**Project Documentation for Cohort Analysis**

**Project Overview :**

**Title: Cohort Analysis for Online Retail**

**Objective**: Analyse customer retention and behaviour patterns over time to identify opportunities for business improvement.

**Dataset Name:** Online Retail

**Description:** The dataset contains sales transactions from an online retail store, including customer information, purchase details, and product identifiers.

**Technology Stack**

**Languages:** Python

**Libraries/Packages:**

* **pandas:** For data manipulation
* **matplotlib and seaborn**: For visualizations
* **datetime:** For date handling

**Project Requirements**

**Software:**

* Python 3.7+
* Jupyter Notebook or other Python IDEs

**Libraries:**

Install the required packages using :

pip install pandas matplotlib seaborn

**Project Implementation :**

* **Data Preparation:** Cleaning the dataset by handling missing values and preparing it for analysis.
* **Cohort Analysis:**
* **Cohort Identification:** Grouping customers based on their first purchase period.
* **Retention Calculation:** Calculating the retention rate over different periods.
* **Visualizations:** Creating plots to visualize retention trends and identify patterns.

**Usage Instructions**

**Setting Up:**

1. Clone or download the project files.
2. Ensure the required Python libraries are installed.
3. Open the notebook file (Cohort\_Analysis.ipynb) in Jupyter or any compatible IDE.

**Running the Analysis:**

1. Follow the cells sequentially for data preparation, cohort analysis, and visualization.
2. Customize the analysis parameters like cohort period, date range, etc., if needed.

**Project Benefits**

* **Customer Insights**: Understand how customer retention trends vary across different cohorts.
* **Business Improvement:** Identify high-performing cohorts to focus on for marketing strategies.
* **Personalization:** Develop customer-specific promotions based on observed behaviour.

**Organizational Impact**

* **Targeted Marketing:** More focused campaigns that increase customer loyalty and reduce churn.
* **Resource Allocation:** Allocate resources efficiently by focusing on valuable customer segments.
* **Strategic Planning:** Plan for seasonal promotions or inventory management based on purchase patterns.

**Glossary**

* **Cohort:** A group of customers who share a common characteristic within a specific timeframe, like the month they first purchased.
* **Retention Rate:** The percentage of customers who continue to make purchases over a defined period.

**Conclusion:**

* The Cohort Analysis project reveals significant customer behaviour insights across different cohorts. These findings, particularly concerning customer retention trends, can guide businesses toward targeted marketing strategies. By tailoring promotions to high-performing customer groups and strategically managing resources, companies can increase customer satisfaction and reduce churn rates. Future work may focus on expanding analysis parameters or integrating predictive models for deeper insights.

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**Role:** Data Analyst responsible for collecting, cleaning, analyzing data, and developing visualizations.