Salesforce project

Bike Rental Management System

Small rental businesses often struggle to manage bookings, customer interactions, and fleet availability due to reliance on manual processes, phone calls, or spreadsheets. This leads to issues such as double-bookings, delayed maintenance, missed payments, and poor customer experiences. For small businesses and startups, these inefficiencies result in reduced profitability and lower customer satisfaction.

To address this, there is a need for a Salesforce-based Bike Rental Management System that extends standard Salesforce objects, automates booking confirmations and reminders, and leverages Salesforce Reports and Dashboards to provide visibility into rental trends, fleet usage, and customer engagement all at an affordable cost.

Phase1: Problem understanding & industry analysis

1. **Requirement Gathering (What to Track):**

Bikes (Inventory Management):

- Bike ID / Serial Number
- Bike Type (Mountain, Road, Electric, Scooter, etc.)
- Availability Status (Available, Booked, Under Maintenance)
- Rental Rate (per hour/day/week)
- Maintenance Due Date

Customers (Renter Records):

- Customer Name & Contact Info
- ID Proof Details (License/ID Card)
- Rental History (previous bookings, payment status)

Bookings/Reservations:

- Booking ID
- Bike Selected
- Rental Duration (start & end date/time)
- Payment Status (Pending, Paid, Overdue)

- Linked Record (Customer Account/Contact)

Reporting & Dashboards:

- Active Rentals (current bookings)
- Bike Utilization Rate (available vs rented)
- Revenue by Bike Type or Time Period
- Overdue Returns & Payments
- Top Customers (frequent renters)

Automations (Workflow Rules/Flows):

- Auto-confirmation email/SMS after booking creation
- Reminder 24 hours before bike return deadline
- Notification for overdue returns/payments
- Auto-creation of maintenance tasks after certain rental cycles

2. Stakeholder Analysis

- **Customer (Bike Renter):** Needs a smooth booking process, timely confirmations, and return reminders.
- **Rental Staff (End Users):** Requires an easy interface to create/update bookings, check availability, and collect payments.
- **Manager/Owner:** Needs dashboards to track rentals, revenue, and overdue returns for better decision-making.
- **Admin:** Configures custom fields, sets up flows for automations, and manages fleet/booking data.

3. Business Process Mapping

- **Booking Creation:** Rental staff/customer creates booking linked to a bike and a customer record.
- **Availability Check:** System ensures bike is not double-booked.
- **Confirmation & Payment:** Booking confirmation sent; payment marked (Pending/Paid).
- **Rental Execution:** Bike handed over, status changed to “Rented.”
- **Return & Closure:** Upon return, staff updates status, records payment, and schedules maintenance if needed.
- **Reporting & Insights:** Dashboards show revenue, fleet usage, overdue returns, and top-performing bikes/customers.

4. **Industry-Specific Use Case Analysis**

    - **Local Bike Rental Shops:** Centralizes booking and customer management, reducing manual work.
    - **Tour Operators:** Tracks group rentals, payment status, and customer engagement.
    - **Corporate Rentals:** Supports companies offering employee bike rentals with usage reports and cost tracking.

5. **AppExchange Exploration**

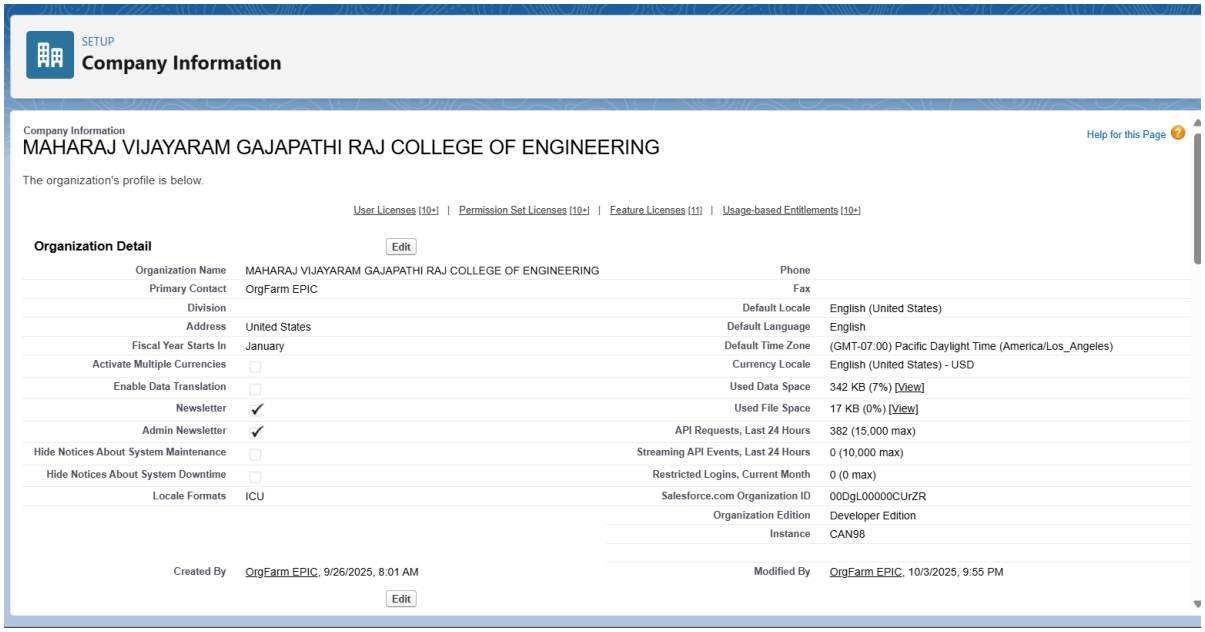
Explore Salesforce AppExchange apps like:

- **Rental Management Solutions (3rd-party apps):** End-to-end rental lifecycle tools.
- **Field Service Lightning:** To track maintenance schedules and technician assignments.
- **Conga Composer:** For generating rental agreements and invoices.
- **Payment Gateway Integrations (Stripe, PayPal):** For online payments. **Why Simple & Affordable?**
- **Low Complexity:** Uses standard Salesforce objects (Accounts, Contacts, Opportunities, Assets) with minimal customization.
- **Cost-Effective:** Built using Flows, Workflow Rules, and Reports/Dashboards, compatible with Salesforce Essentials or Lightning Professional editions.
- **Scalable for Small Businesses:** Designed for rental shops with 5–100 bikes and users, providing essential functionality without expensive addons.

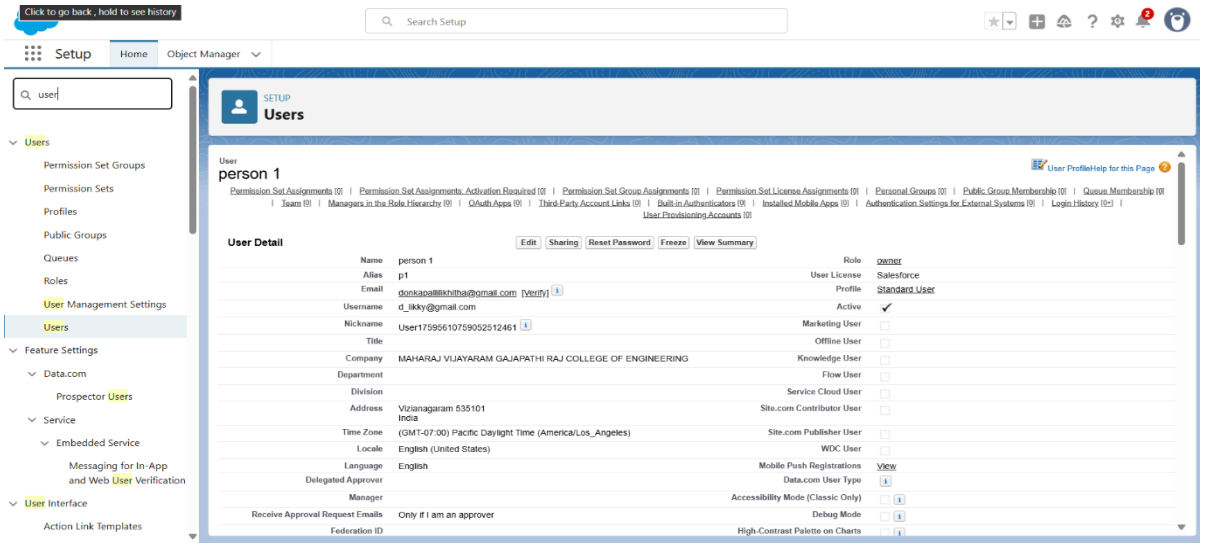
Phase 2: Org Setup & Configuration

Purpose: Configure Salesforce org for **Bike Rental Management System** to ensure users, profiles, roles, and security settings are correctly aligned with rental, support, and maintenance operations.

