Churn Prediction and Retention System - Justifications

Step-by-Step Justification

1. **Data Preparation & MySQL Setup**
- Ensures structured storage and easy querying.
- **Counterexample:** CSV is inefficient for large datasets.
- **Possible Cases Covered:** Missing values, duplicates, inconsistencies.

2. **Predictive Modeling for Churn**
- Two models for comparison (Logistic Regression & XGBoost).
- **Counterexample:** Deep learning is complex and less interpretable.
- **Possible Cases Covered:** Imbalanced data, feature redundancy.

3. **NLP for Customer Feedback Analysis**
- Helps understand dissatisfaction from customer reviews.
- **Counterexample:** Keyword-based analysis fails for sarcasm.
- **Possible Cases Covered:** Mixed languages, short feedback texts.

4. **Generative AI for Retention Strategies**
- Chatbot enhances personalized retention.
- **Counterexample:** Rule-based bots fail with dynamic queries.
- **Possible Cases Covered:** Multi-issue queries, proactive retention offers.

5. **System Integration & Deployment**
- Scalable API setup using FastAPI & AWS/GCP.
- **Counterexample:** Colab cannot handle production loads.
- **Possible Cases Covered:** High-traffic demand, real-time model updates.

6. **Ethical Considerations & Privacy**
- Ensures AI fairness and transparency.
- **Counterexample:** High accuracy may still lead to biased predictions.
- **Possible Cases Covered:** Bias mitigation, GDPR compliance.