


9. Booking Successful Screen

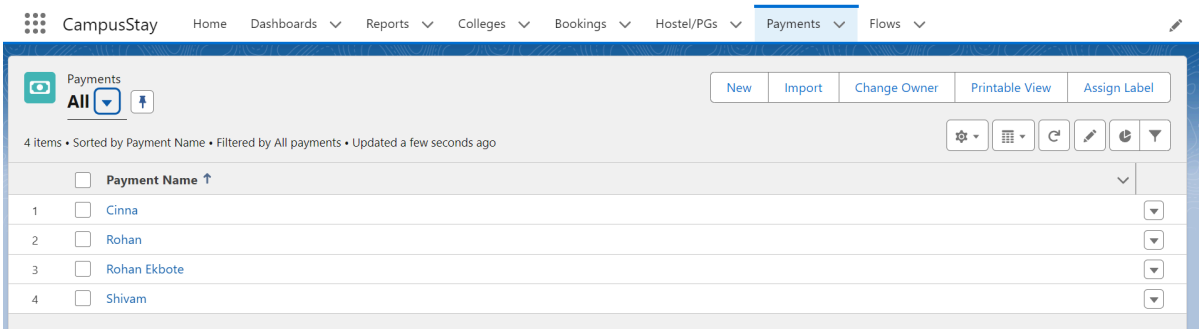




10. Booking Record Created (Rohan Ekbote)



11. Payment Record Created (Rohan Ekbote)



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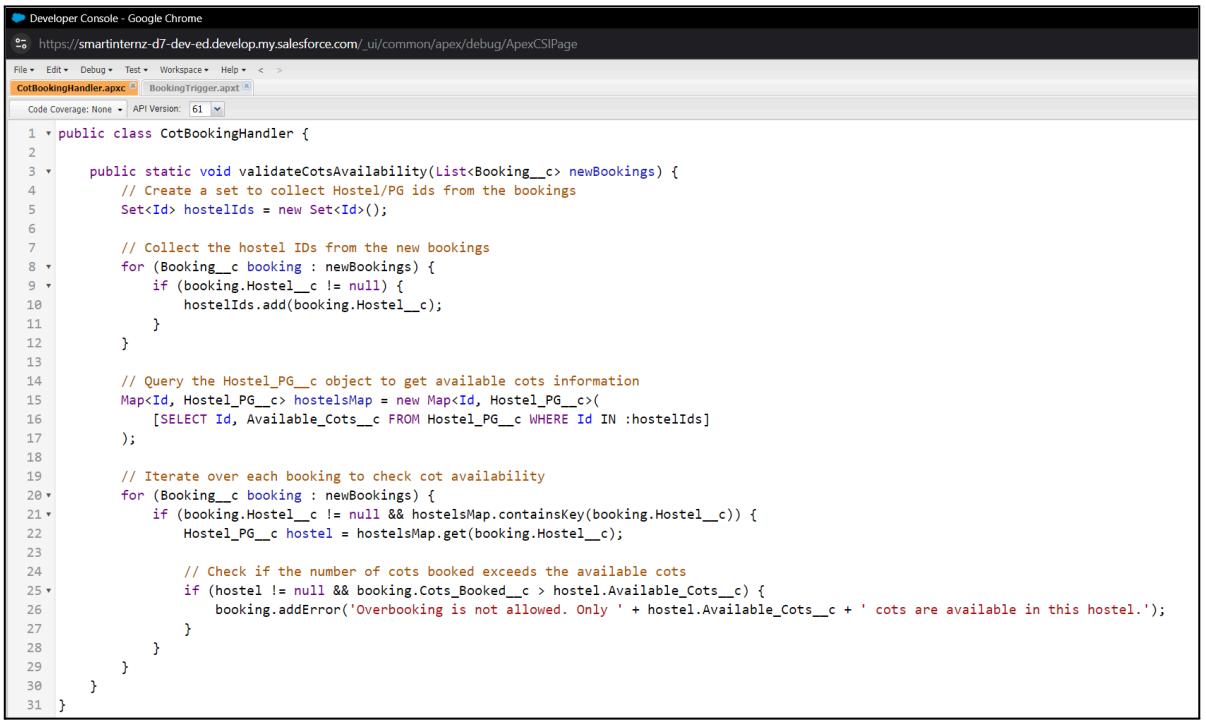
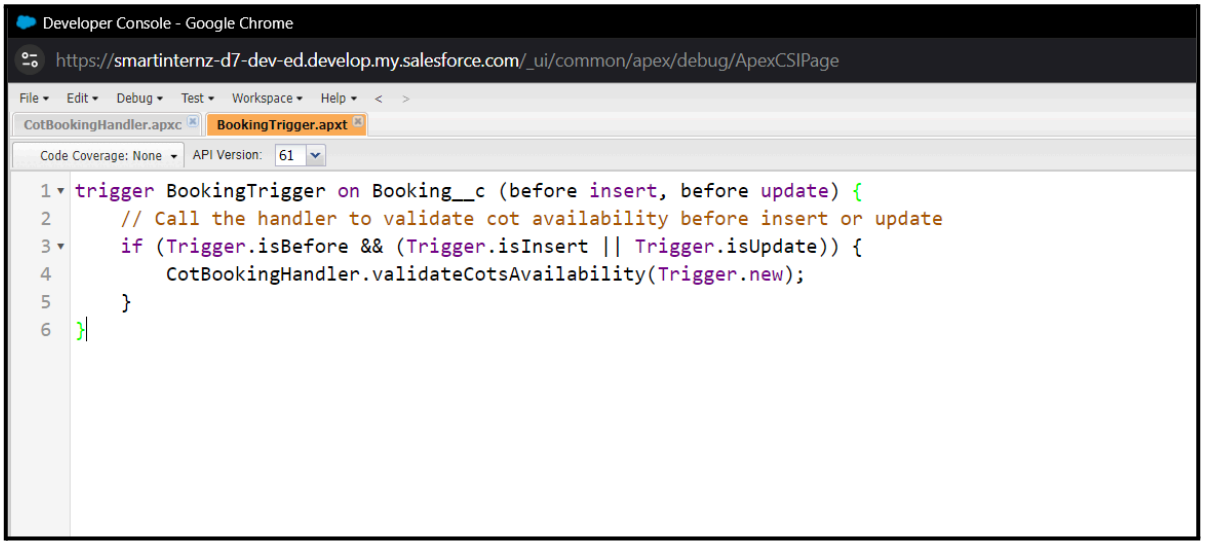
6. Class Handler & Trigger Review

6.1 Class: CotBookingHandler



- **Purpose**: To check if there are enough available cots in the selected hostel before a booking is confirmed.
- **Key Points**:
  - Collects **Hostel IDs** from new bookings.
  - Queries the **Hostel/PG** object to retrieve the number of available cots for the selected hostels.
  - For each booking, check if the number of cots being booked exceeds the available cots.
  - If there is an overbooking attempt, it throws an error and prevents the booking.

6.2 Trigger: BookingTrigger



- **Purpose**: To trigger the cot availability validation before a booking is inserted or updated.
- **Key Points**:
  - Runs **before insert** and **before update** on the **Booking** object.
  - Calls the validateCotsAvailability method from the **CotBookingHandler** class.
  - Ensures no overbooking by validating cot availability before saving the record.

Summary:

- This trigger-handler setup ensures that students cannot book more cots than are available in the selected hostel, effectively preventing overbooking errors. It runs every time a new booking is created or updated, validating the cot availability in real time.