1. **Salesforce Edition:** Developer Edition
2. **Company Profile Setup:**
   • Company Name, Address
   • Timezone → Asia/Kolkata (IST)

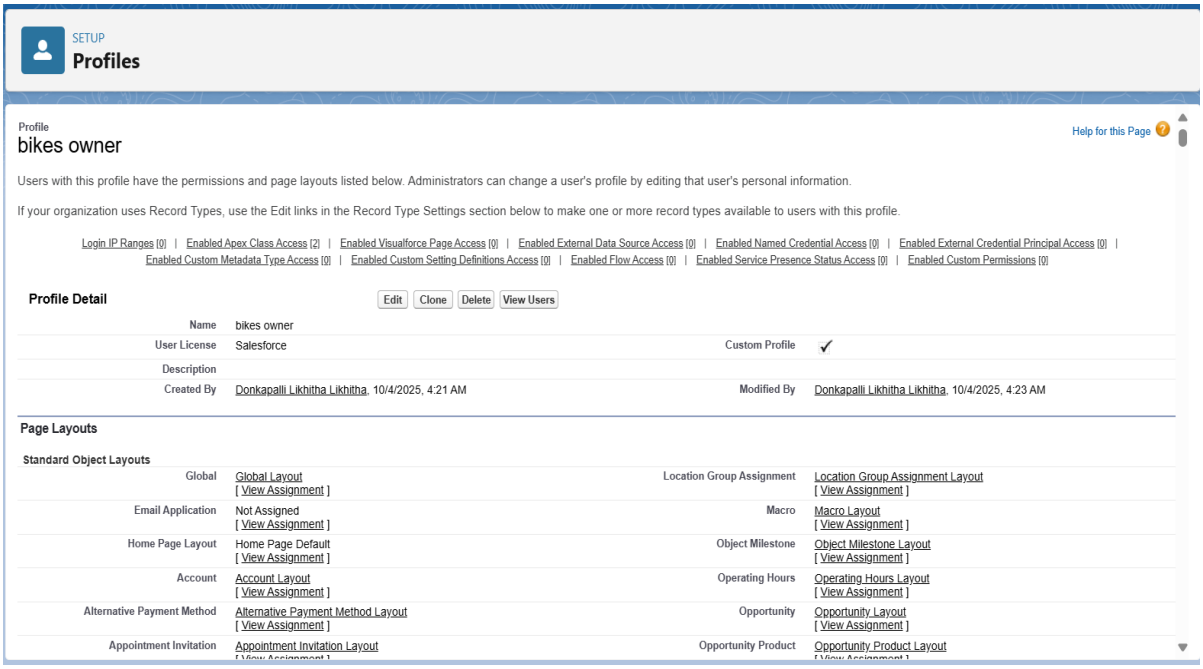


3. **Business Hours & Holidays:**
   - Rental Operations: Mon–Sun, 6 AM – 11 PM
   - Customer Support (Refunds/Complaints): 9 AM – 8 PM
   - Add Regional Public Holidays for SLA & Follow-up Management
4. **Fiscal Year:** Standard
5. **User Setup & Licenses – Create Sample Users:**
   - **Admin:** Full access to all rental data, refund workflows & dashboards
   - **Rental Manager:** Manages bike inventory, approves booking overrides
   - **Support Agent (Customer Care):** Handles refund requests and customer complaints
   - **Role:** Owner
   - **User License:** Salesforce
   - **Profile:** Standard User



6. Profiles:

- **Admin:** Full access to all rental, refund, and maintenance objects
- **Rental Manager:** Edit/View bikes, bookings, and refunds
- **Support Agent:** Edit/View bookings and refund requests only
- **Technician (Optional):** Edit/View bike maintenance logs only
- **Receptionist (Optional):** Create/View booking records only



SETUP
Profiles

Profile
bikes owner

Help for this Page

Users with this profile have the permissions and page layouts listed below. Administrators can change a user's profile by editing that user's personal information.

If your organization uses Record Types, use the Edit links in the Record Type Settings section below to make one or more record types available to users with this profile.

Login IP Ranges [0] | Enabled Apex Class Access [2] | Enabled Visualforce Page Access [0] | Enabled External Data Source Access [0] | Enabled Named Credential Access [0] | Enabled External Credential Principal Access [0] | Enabled Custom Metadata Type Access [0] | Enabled Custom Setting Definitions Access [0] | Enabled Flow Access [0] | Enabled Service Presence Status Access [0] | Enabled Custom Permissions [0]

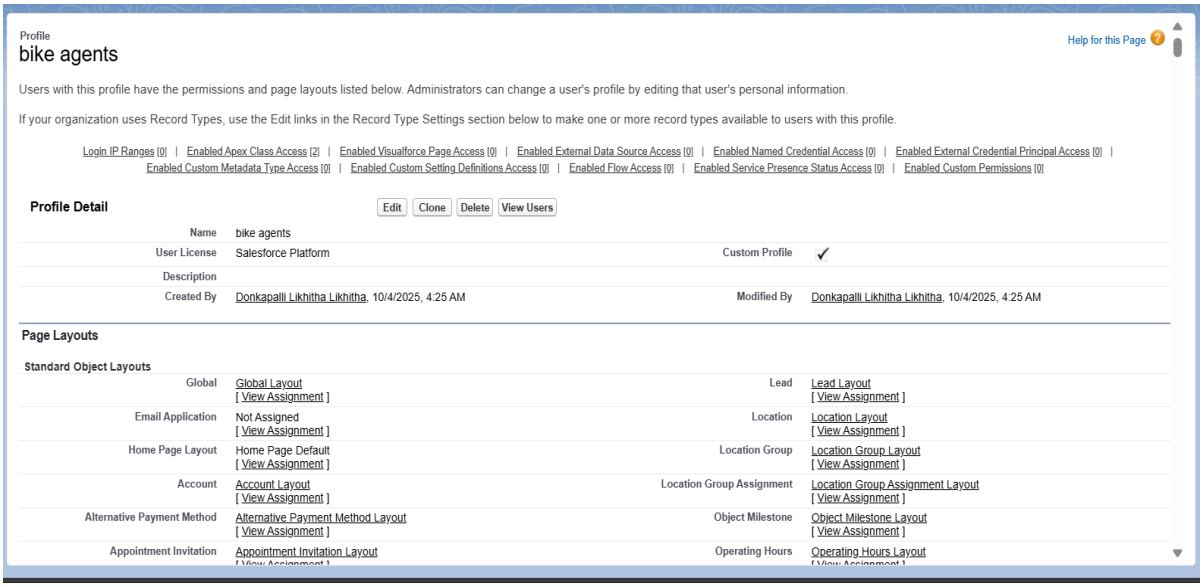
Profile Detail Edit | Clone | Delete | View Users

Name	bikes owner		
User License	Salesforce	Custom Profile	✓
Description			
Created By	Donkapalli Likhitha Likhitha, 10/4/2025, 4:21 AM	Modified By	Donkapalli Likhitha Likhitha, 10/4/2025, 4:23 AM

Page Layouts

Standard Object Layouts

Global	Global Layout [View Assignment]	Location Group Assignment	Location Group Assignment Layout [View Assignment]
Email Application	Not Assigned [View Assignment]	Macro	Macro Layout [View Assignment]
Home Page Layout	Home Page Default [View Assignment]	Object Milestone	Object Milestone Layout [View Assignment]
Account	Account Layout [View Assignment]	Operating Hours	Operating Hours Layout [View Assignment]
Alternative Payment Method	Alternative Payment Method Layout [View Assignment]	Opportunity	Opportunity Layout [View Assignment]
Appointment Invitation	Appointment Invitation Layout	Opportunity Product	Opportunity Product Layout



Profile
bike agents

Help for this Page

Users with this profile have the permissions and page layouts listed below. Administrators can change a user's profile by editing that user's personal information.

If your organization uses Record Types, use the Edit links in the Record Type Settings section below to make one or more record types available to users with this profile.

