

Xeno Assignment for SDE Internship

Hello! Thank you for your interest in the SDE Internship role at Xeno! Our product helps brands reach their customers in meaningful, data-driven ways—by organizing customer data, running personalized campaigns, and tracking engagement.

Through this assignment, we're excited to learn about your technical skills and problem-solving approach, as well as to give you a taste of the kind of work Xeno does every day.

The Task: Build a Mini CRM & Campaign Management App

We'd like you to create a simplified CRM system that models some of the core features that help Xeno's clients interact with their customers. Your application will be evaluated based on the requirements below.

1. Data Ingestion API

Goal: Set up APIs to load data for customers and their orders.

Requirements:

- Build APIs to accept and store customer and order data in a database.
- Demonstrate these APIs in action using Postman, showing data entries successfully populating the relevant tables.

Bonus: Implement this in a scalable way by setting up a pub-sub architecture. Here, the API should handle only data validation and push the validated data to a message broker, with actual storage handled by a consumer process.

2. Campaign & Audience Management

Goal: Create a simple web app that allows users to define audience segments and manage campaign messages.

Requirements:

- **Audience Creation:**
 - Allow the user to define audience segments based on customer data. For example:
 - Customers with total spending > INR 10,000
 - Customers with spending > INR 10,000 and visits <= 3
 - Customers who haven't visited in the last 3 months
 - Users should be able to build these segments by applying multiple conditions with AND/OR logic across various fields. The app should calculate the size of the audience before saving.

- **Campaign History & Stats:**

- After creating a segment, display a page with past campaigns sent, ordered by the most recent.
- Set up Google-based authentication to access this web app.

- **Message Sending:**

- Save the defined audience data in a `communications_log` table.
- Implement a dummy API to send personalized messages to this audience, such as “Hi [Name], here’s 10% off on your next order!”
- This API should internally call another “Delivery Receipt” API (both residing in your backend) with a random delivery status (90% SENT, 10% FAILED), referencing the `communications_log` ID.
- The Delivery Receipt API should update the communication status in the database based on whether the message was marked SENT or FAILED.
- **Bonus:** Use a pub-sub model to batch database updates, even if the Delivery Receipt API is called one by one.
- **Bonus:** Display statistics on the campaign page (e.g., audience size, number sent, number failed).

Preferred Tech Stack:

- **Frontend:** React.js or Next.js
- **Backend:** Java or Node.js
- **Database:** MySQL or MongoDB

Skills We’re Evaluating:

- Backend API design and frontend development to handle segmentation and campaign tracking.
- Use of Postman to test and demonstrate API functionality.
- Ability to interpret and creatively implement an abstract set of requirements.
- Capability to deploy this project online.
- Integrating Google authentication.
- Creating a 5-minute demo video to showcase the project.
- Understanding and leveraging a pub-sub model for scalability.
- Efficient batch processing and database optimization.
- Completing the project with attention to detail and time efficiency.

Submission Details-

- **Demo Video:** Record a video (narrated by you) that showcases the app's functionality. This helps us see your approach, communication skills, and understanding of the project.
- **Project Code:** Make sure your code is original. Our interviewers will thoroughly review your code and may ask detailed questions about your choices and logic. Please ensure that your submission is your own work, as it will be closely evaluated. **Please note any form of cheating plagiarism will be detected and that student will automatically be disqualified from the further rounds**

Once you're done, submit your project by **17th November 2024** via this [Google Form](#).

We are super excited to see your work ✨.

To understand more about Xeno please visit our [website](#)

And to get an insight about the journey of an intern at Xeno please click [here](#) and [here](#). Who knows the next post can be about your journey with us.