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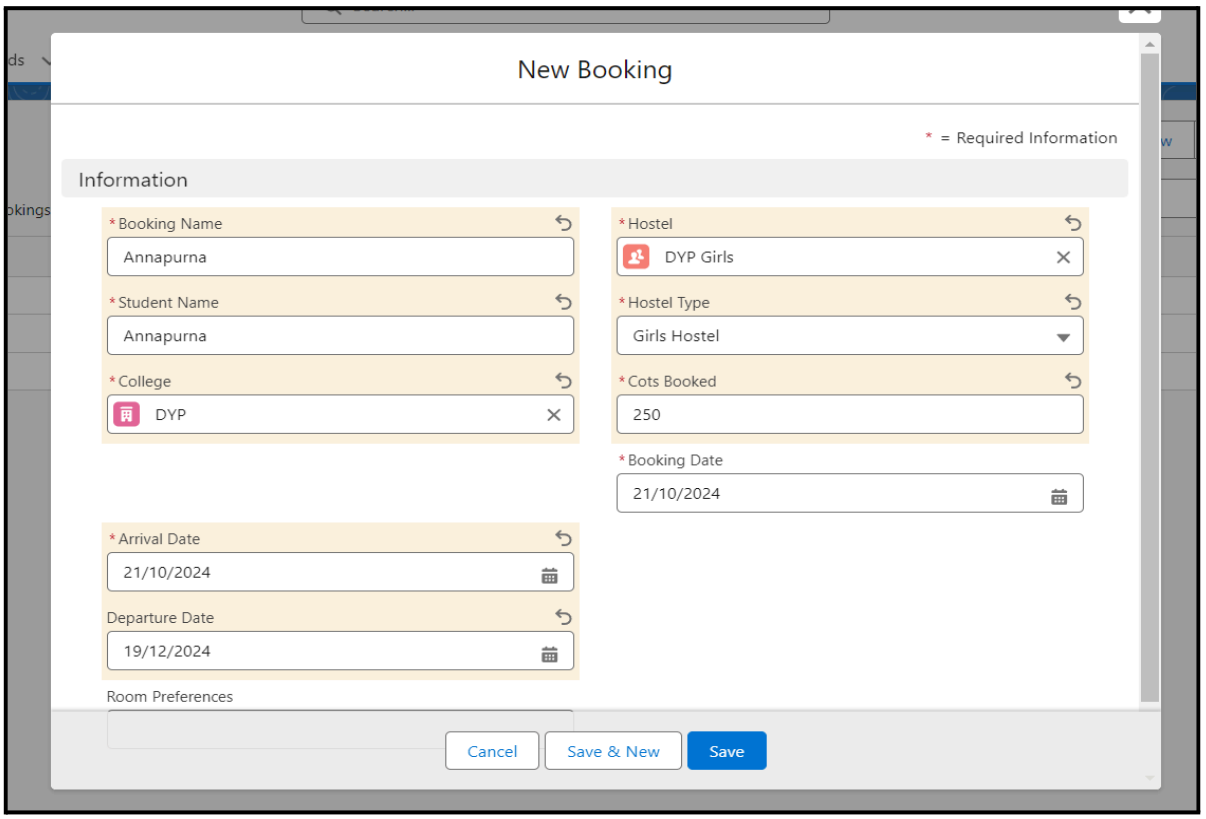
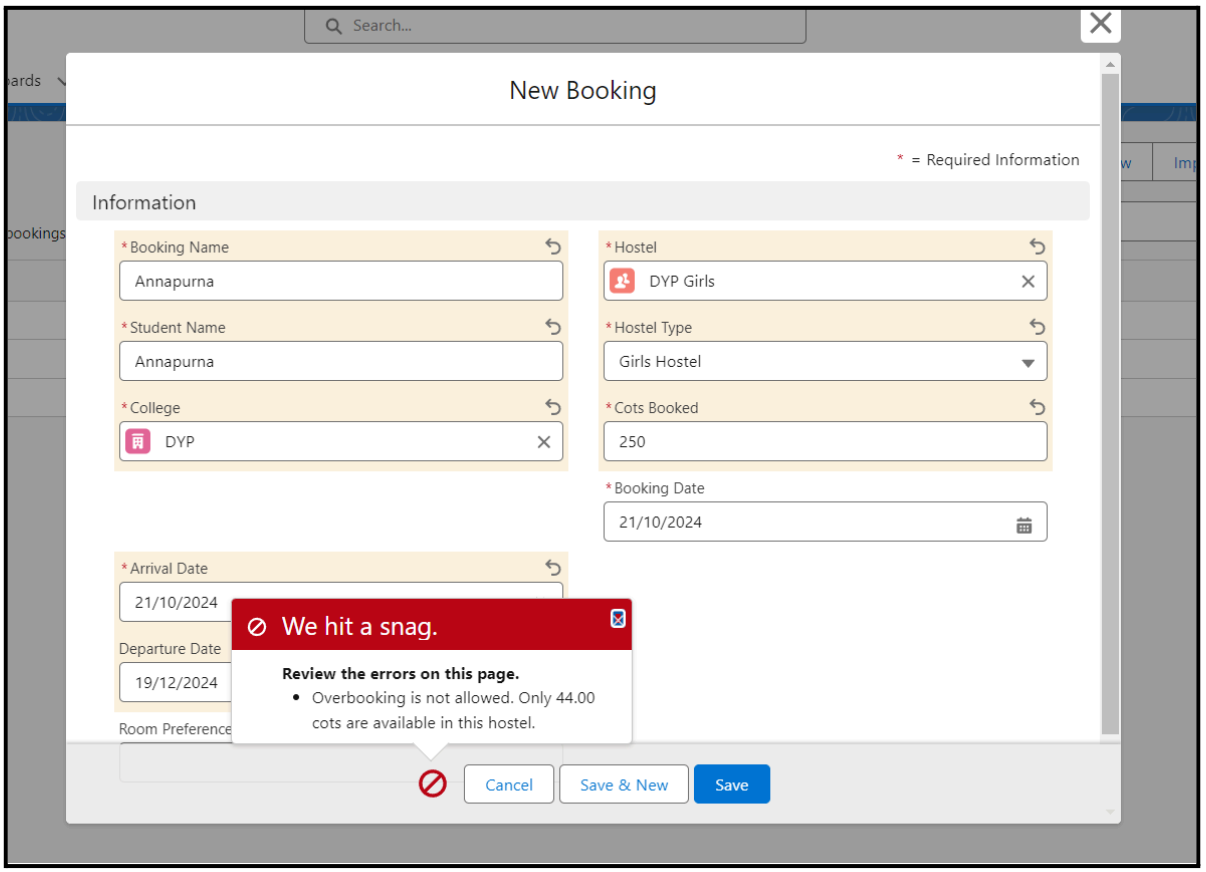
7. Testing and Validation