Login IP Ranges [0] | Enabled Apex Class Access [2] | Enabled Visualforce Page Access [0] | Enabled External Data Source Access [0] | Enabled Named Credential Access [0] | Enabled External Credential Principal Access [0] | Enabled Custom Metadata Type Access [0] | Enabled Custom Setting Definitions Access [0] | Enabled Flow Access [0] | Enabled Service Presence Status Access [0] | Enabled Custom Permissions [0]

Profile Detail Edit | Clone | Delete | View Users

Name	bike agents		
User License	Salesforce Platform	Custom Profile	✓
Description			
Created By	Donkapalli Likhitha Likhitha, 10/4/2025, 4:25 AM	Modified By	Donkapalli Likhitha Likhitha, 10/4/2025, 4:25 AM

Page Layouts

Standard Object Layouts

Global	Global Layout [View Assignment]	Lead	Lead Layout [View Assignment]
Email Application	Not Assigned [View Assignment]	Location	Location Layout [View Assignment]
Home Page Layout	Home Page Default [View Assignment]	Location Group	Location Group Layout [View Assignment]
Account	Account Layout [View Assignment]	Location Group Assignment	Location Group Assignment Layout [View Assignment]
Alternative Payment Method	Alternative Payment Method Layout [View Assignment]	Object Milestone	Object Milestone Layout [View Assignment]
Appointment Invitation	Appointment Invitation Layout	Operating Hours	Operating Hours Layout

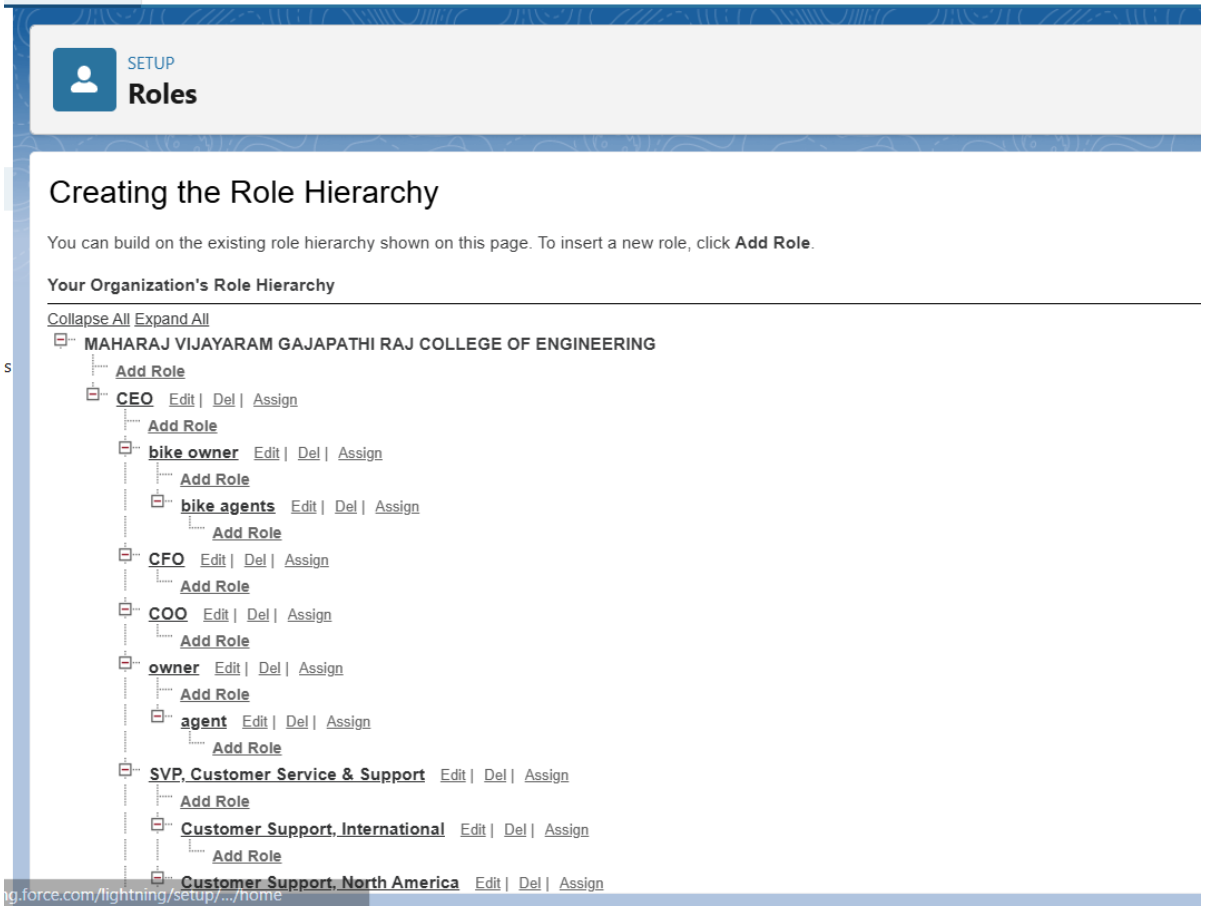
7. Roles (Hierarchy Structure):

Sample structure:

Admin > Rental Manager > Support Agent / Technician > Receptionist

Created Structure :

Company > CEO > Bike owner > Bike agents > users



8. Permission Sets: Assign report and dashboard access to Rental Managers & Support Agents

9. OWD & Sharing Rules:

- **Customers / Contacts:** Private
- **Bookings / Rentals:** Private
- **Refund Requests:** Private
- **Sharing Rule:** Share each booking and refund only with assigned Support Agent or Manager

10. Login Access Policies: Admin can login as any user

11. Sandbox Usage & Deployment Basics:

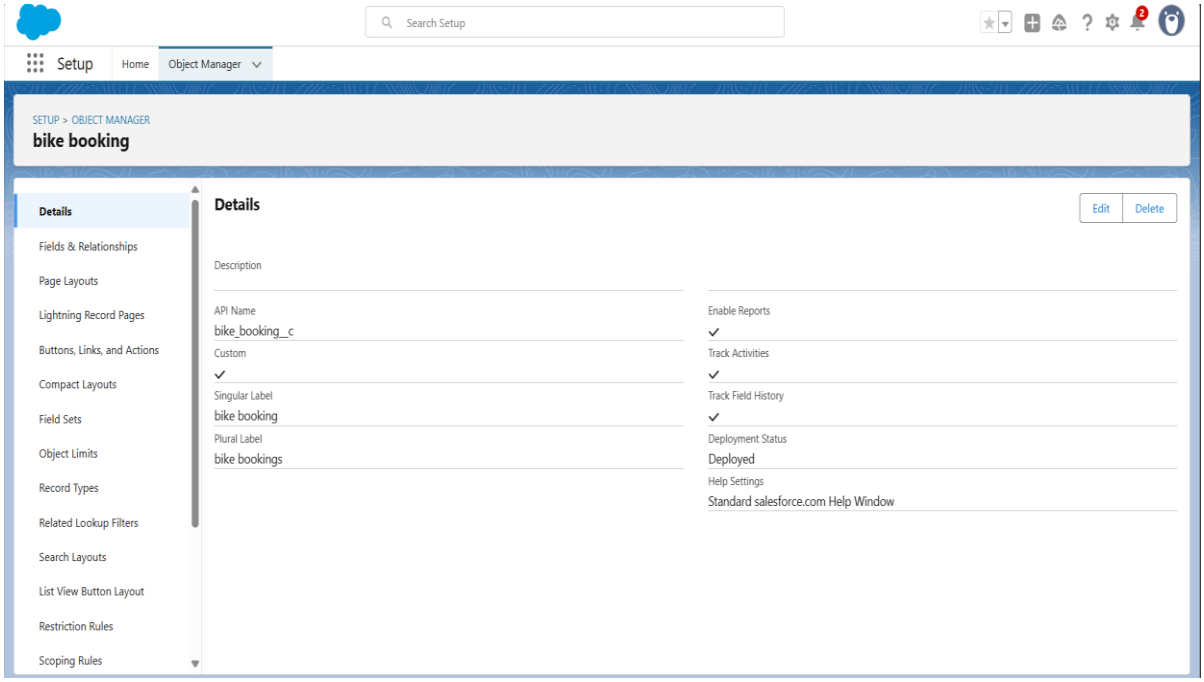
Optional used for testing refund workflows and automation setup before moving to production

Phase 3: Data Modeling & Relationships

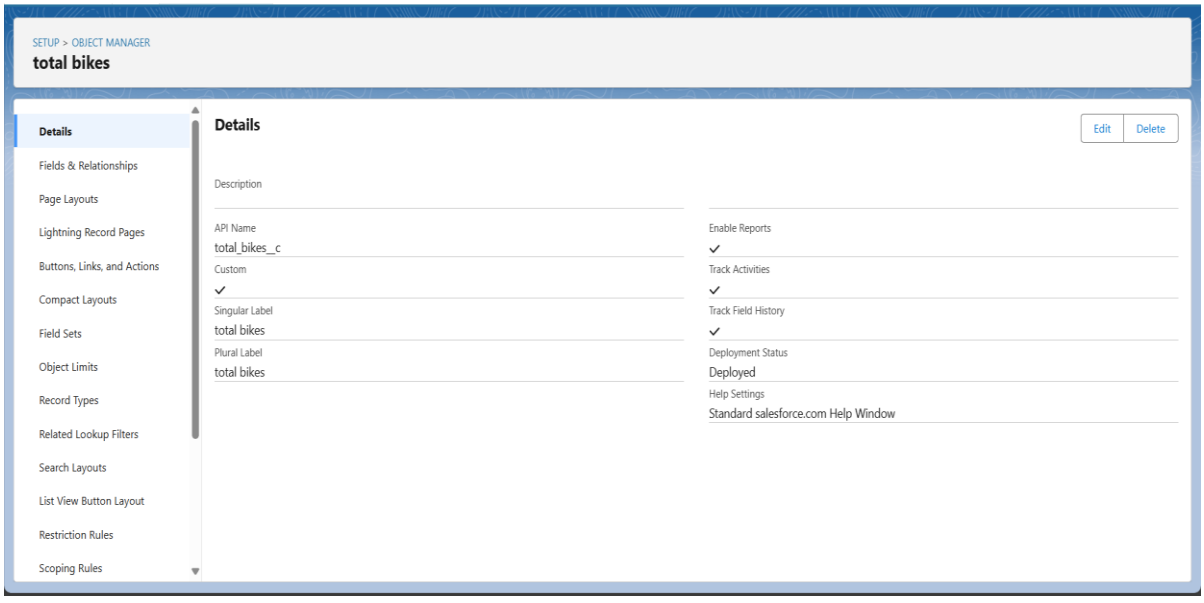
- **Purpose:** Design Salesforce objects and relationships for managing **customers, bike rentals, payments, refunds, and maintenance data** within the Bike Rental Management System.

