# 🚀 **Portfolio Project: Data-Driven Customer Retention & Revenue Optimization**

We'll work on a **real-world end-to-end project** using **SQL, Python, and ML**. This will help showcase your expertise in **data analytics, marketing, and business decision-making**.

### **📌 Project Overview**

📊 **Business Problem:**  
A subscription-based company (like Netflix, Zomato Gold, or Spotify) is struggling with **high customer churn** and **declining revenue growth**. Our goal is to:

1. **Analyze churn & revenue trends** over time.
2. **Identify key customer segments** with high churn.
3. **Predict churn probability** using Machine Learning.
4. **Recommend data-driven strategies** to improve retention & revenue.

📁 **Dataset:**

* Customer transactions
* Subscription start & end dates
* Marketing campaign responses
* User activity logs

💻 **Tools & Techniques:**  
✅ SQL for **data extraction & segmentation**  
✅ Python for **EDA & visualization**  
✅ ML (Logistic Regression, Random Forest) for **Churn Prediction**  
✅ Business storytelling for **Retention Strategies**

### **📌 Step 1: Data Preparation & SQL Analysis**

👉 **Task 1: Load & Explore the Dataset**

* Clean & preprocess the data.
* Identify missing values & handle them.
* Use SQL to calculate key metrics:
  + **Churn Rate, Retention Rate**
  + **Monthly Recurring Revenue (MRR)**
  + **Customer Lifetime Value (CLV)**

### **📌 Step 2: Churn Prediction Using Machine Learning**

👉 **Task 2: Feature Engineering & Model Building**

* Create features like **engagement score, avg. spend, discount usage**.
* Train models to **predict churn probability**.
* Evaluate model performance using **ROC-AUC, precision-recall**.

### **📌 Step 3: Business Insights & Retention Strategies**

👉 **Task 3: Convert Findings into Actionable Insights**

* Identify **high-risk customer segments**.
* Suggest **personalized retention strategies** (discounts, loyalty rewards, targeted ads).
* Use **A/B testing to validate strategies**.

### **📌 Final Deliverable**

🎯 **Project Report / Dashboard:**

* **Key Metrics & Visualizations** (Churn Trends, Revenue, CLV)
* **SQL Queries & Python Code**
* **ML Model Performance**
* **Actionable Business Recommendations**