7.1 Unit Testing:

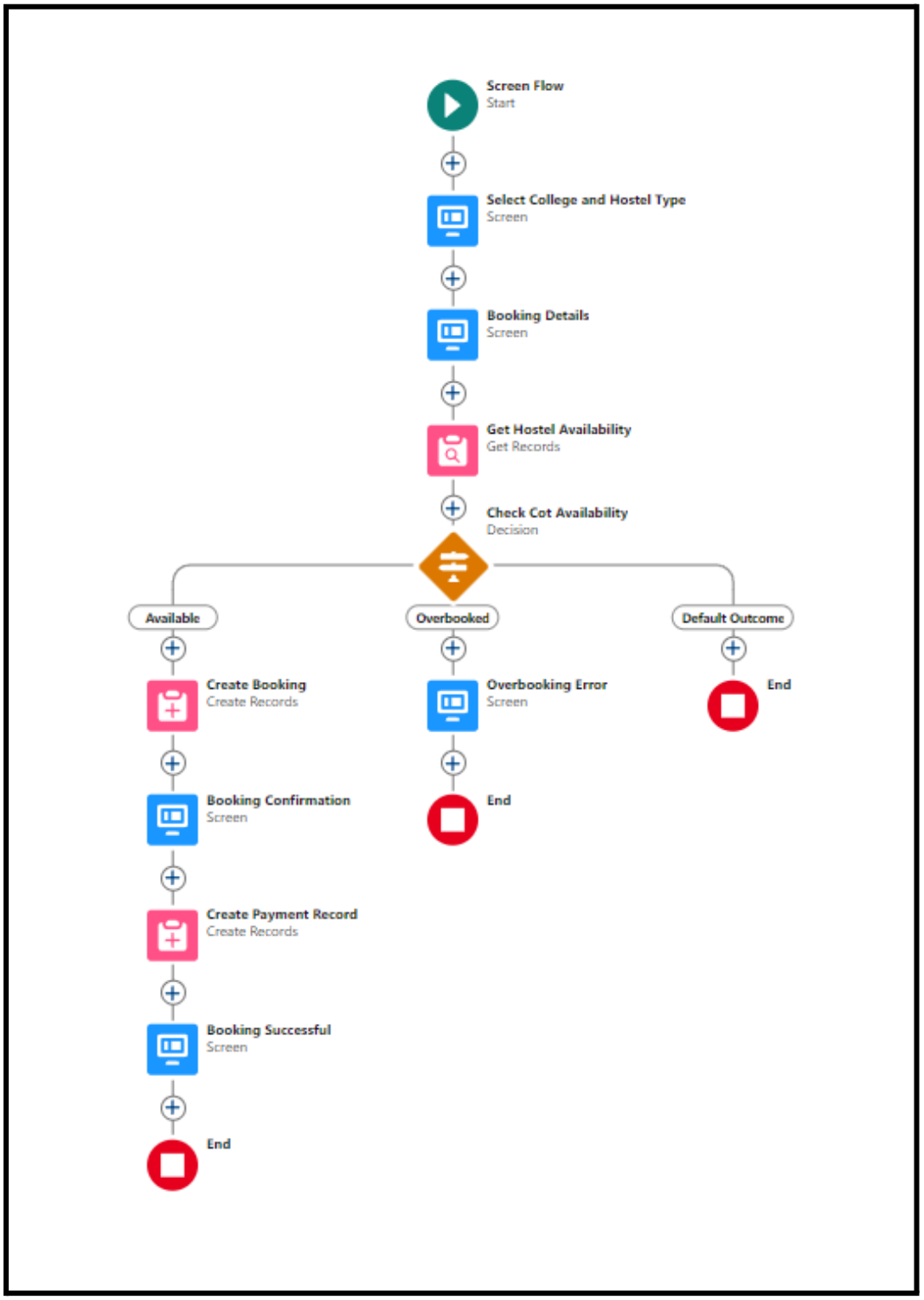
- **Apex Classes and Triggers**: Tests ensure that triggers are correctly filling in the **Hostel Type** and that all logic around cot availability and payments works as expected.

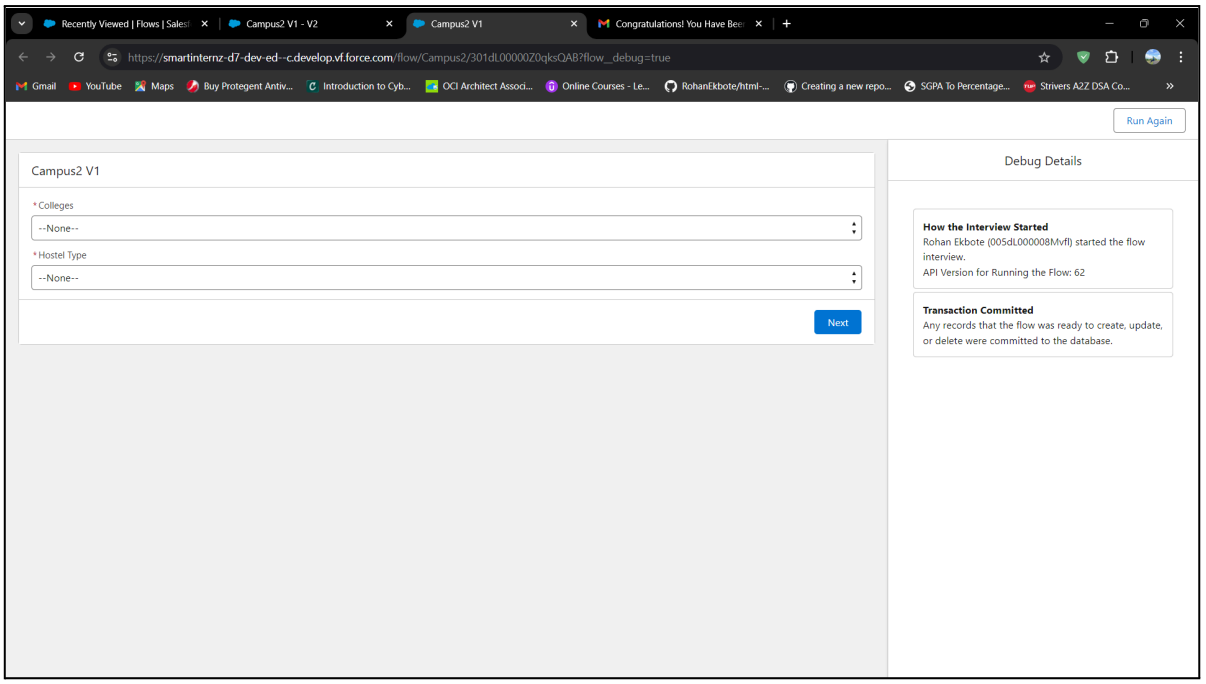




7.2 User Interface Testing:

- **Flow Testing**: The flow was thoroughly tested to ensure proper cot availability checks, booking creation, and payment record auto-generation.
- Screens like the **Booking Confirmation Screen** and **Booking Successful Screen** were validated to ensure they display accurate information.




Recently Viewed | Flows | Salesf
Campus2 V1 - V2
Campus2 V1
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Gmail
YouTube
Maps
Buy Protegent Antiv...
Introduction to Cyb...
OCI Architect Associ...
Online Courses - Le...
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Creating a new repo...
SGPA To Percentage...
Strivers A2Z DSA Co...
Run Again
Campus2 V1
*Colleges
--None--
*Hostel Type
--None--
Next
Debug Details
How the Interview Started
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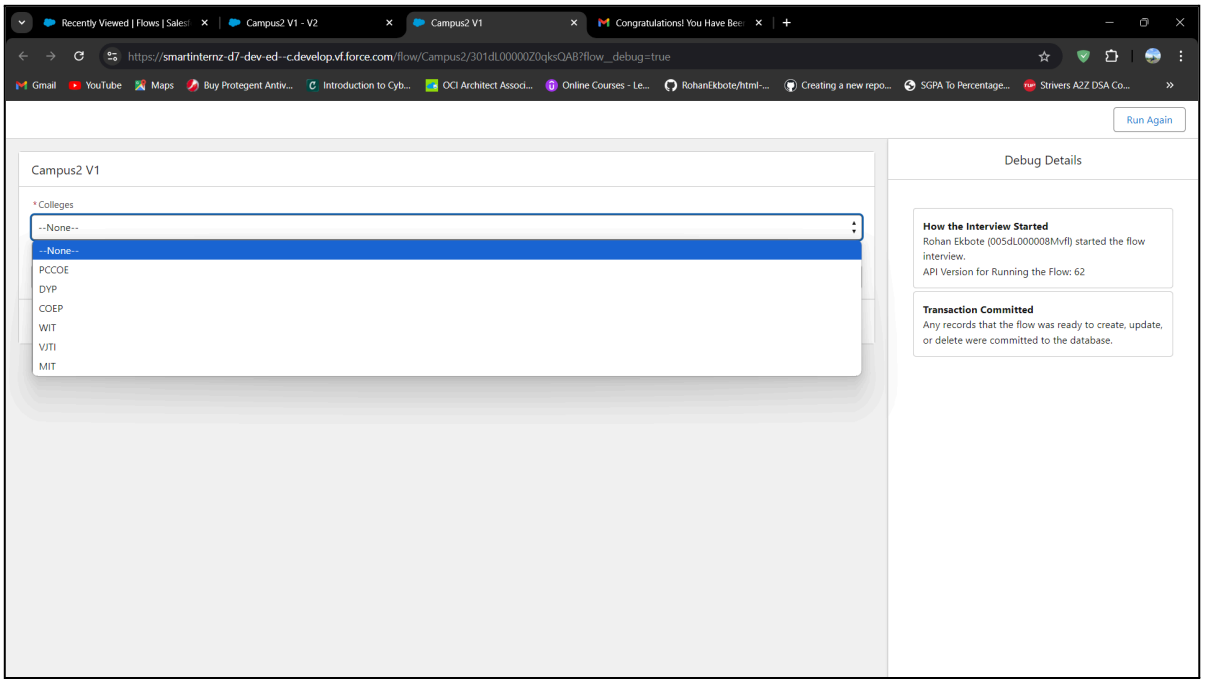
API Version for Running the Flow: 62
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.