1. Custom Objects:

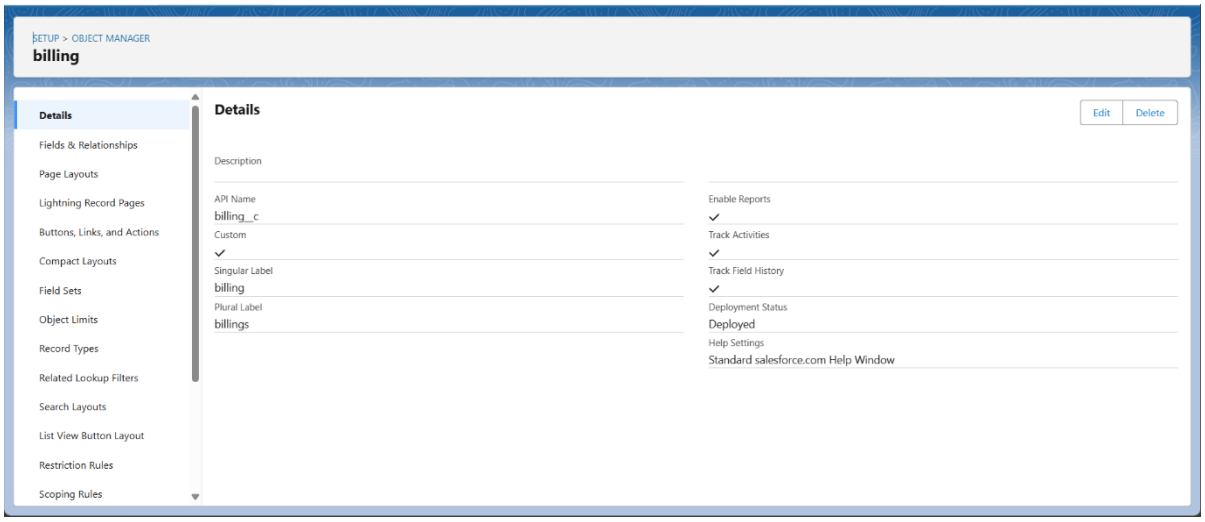
- Bike bookings



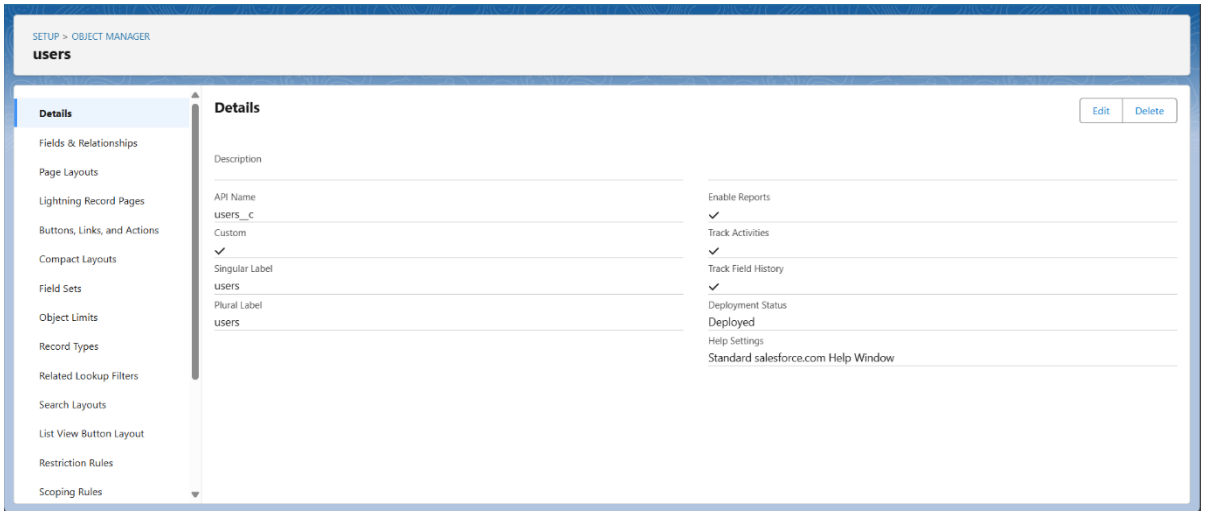
- Total bikes



- Billing process

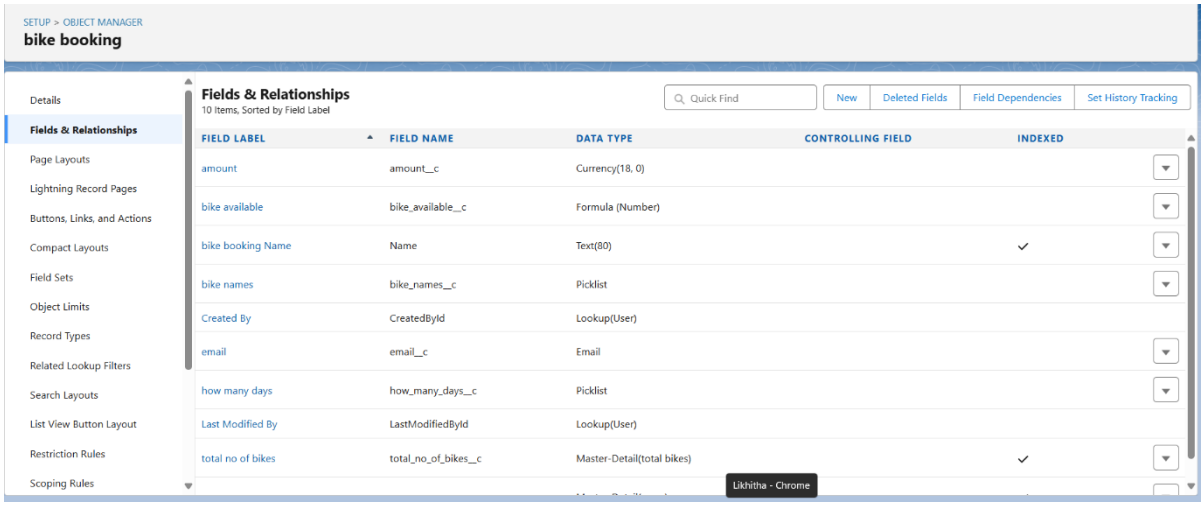


- Users

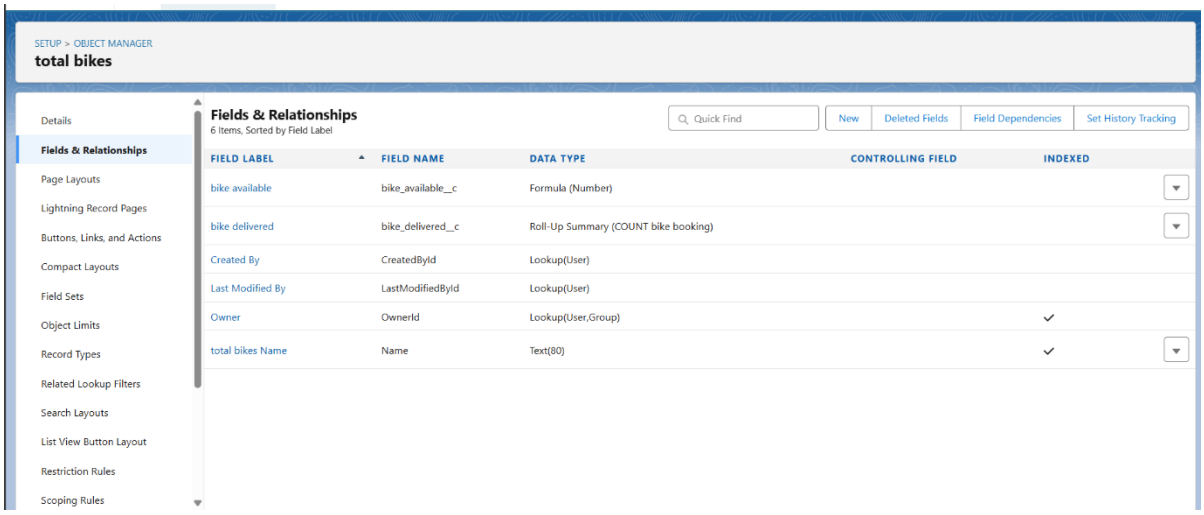


2. Fields and relationships

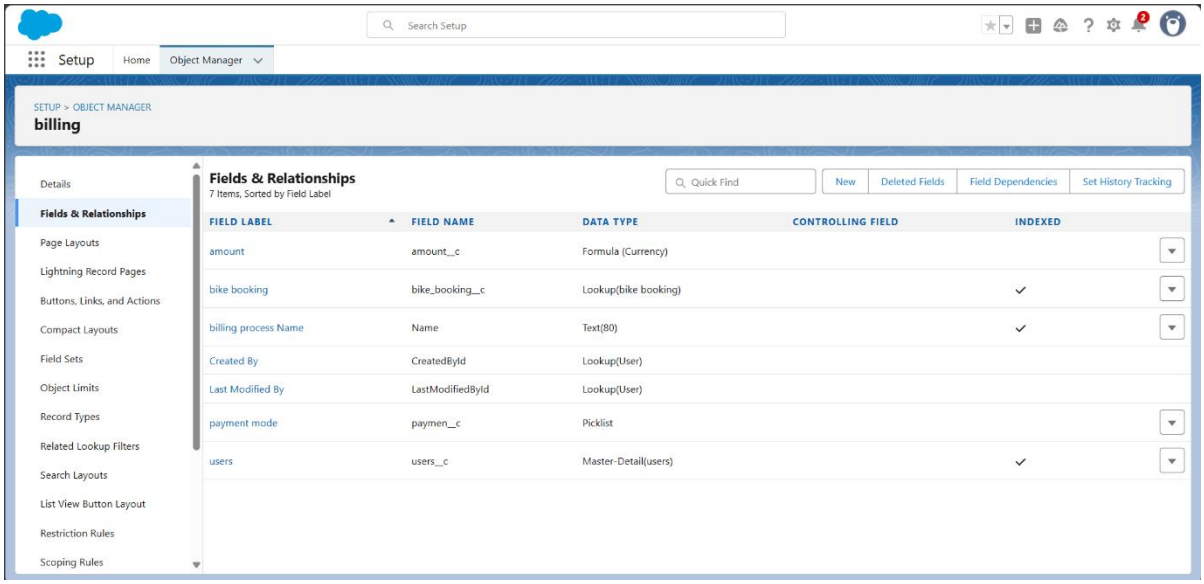
- **Bike booking**
  Amount
  Bikes available
  Bike booking names
  Bike names
  Email
  How many days
  Total no of bikes



- **Total bikes**
  Bike available
  Bike delivered
  Owner
  Total bikes



- **Billing**
  Amount
  Bike booking
  Billing number
  users



- **Users**

  Email

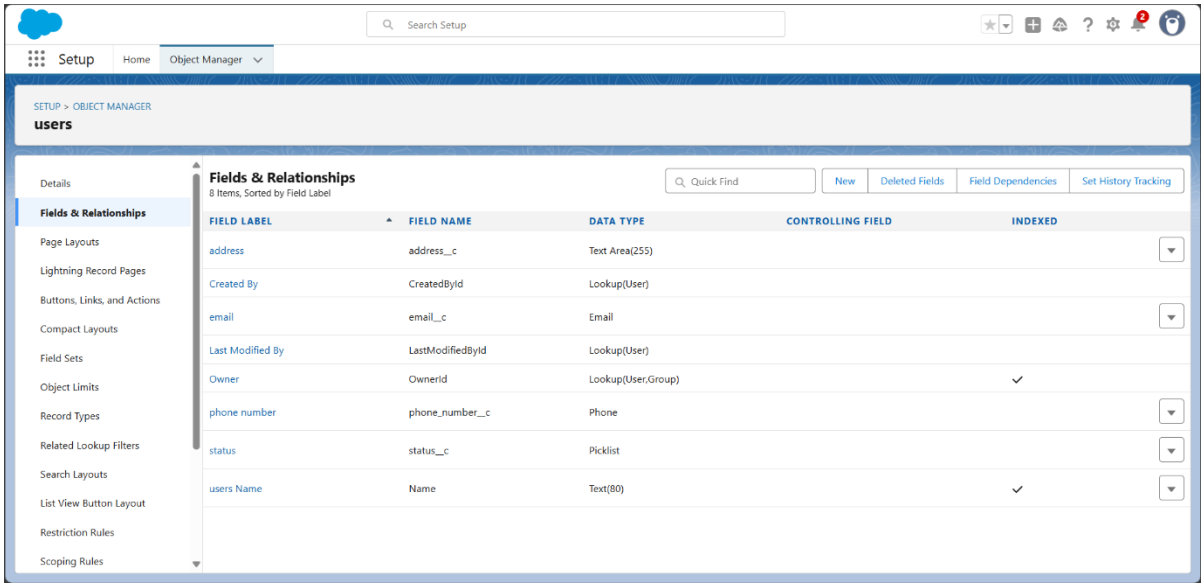
  Owner

  Phone number

  Users

  Address

  Status



3. Record Types

- Record types would typically be used if different business processes or page layouts are needed per object based on values like status or type (e.g., different layouts or picklist values for gear vs non-gear bikes).

- Currently, it appears only default record types are implemented for these objects.

4. **Page Layouts**

   Page layouts control the arrangement of fields, sections, related lists on the record detail page for users.

   1.Bike Booking layout would likely show:
   - Fields: bike booking Name, amount, bike available formula, bike names, how many days, email.
   - Related lists: total no of bikes (Master-Detail related list)

   2.Billing layout would show:
   - Billing process Name, amount formula, bike booking lookup, payment mode, users master-detail.
   - Lookup and related user and bike booking details.

   3.Total Bikes layout might Include:
   - Total bikes Name, bike available formula, bike delivered roll-up summary
   - Owner and audit info

   4.Users layout includes:
   - Ownership and audit fields
   - Users Name, address, email, phone number, status

5. **Compact layouts**

   Compact layouts define key fields displayed in record highlights and mobile cards.
   - Bike Booking compact layout might show key Identifiers such as:
     - Bike booking Name, status (if available), bike names, how many days
   - Billing compact layout likely shows:
     - Billing process Name, amount, payment mode
   - Total Bikes compact layout would show.
     - Total bikes Name, bike available number, bike delivered count
   - Users compact layout likely Includes:
     - Users Name, status, phone number or email for quick reference

6. **Schema Builder**

   The Schema Builder in Salesforce is a visual tool that lets administrators

and developers design, view, and manage the data model for both standard and custom objects, including their fields and relationships.

- Create and modify custom objects and fields
- Define relationships (Master-Detail, Lookup)
- Visualize how objects connect for a clear data architecture

Example (Bike Booking System):
The Schema Builder visually displays links between objects like:

- **Bike Booking**
- **Billing**
- **Users**
- **Total Bikes**

7. Lookup vs Master-Detail vs Hierarchical Relationships

Type	Description	Example in Your System	Features
Lookup	Loose reference — child record can exist independently	*Billing* → *Bike Booking*, *Bike Booking* → *Total Bikes*	No sharing/deletion dependency; parent optional
Master-Detail	Strong ownership — child depends on parent	*Total Bikes* → *Bike Booking*, *Billing* → *Users*	Parent controls sharing, deletion; supports roll-up summary
Hierarchical	Used only on User object to define manager-subordinate relations	Not shown in screenshots	Used to model reporting/management hierarchy

Relationships in your system:

- **Master-Detail:** Total Bikes ↔ Bike Booking; Billing ↔ Users
- **Lookup:** Billing ↔ Bike Booking
- **Hierarchical:** None configured

8. Junction Objects

A junction object is a custom object that has two Master-Detail relationships to create a many-to-many relationship between two other objects.

9. External Objects

External Objects represent data stored outside Salesforce (like ERP or external databases) but made available inside Salesforce through Salesforce Connect.

