**Project Update for Today 8/18/24**

**What I Got Done:**

1. **Python Code Enhancements:**
   * **Started the day by working on Python code for feature engineering, including calculating Customer Lifetime Value (CLV), Recency, Frequency, and Monetary (RFM) metrics.**
   * **Ran into some issues with the Recency calculation but fixed it by correctly defining the current\_date.**
   * **Created time-based features and calculated the Average Order Value (AOV) for each customer.**
   * **Also worked on implementing forecasting models, including ARIMA, for predicting future sales. Resolved issues related to model convergence and parameter settings.**
2. **Data Exploration and Visualization:**
   * **Uploaded the cleaned dataset into Tableau Public and started playing around with different visualizations.**
   * **Created a line chart to track the sales trend over time using the InvoiceDate field and a calculated TotalSales field (Quantity \* Price).**
   * **Tried out different time granularity levels (daily, monthly, quarterly) to see what patterns and trends popped up in the sales data.**
3. **Filtering and Interactivity:**
   * **Set up a filter using the StockCode field to focus on specific products or categories.**
   * **Later decided to switch to a date range filter based on InvoiceDate to get a better view of sales over specific periods.**
   * **Made sure the filters were visible and easy to use on the dashboard, so I could dynamically explore the data.**
4. **Building the Dashboard:**
   * **Pulled all the relevant visualizations together into a single, cohesive dashboard in Tableau Public.**
   * **Added filters and made sure they worked across multiple visualizations for a smooth user experience.**
   * **Tweaked the layout, colors, and titles to give the dashboard a polished, professional look.**
5. **Publication and Sharing:**
   * **Ran into some issues saving and publishing the dashboard on Tableau Public, but I made sure to save images of the key graphs and visualizations. These will be useful for including in my portfolio to show off the analysis.**

**Challenges and How I Tackled Them:**

1. **Python Errors:**
   * **Faced issues with the Recency calculation and model fitting in Python.**
   * **Solution: Correctly defined the current\_date for Recency and adjusted the parameters for the forecasting models to ensure they ran smoothly.**
2. **Filter Selection:**
   * **Started with a StockCode filter, but realized that a date range filter would be more insightful.**
   * **Solution: Switched to using the InvoiceDate field for filtering and adjusted the dashboard to make the analysis more meaningful.**
3. **Dashboard Layout and Design:**
   * **Making the dashboard look good and easy to navigate took some effort, especially with the layout and filter placement.**
   * **Solution: Used containers and alignment tools in Tableau Public to organize everything in a clean, logical way.**
4. **Tableau Public's Limitations:**
   * **Noticed some limitations with the web version of Tableau Public compared to the desktop version.**
   * **Solution: Worked within the constraints of Tableau Public web, focusing on the most important features for the analysis.**

**Final Takeaways:**

* **Interactive Dashboard: Managed to create a fully interactive dashboard in Tableau Public that shows key sales trends, product performance, and allows for dynamic filtering by date and product code.**
* **Data Insights: The visualizations and filters helped me spot key sales patterns, like growth trends and seasonal variations.**
* **Portfolio-Ready Visuals: Even though I couldn’t publish the full dashboard on Tableau Public, I saved images of the key graphs and visualizations. These will be great to include in my portfolio to demonstrate my data analysis and visualization skills.**
* **Python Contributions: Successfully applied Python for feature engineering and forecasting, which contributed to the overall quality of the data analysis and final visualizations.**