Recently Viewed | Flows | Salesf
Campus2 V1 - V2
Campus2 V1
Congratulations! You Have Bee
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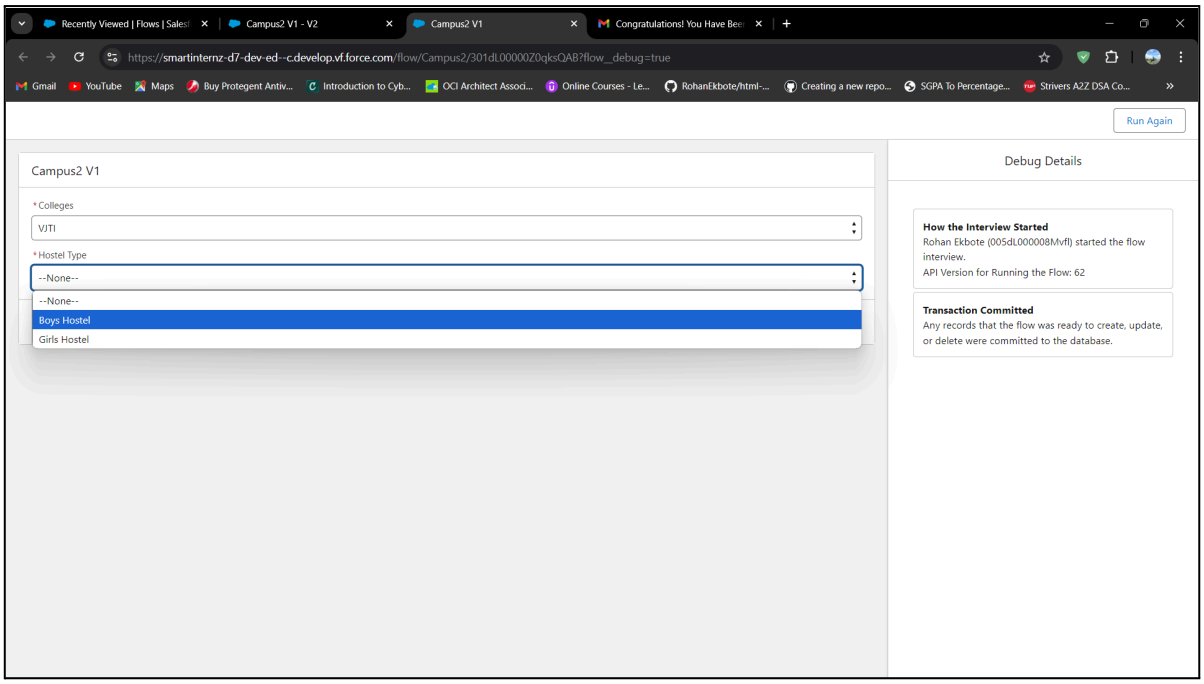
Creating a new repo...
SGPA To Percentage...
Strivers A2Z DSA Co...
Run Again
Campus2 V1
*Colleges
--None--
--None--
PCCOE
DYP
COEP
WIT
VJTI
MIT
Debug Details
How the Interview Started
Rohan Ekbote (005dL000008Mvfl) started the flow interview.
API Version for Running the Flow: 62
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.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Campus2 V1
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Creating a new repo...
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Run Again
Campus2 V1
*Colleges
VJTI
*Hostel Type
--None--
--None--
Boys Hostel
Girls Hostel
Debug Details
How the Interview Started
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Transaction Committed
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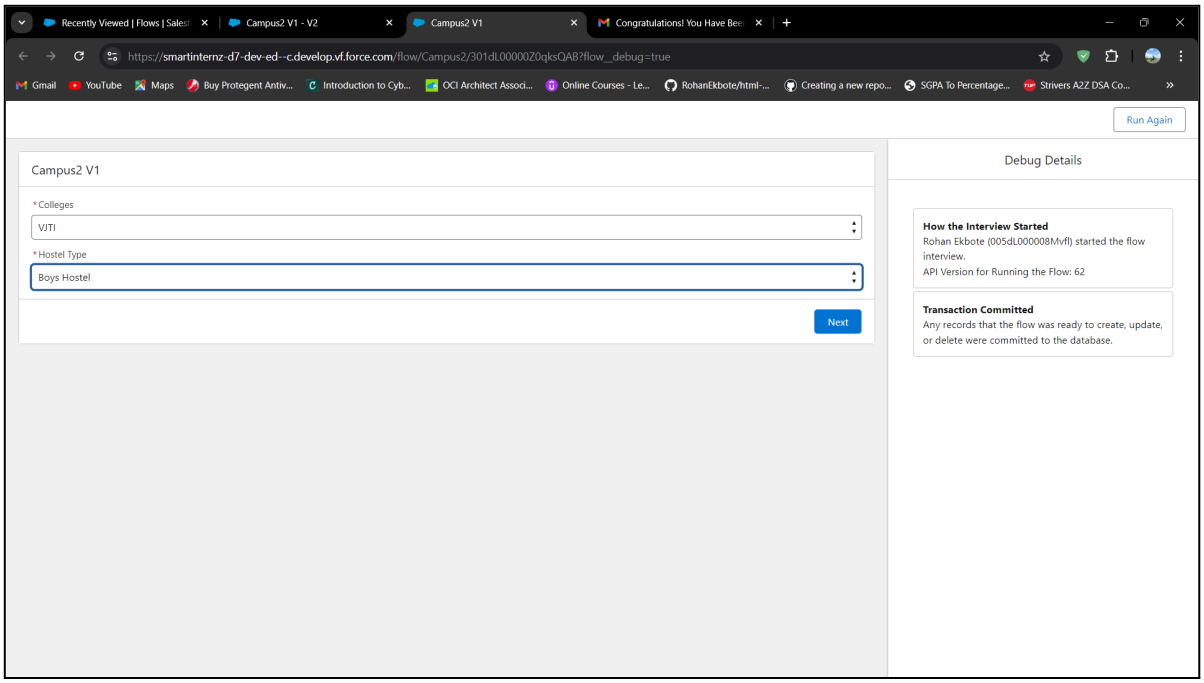
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Campus2 V1
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VJTI
*Hostel Type
Boys Hostel
Next
Debug Details
How the Interview Started
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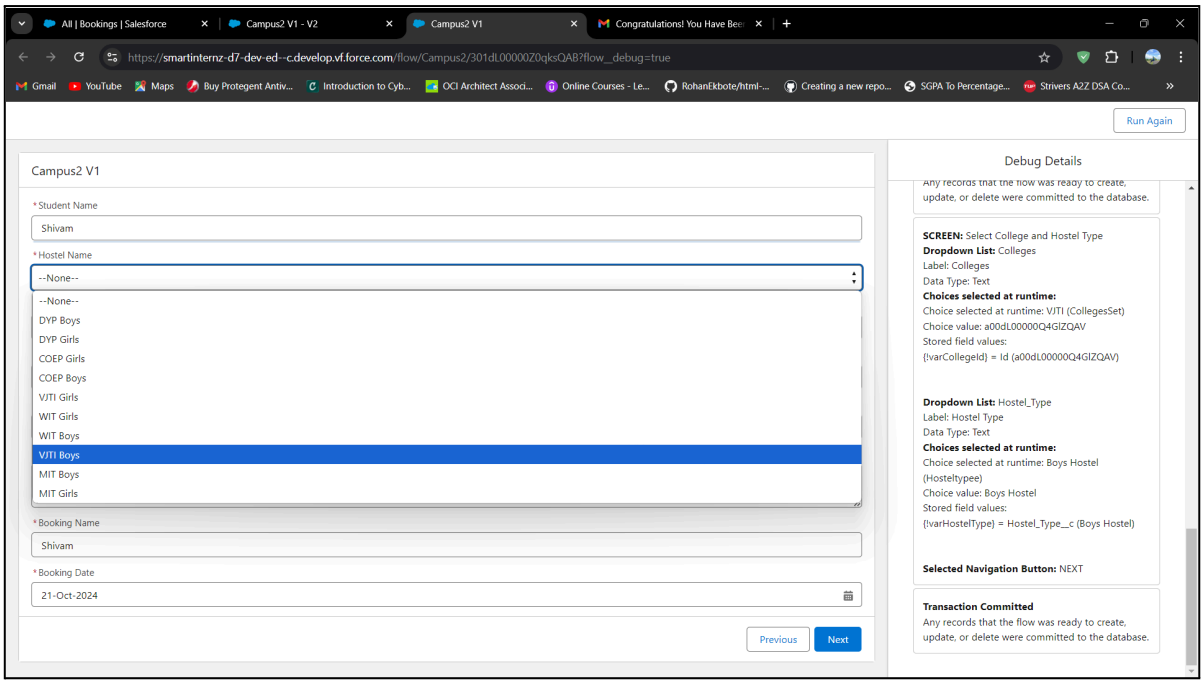
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Campus2 V1
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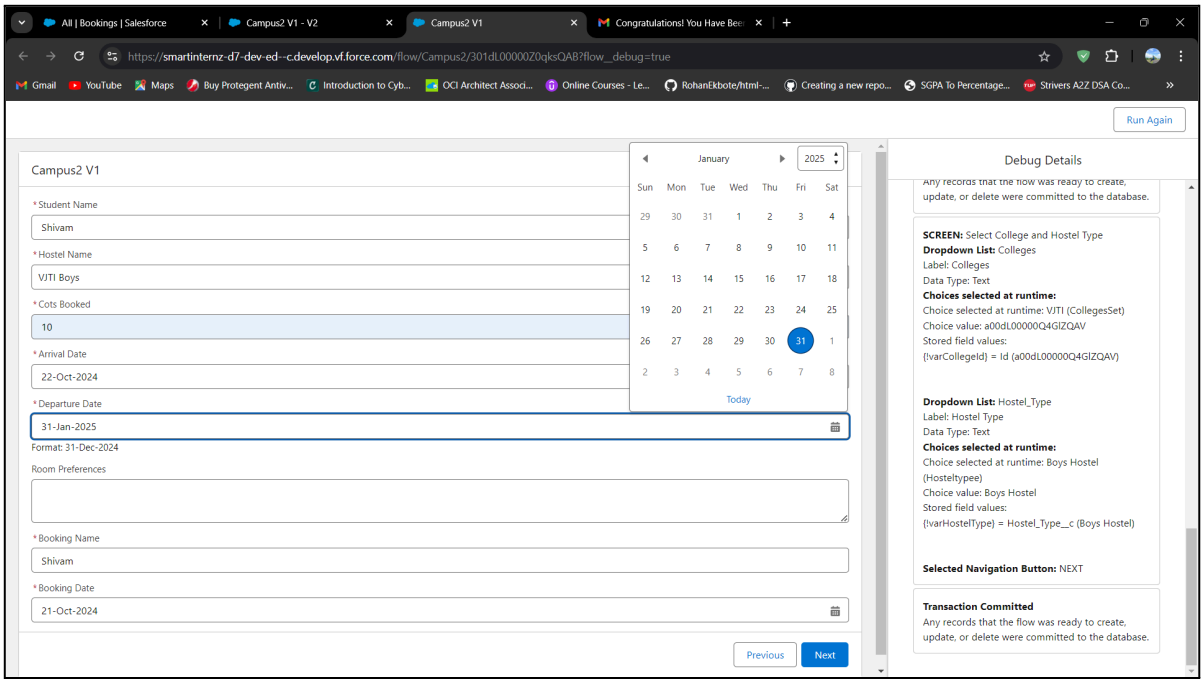
Run Again
Campus2 V1
*Student Name
Shivam
*Hostel Name
--None--
--None--
DYP Boys
DYP Girls
COEP Girls
COEP Boys
VJTI Girls
WIT Girls
WIT Boys
VJTI Boys
MIT Boys
MIT Girls
*Booking Name
Shivam
*Booking Date
21-Oct-2024
Previous
Next
Debug Details
Any records that the flow was ready to create, update, or delete were committed to the database.
SCREEN: Select College and Hostel Type
Dropdown List: Colleges
Label: Colleges
Data Type: Text
Choices selected at runtime:
Choice selected at runtime: VJTI (CollegesSet)
Choice value: a00dL00000Q4GIZQAV
Stored field values:
{!varCollegeId} = Id (a00dL00000Q4GIZQAV)
Dropdown List: Hostel_Type
Label: Hostel Type
Data Type: Text
Choices selected at runtime:
Choice selected at runtime: Boys Hostel (Hosteltypee)
Choice value: Boys Hostel
Stored field values:
{!varHostelType} = Hostel_Type__c (Boys Hostel)
Selected Navigation Button: NEXT
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.