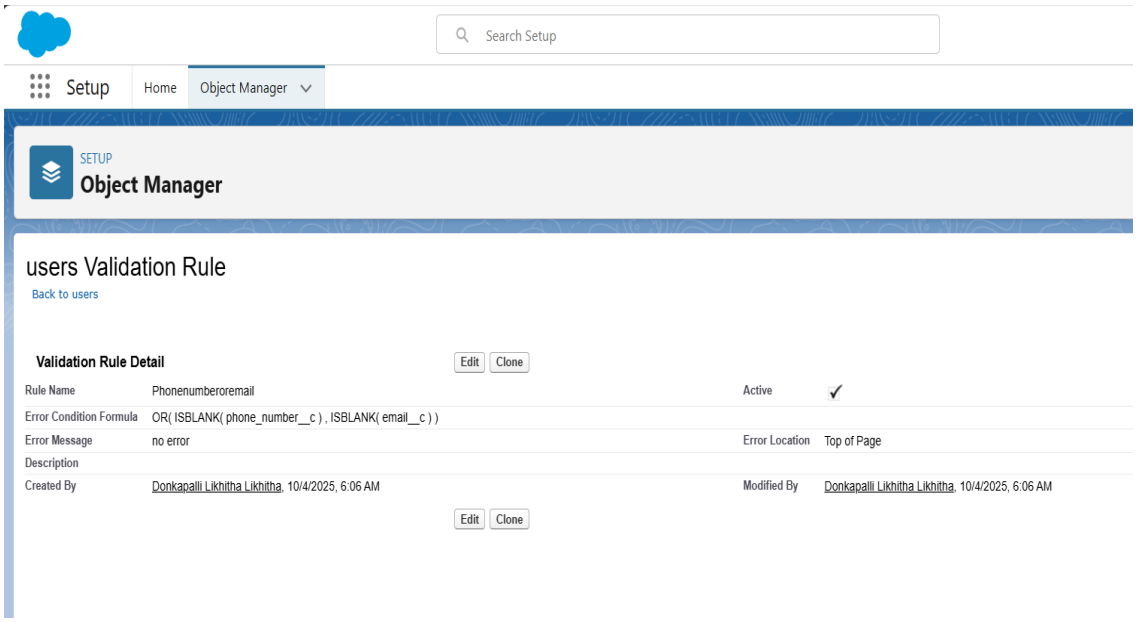
- Data is not stored in Salesforce (accessed in real time)
- Useful for integration and reporting across systems

Phase 4: Process Automation (Admin)

Purpose: Automate repetitive tasks, notifications, and follow-ups for bike rentals, returns, maintenance, and customer engagement.

1. Validation Rules:

- Ensure Return Date >= Rental Start Date
- Ensure Bike Availability = Yes before booking
- Ensure Customer Age >= 18 for bike rental



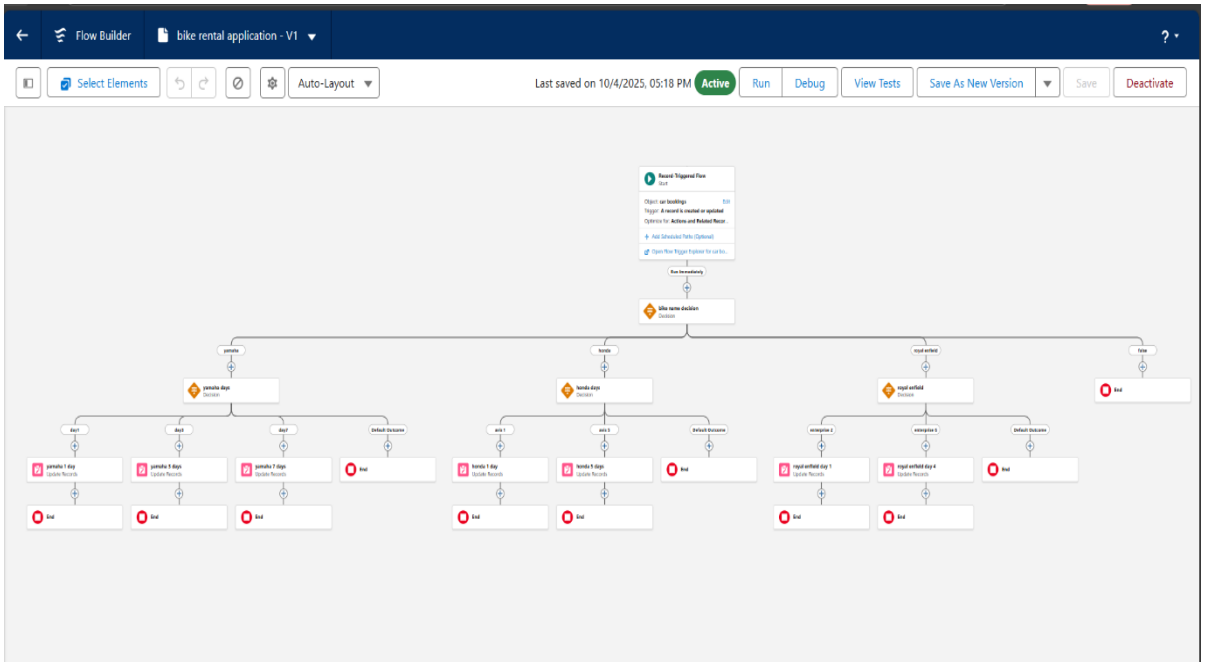
2. Workflow / Process Builder:

- **Notify Admin / Support Agent** when a bike is booked or returned late
- **Auto-assign a default rental plan** if the customer doesn't select a plan (e.g., hourly, daily, weekly)
- **Flag overdue rentals** automatically if the bike is not returned on time

3. Flow Builder:

- **Auto-create "Active Rentals" report** showing all ongoing rentals

- **Automate maintenance reminders** when a bike reaches a certain usage threshold
- **Automate notifications to customers** for upcoming rental end or overdue returns



4. Email Alerts / Custom Notifications:

- **Notify customers** about booking confirmation, rental expiration, or overdue bikes
- **Notify support/maintenance team** when a bike requires servicing or is flagged as overdue
- **Notify customers** of promotions or loyalty offers

Purpose:

Automatically maintain data consistency and save manual work.

Examples in Bike Rental System:

Use Case	Trigger Condition	Field Updated	Result
Mark bike as "Booked"	When a new booking is created	*Total_Bikes__c.Availability__c* → "Booked"	Prevents double-booking
Mark booking as "Completed"	When return date ≤ Today	*Bike_Booking__c.Status__c* → "Completed"	Keeps records up to date

Update payment status	When Billing record is saved	*Billing__c.Payment_Status__c* → "Paid"	Reflects successful transactions
Set maintenance flag	When bike reaches usage threshold	*Total_Bikes__c.Maintenance_Status__c* → "Due"	Alerts technicians automatically

Where to Create:
→ Setup → Workflow Rules / Flows → Add Action → **Field Update**

5. Tasks:

Tasks in Salesforce are activities or reminders automatically assigned to users. They help ensure follow-ups or actions are not missed.

Purpose: Automate reminders for staff or managers — crucial for customer returns and maintenance schedules.

Use Case	Trigger Condition	Task Assigned To	Task Description
Bike Return Reminder	24 hours before return date	Support Agent	"Follow up with customer for bike return."
Maintenance Task	When bike status = "Under Maintenance"	Technician	"Inspect and service the bike."
Payment Follow-up	When payment is overdue	Rental Manager	"Call customer to clear pending payment."
Customer Feedback	After rental completion	Support Agent	"Send feedback form to customer."

Where to Create:
→ Setup → Workflow Rules / Process Builder / Flow → Add Action → **New Task**

6. Custom Notifications

Custom Notifications send alerts directly inside Salesforce (web or mobile) instead of just email or SMS. They appear as bell notifications on the Salesforce UI.

Purpose: Provide **real-time alerts** to users without leaving Salesforce.

Use Case	Trigger Condition	Recipient	Message Example
Overdue Rental Alert	Bike not returned by due date	Admin / Support Agent	"Rental #BK-1023 is overdue. Please follow up."

Maintenance Needed	Bike flagged for servicing	Technician	“Bike #B-45 requires maintenance.”
New Booking Confirmed	Booking created successfully	Customer (via in-app or push)	“Your booking is confirmed!”
Payment Received	Billing status updated to Paid	Rental Manager	“Payment received for Booking #BK-1040.”

Setup Steps:

- Go to **Setup → Notification Builder → Custom Notifications**
- Click **New Notification Type**
- Assign to **Desktop / Mobile**
- Use this in **Flow or Process Builder** → *Action Type:* “Send Custom Notification”

Phase 5: Apex Programming (Developer)

Purpose: Use Apex code for advanced automation based on bike rental status, customer activity, and maintenance needs.

1. Triggers:

- **Rental Booking Insert** → Automatically assign default rental plan or discount if none is selected
- **Rental Status Update** → Notify admin/support agent via email if bike is overdue or damaged
- **Maintenance Record Insert/Update** → Trigger notification to maintenance team if bike requires servicing

2. Helper Classes:

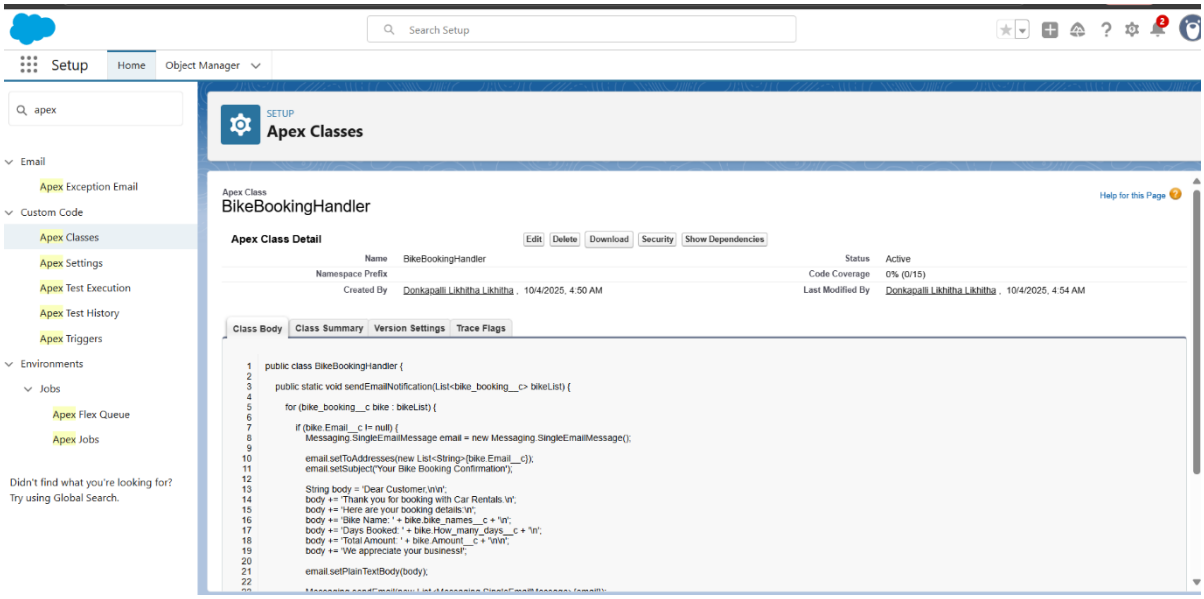
- **Calculate Rental Status** (Active, Completed, Overdue)
- **Determine Maintenance Priority** based on usage hours or mileage
- **Calculate Customer Loyalty Points / Discounts** based on rental history

3. Batch Apex / Queueable Apex:

- **Bulk update active rentals** and send overdue notifications to customers
- **Bulk generate monthly rental reports** for admin
- **Queueable process** to assign maintenance schedules for multiple bikes automatically

4. Test Classes:

- For triggers, helper classes, and batch/queueable processes to **ensure proper execution and meet Salesforce deployment requirements**
- Validate scenarios like overdue rentals, new bookings, and maintenance alerts

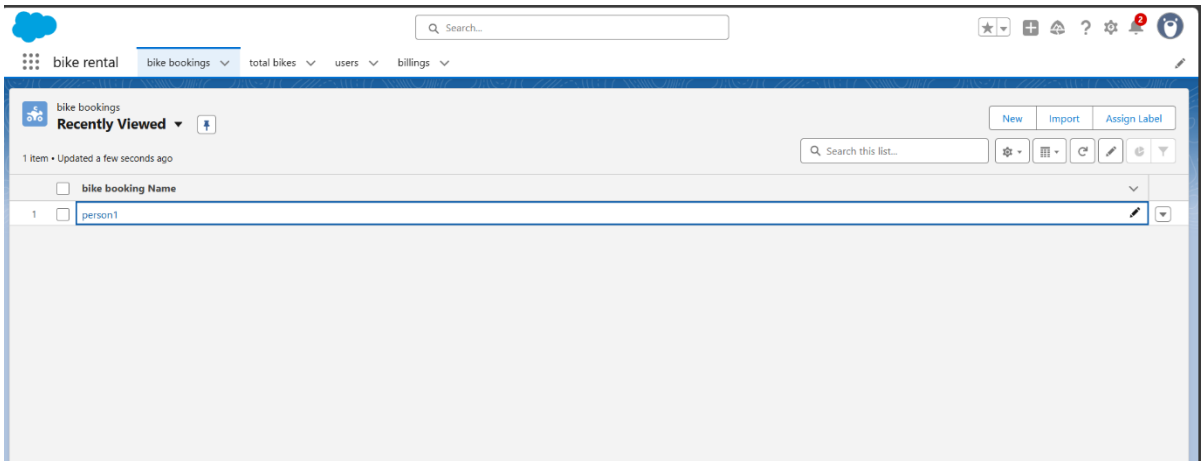


Phase 6: User Interface Development – Bike Rental Management System

Purpose: Create a user-friendly experience for admins, support agents, and customers.

1. Create Bike Rental App in Lightning App Builder

- Name the app: **"Bike Rental Management"**
- Include branding/logo for easier recognition



2. Add Tabs:

- **Bikes** – List of all available bikes and their status
- **Customers** – Customer records and rental history
- **Bookings / Rentals** – Active, completed, and overdue rentals
- **Maintenance** – Bikes needing servicing

- **Reports** – Rental trends, overdue rentals, revenue
- **Dashboards** – Visual overview of rentals, maintenance workload, and customer activity
- **Promotions / Offers** – Optional tab for ongoing offers or loyalty programs

3. Customize Record Pages:

- **Customer Record Page:** Show rental history, active bookings, loyalty points, and overdue rentals
- **Bike Record Page:** Show availability, maintenance history, and current booking status
- **Booking Record Page:** Show booking details, customer info, rental duration, and payment status

4. Home Page Layouts:

- **Dashboard Components:**
    - Number of active rentals, overdue returns, and upcoming bookings
    - Bikes due for maintenance
    - Customer loyalty and rental trends
    - Support agent workload (pending approvals, overdue follow-ups)

5. Optional – Lightning Web Components (LWC):

- **Customer Search Component:** Quickly find customers and their active bookings
- **Rental Status Overview:** Show bikes by availability, overdue, and maintenance needed
- **Promotions / Retention Actions Tracker:** Track discounts, offers, or reminders for frequent renters

Phase 7: Integration & External Access – Bike Rental Management System

Purpose: Connect Salesforce with external systems to enhance bike rental management, notifications, and customer engagement.

1. Named Credentials:

- **Connect with third-party APIs**:
    - **Email services** – Send booking confirmations, overdue alerts, and promotional offers

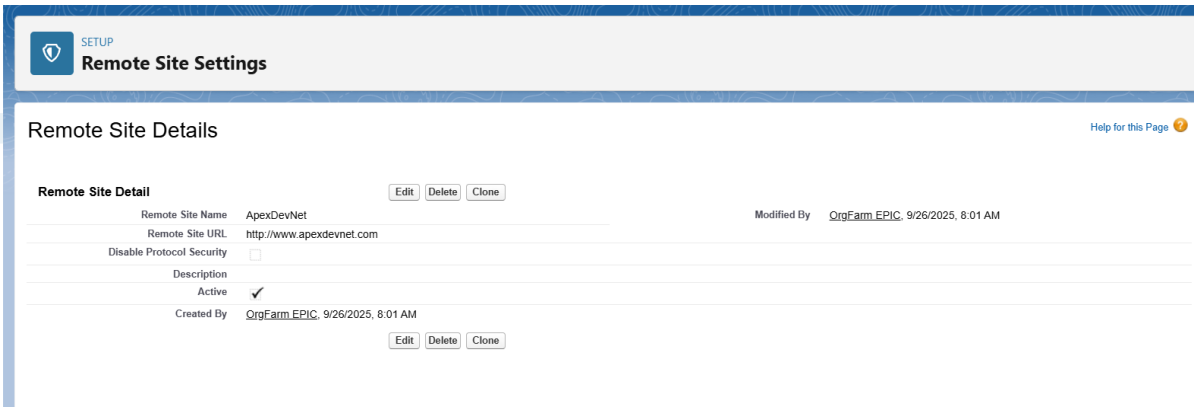
- **SMS gateways** – Notify customers about upcoming rentals, late returns, or maintenance schedules
- **Payment gateways** – Integrate for rental payments and refunds
- **Marketing platforms** – Sync customer data for loyalty programs and offers

2. Platform Events:

- **Notify support or admin agents**:
  - When a rental becomes overdue
  - When a bike is flagged for maintenance
  - When a customer makes multiple bookings or frequent cancellations (to trigger loyalty or retention actions)

3. Remote Site Settings:

- **Allow external API access** for:
  - Sending notifications via email or SMS
  - Fetching customer engagement or usage data from mobile apps
  - Integrating with bike tracking systems (GPS or IoT-based bike availability updates)



Phase 8: Data Management & Deployment – Bike Rental Management System

Purpose: Ensure data integrity, smooth migrations, and secure management of bikes, customers, rentals, and maintenance data.

1. Data Import Wizard (UI-based import)

- **Use Case:** Upload small datasets like sample Customers, Bikes, Bookings, or Maintenance records for testing.

- **Steps:**
    1. Go to App Launcher → search Data Import Wizard.
    2. Scroll down to Custom Objects → Select Customer, Bike, or Booking.
    3. Click Launch Wizard.
    4. Upload CSV (e.g., Customer Name, Email, Bike ID, Rental Start/End Date, Status).
    5. Map fields → Click Start Import → Records uploaded.