All | Bookings | Salesforce
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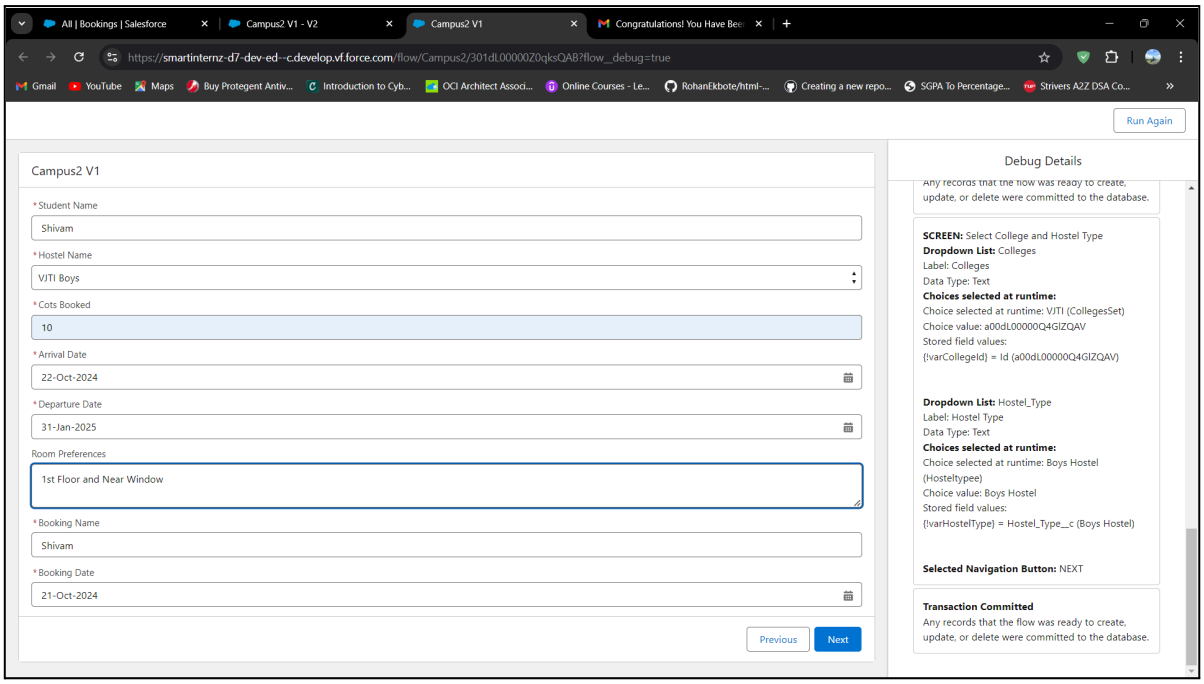
SGPA To Percentage...
Strivers A2Z DSA Co...
Run Again
Campus2 V1
*Student Name
Shivam
*Hostel Name
VJTI Boys
*Cots Booked
10
*Arrival Date
22-Oct-2024
*Departure Date
31-Jan-2025
Format: 31-Dec-2024
Room Preferences
*Booking Name
Shivam
*Booking Date
21-Oct-2024
Previous
Next
January
2025
Sun Mon Tue Wed Thu Fri Sat
29 30 31 1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31 1
2 3 4 5 6 7 8
Today
Debug Details
Any records that the flow was ready to create, update, or delete were committed to the database.
SCREEN: Select College and Hostel Type
Dropdown List: Colleges
Label: Colleges
Data Type: Text
Choices selected at runtime:
Choice selected at runtime: VJTI (CollegesSet)
Choice value: a00dL00000Q4GIZQAV
Stored field values:
{!varCollegeId} = Id (a00dL00000Q4GIZQAV)
Dropdown List: Hostel_Type
Label: Hostel Type
Data Type: Text
Choices selected at runtime:
Choice selected at runtime: Boys Hostel (Hosteltypee)
Choice value: Boys Hostel
Stored field values:
{!varHostelType} = Hostel_Type__c (Boys Hostel)
Selected Navigation Button: NEXT
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.


All | Bookings | Salesforce
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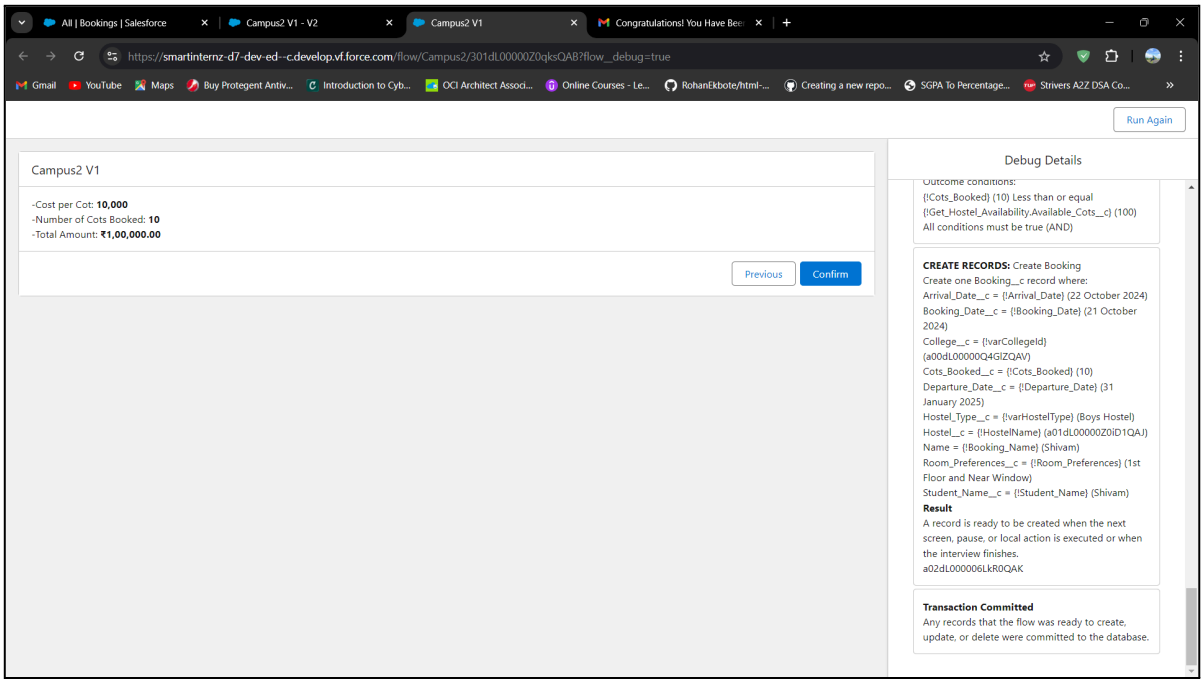
Run Again
Campus2 V1
*Student Name
Shivam
*Hostel Name
VJTI Boys
*Cots Booked
10
*Arrival Date
22-Oct-2024
*Departure Date
31-Jan-2025
Room Preferences
1st Floor and Near Window
*Booking Name
Shivam
*Booking Date
21-Oct-2024
Previous
Next
Debug Details
Any records that the flow was ready to create, update, or delete were committed to the database.
SCREEN: Select College and Hostel Type
Dropdown List: Colleges
Label: Colleges
Data Type: Text
Choices selected at runtime:
Choice selected at runtime: VJTI (CollegesSet)
Choice value: a00dL00000Q4GIZQAV
Stored field values:
{!varCollegeId} = Id (a00dL00000Q4GIZQAV)
Dropdown List: Hostel_Type
Label: Hostel Type
Data Type: Text
Choices selected at runtime:
Choice selected at runtime: Boys Hostel (Hosteltypee)
Choice value: Boys Hostel
Stored field values:
{!varHostelType} = Hostel_Type__c (Boys Hostel)
Selected Navigation Button: NEXT
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.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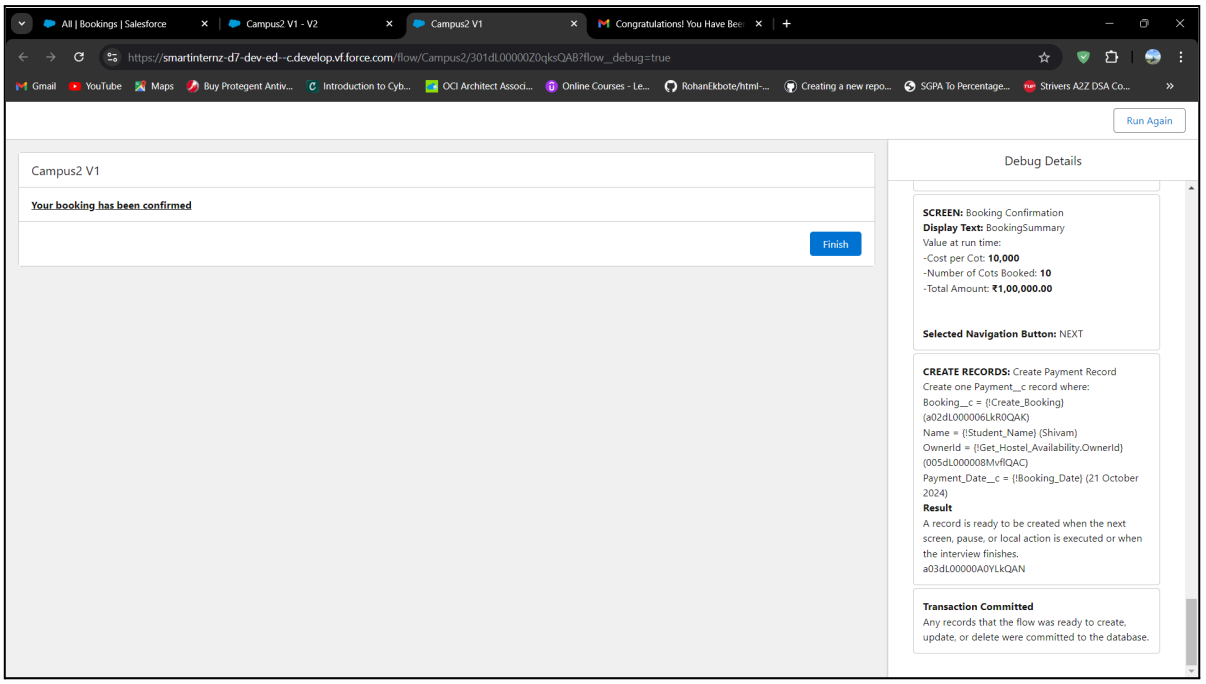
Run Again
Campus2 V1
-Cost per Cot: 10,000
-Number of Cots Booked: 10
-Total Amount: ₹1,00,000.00
Previous
Confirm
Debug Details
Outcome conditions:
{!Cots_Booked} (10) Less than or equal {!Get_Hostel_Availability.Available_Cots__c} (100)
All conditions must be true (AND)
CREATE RECORDS: Create Booking
Create one Booking__c record where:
Arrival_Date__c = {!Arrival_Date} (22 October 2024)
Booking_Date__c = {!Booking_Date} (21 October 2024)
College__c = {!varCollegeId} (a00dL00000Q4GIZQAV)
Cots_Booked__c = {!Cots_Booked} (10)
Departure_Date__c = {!Departure_Date} (31 January 2025)
Hostel_Type__c = {!varHostelType} (Boys Hostel)
Hostel__c = {!HostelName} (a01dL00000Z0iD1QAJ)
Name = {!Booking_Name} (Shivam)
Room_Preferences__c = {!Room_Preferences} (1st Floor and Near Window)
Student_Name__c = {!Student_Name} (Shivam)
Result
A record is ready to be created when the next screen, pause, or local action is executed or when the interview finishes.
a02dL000006LkR0QAK
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.