2. Data Loader (Bulk Import/Export)

- **Use Case:** Upload large datasets (e.g., 500+ Customers or Bookings at once) or perform updates.
- **Steps:**
    1. Setup → search Data Loader → Download & Install.
    2. Open → Log in with Salesforce credentials.
    3. Choose operation: Insert, Update, Upsert, Delete, Export.
    4. Example: Insert → Customer or Booking object → Upload CSV → Map fields → Run.

3. Duplicate Rules (Data Quality Control)

- **Use Case:** Prevent duplicate customer or bike records (same email, phone, or bike ID).
- **Steps:**
    1. Setup → search Duplicate Rules → New Rule → Select Customer or Bike.
    2. Define rule: Check Email, Phone, or Bike ID.
    3. Action: Alert or Block → Save & Activate.

4. Change Sets / Deployment

- **Use Case:** Move Customers, Bikes, Bookings, Maintenance Records, Reports, Dashboards from sandbox → production.
- **Steps:**
    1. Setup → search Outbound Change Sets → Create new → Name: "Bike Rental Deployment".
    2. Add Components → Upload → Target Org → Approve & Deploy.

5. Export / Backup

- **Use Case:** Monthly backup of Customers, Bikes, Bookings, and Maintenance data.

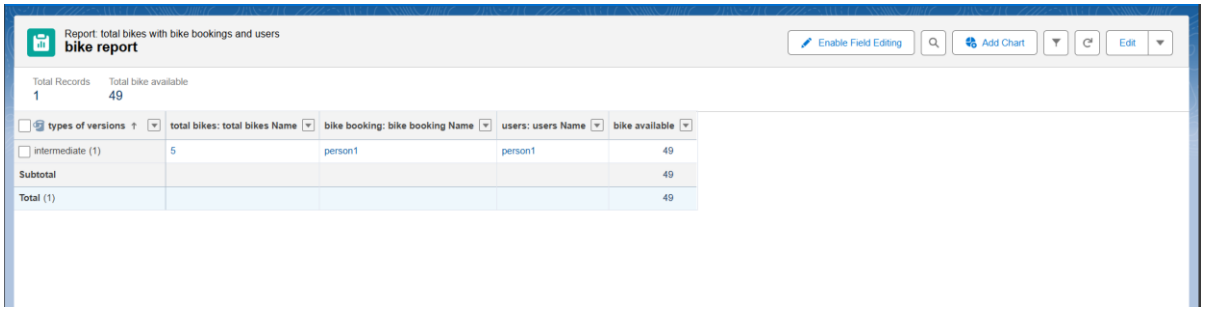
- **Steps:**
    1. Setup → search Data Export → Select Customers, Bikes, Bookings, Maintenance.
    2. Frequency: Monthly → Salesforce generates ZIP with CSVs → Download.

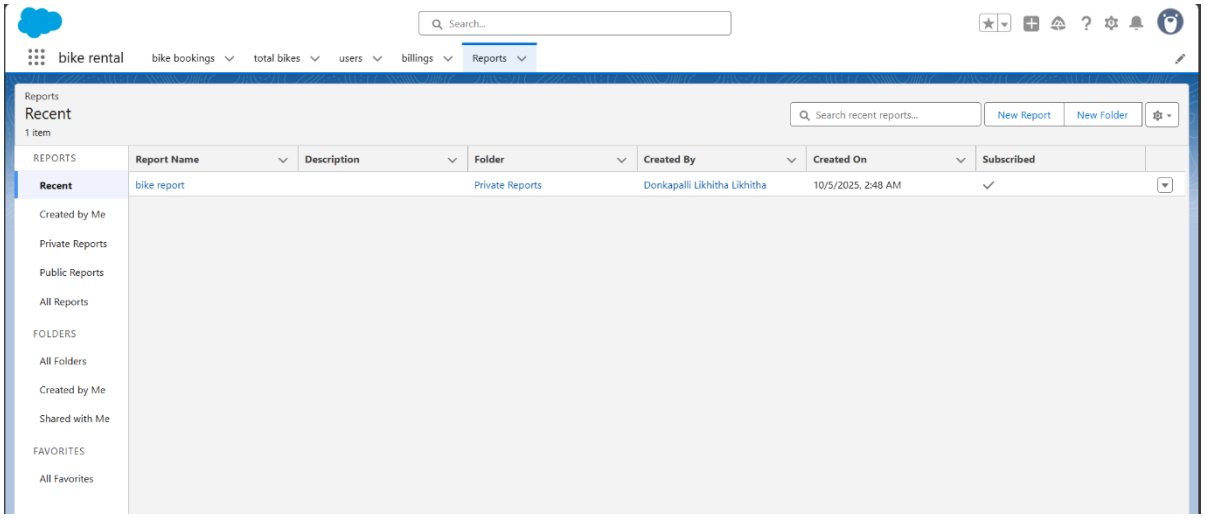
Phase 9: Reporting, Dashboards & Security Review – Bike Rental Management System

Purpose: Track bike usage, rental performance, maintenance status, and team efficiency.

Reports:

- **Active / Overdue Rentals by Status** – Summary or Matrix report
- **Maintenance Tasks Completed by Support/Maintenance Agent** – Summary
- **Rentals per Bike Type or Plan** – Tabular report

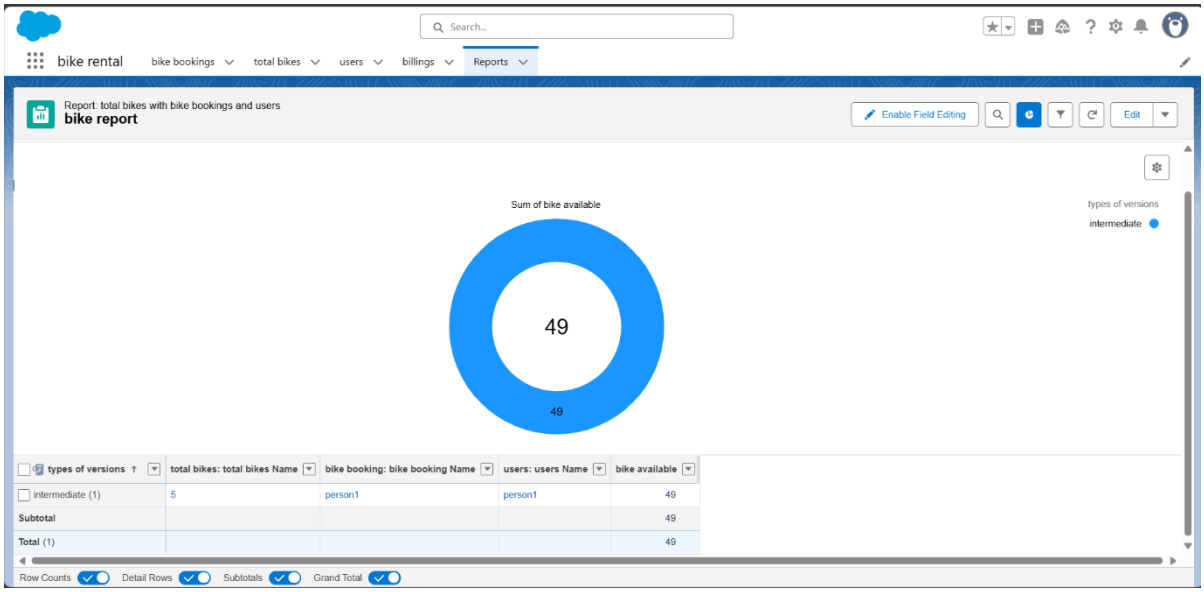




Dashboards:

- **Donut Chart** → Active vs Overdue vs Completed Rentals
- **Bar Chart** → Rentals handled per support/maintenance agent

- **Line/Trend Chart** → Rental revenue or usage trends over time



Security:

- **Field-Level Security** for sensitive data (Customer Email, Payment Details)
- **Sharing Rules** for role-based access (Admin > Support Agent > Assistant)
- **Audit Trail** for changes in Rental Records, Maintenance Updates, and Customer Details

Phase 10: Final Presentation & Demo Day – Bike Rental Management System

Purpose: Showcase the project and demonstrate Salesforce-enabled bike rental features.

Pitch:

- Explain bike rental challenges (overdue returns, maintenance tracking, customer engagement)
- Present your Salesforce solution: automated rentals, notifications, dashboards, and maintenance alerts

Demo Walkthrough:

1. Create a new Customer
2. Create a new Bike
3. Book a rental for the customer (assign rental plan, start/end dates)
4. Show overdue or upcoming rentals and trigger notifications
5. Demonstrate maintenance alerts for bikes reaching usage threshold
6. Show dashboards: Active/Overdue Rentals, Maintenance Tasks, Agent Workload.