All | Bookings | Salesforce
Campus2 V1 - V2
Campus2 V1
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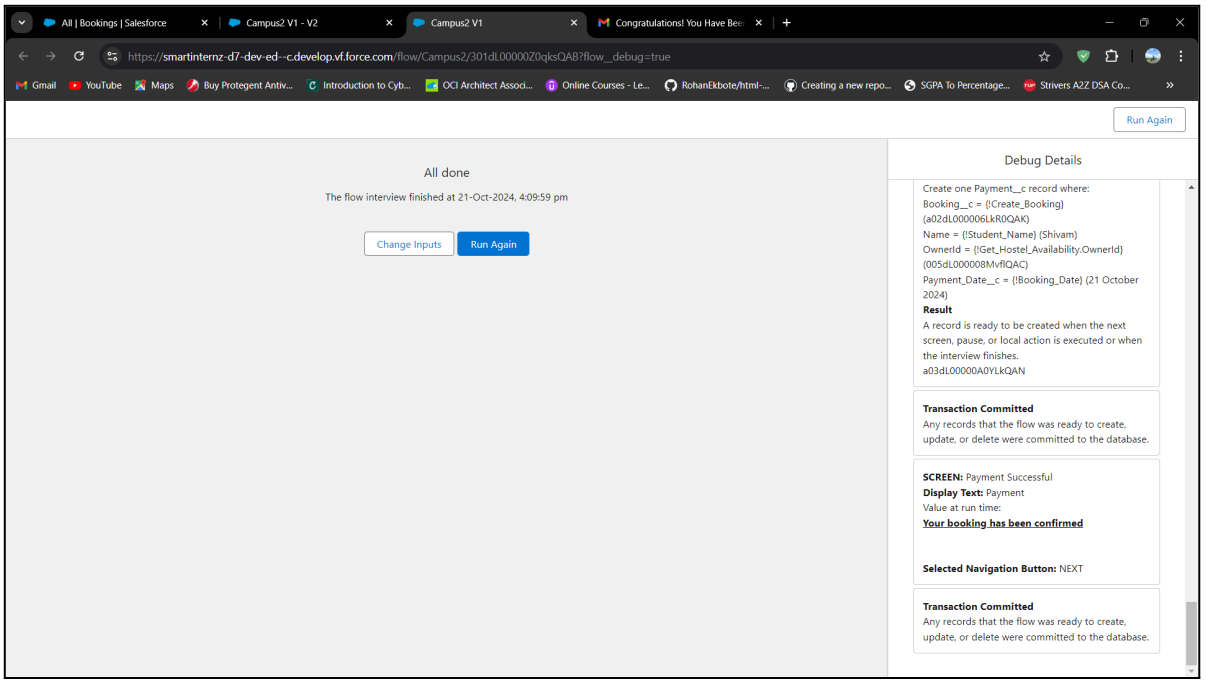
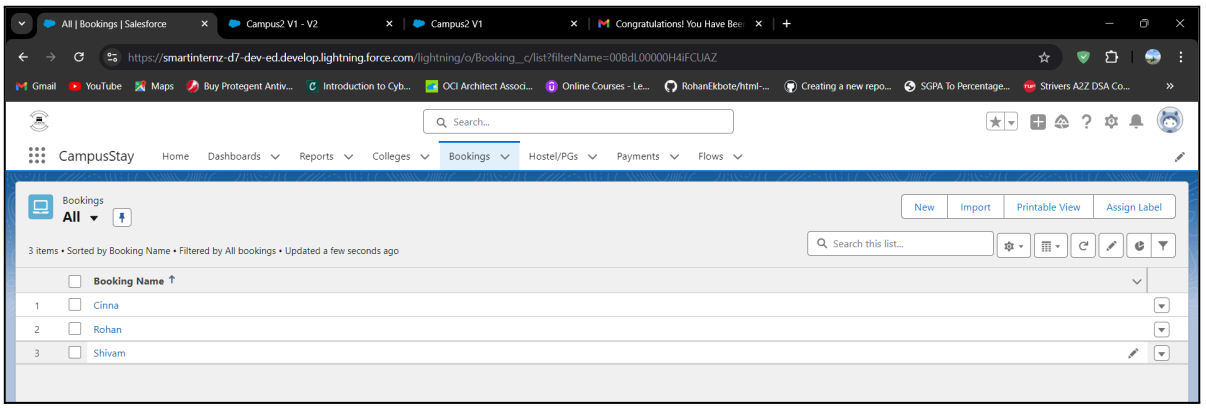
https://smartinternz-d7-dev-ed--c.develop.vf.force.com/flow/Campus2/301dL00000Z0qksQAB?flow__debug=true
Run Again
Campus2 V1
Your booking has been confirmed
Finish
Debug Details
SCREEN: Booking Confirmation
Display Text: BookingSummary
Value at run time:
-Cost per Cot: 10,000
-Number of Cots Booked: 10
-Total Amount: ₹1,00,000.00
Selected Navigation Button: NEXT
CREATE RECORDS: Create Payment Record
Create one Payment__c record where:
Booking__c = {!Create_Booking} (a02dL000006LkR0QAK)
Name = {!Student_Name} (Shivam)
OwnerId = {!Get_Hostel_Availability.OwnerId} (005dL000008MvfIQAC)
Payment_Date__c = {!Booking_Date} (21 October 2024)
Result
A record is ready to be created when the next screen, pause, or local action is executed or when the interview finishes.
a03dL00000A0YLkQAN
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.


All | Bookings | Salesforce
Campus2 V1 - V2
Campus2 V1
Congratulations! You Have Bee
https://smartinternz-d7-dev-ed--c.develop.vf.force.com/flow/Campus2/301dL00000Z0qksQAB?flow__debug=true
Run Again
All done
The flow interview finished at 21-Oct-2024, 4:09:59 pm
Change Inputs
Run Again
Debug Details
Create one Payment__c record where:
Booking__c = {!Create_Booking} (a02dL000006LkR0QAK)
Name = {!Student_Name} (Shivam)
OwnerId = {!Get_Hostel_Availability.OwnerId} (005dL000008MvfIQAC)
Payment_Date__c = {!Booking_Date} (21 October 2024)
Result
A record is ready to be created when the next screen, pause, or local action is executed or when the interview finishes.
a03dL00000A0YLkQAN
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.
SCREEN: Payment Successful
Display Text: Payment
Value at run time:
Your booking has been confirmed
Selected Navigation Button: NEXT
Transaction Committed
Any records that the flow was ready to create, update, or delete were committed to the database.


All | Bookings | Salesforce
Campus2 V1 - V2
Campus2 V1
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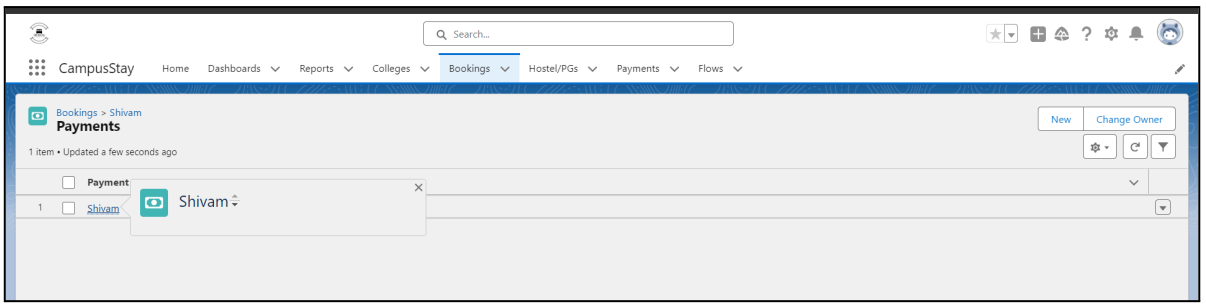
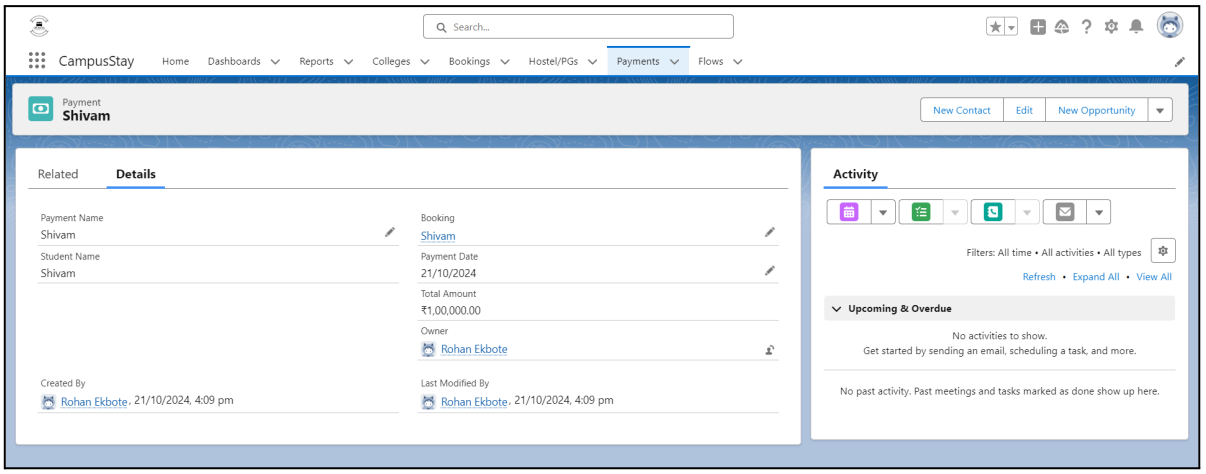
CampusStay
Home
Dashboards
Reports
Colleges
Bookings
Hostel/PGs
Payments
Flows
Bookings
All
New
Import
Printable View
Assign Label
3 items • Sorted by Booking Name • Filtered by All bookings • Updated a few seconds ago
Search this list...
Booking Name
1 Cinna
2 Rohan
3 Shivam





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8. Key Scenarios Addressed by Salesforce

1. **Booking a Hostel Room**: A student selects a college, chooses between Boys' and Girls' Hostels, and books a cot. The system automatically checks cot availability, ensures no overbooking occurs, and creates both the booking and payment records.
2. **Handling Overbooking**: The system prevents overbooking by checking cot availability in real-time. If no cots are available, the user receives an error message and cannot proceed.
3. **Payment Automation**: Once a booking is made, a payment record is automatically generated with all relevant details, including the total amount and payment status.

---

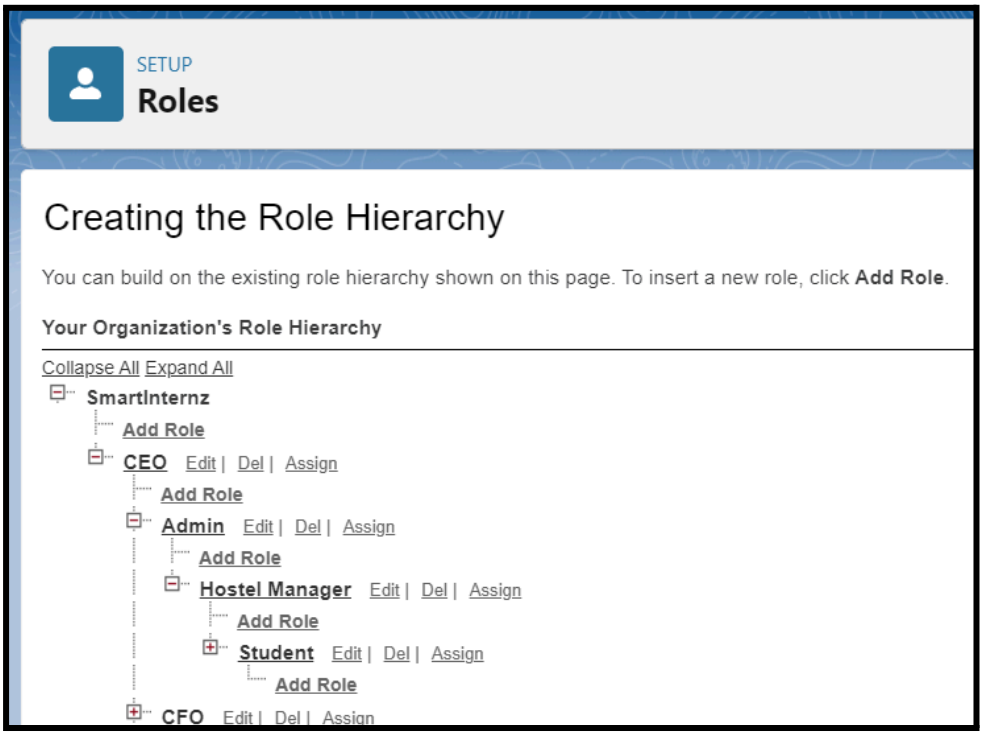
9. Roles and Profiles with Hierarchy

- **Student Profile**:

    - Can view available hostels, make bookings, and view their payment history.
- **Hostel Manager Profile**:
    - Can manage bookings, view cot availability, and update hostel details (e.g., total cots and cot rates).
- **System Administrator**:
    - Has full access to all records, objects, and settings. Manages the flow logic, booking records, and triggers.

Hierarchy:

1. **System Administrator**: Highest authority with full access.
2. **Hostel Manager**: Limited to managing hostels and bookings.
3. **Student**: Can only view and book cots, with access limited to their own records.



10. Conclusion

In the **CampusStay** project, we successfully developed a Salesforce-based hostel booking system that automates the process of room allocation and payment. By leveraging Salesforce's powerful Flow Builder, custom objects, triggers, and automation features, we've created a seamless experience for students and hostel managers. The application ensures no overbooking occurs and provides an easy way to manage payments.

Achievements:

- Automated hostel booking and payment generation.
- Prevented overbooking through real-time availability checks.
- Simplified management for hostel managers through automated processes.
