Assignment 2: Data Storytelling with Tableau Dashboards

🗓️ **Timeline:** 4th April 2025 – 18th April 2025

Instructions

1. Plagiarism Policy:
    I. Any form of plagiarism will result in disqualification.
    II. Ensure all work is original.
    III. Cite any external sources used in your submission.
2. Git Repository:
    I. Maintain a private Git repository for this assignment.
    II. Push your work regularly to GitHub.
3. Naming Conventions:
    I. Use clear and meaningful names for scripts, functions, and variables.

Objective

This assignment challenges students to combine multiple Amazon review datasets and create a **sample dataset** for in-depth analysis. The focus is on **interactive and visually compelling Tableau dashboards** that provide business insights without the need for additional reports. The goal is to **engage the audience with data storytelling** and answer **critical business questions** related to product trends, customer sentiment, and purchase behaviors.

Project Structure & Submission Guidelines

1. Repository & File Structure

Inside your **old repository**, create a new folder:

📁 **A2/**
├ 📁 **dashboards/** *(Tableau files & screenshots of dashboards)*
├ 📁 **images/** *(Visuals for documentation)*
├ 📜 **README.md** *(Overview of the project, navigation guide, insights summary)*

2. Data Preparation

🔗 **Datasets to Use:**

- All Amazon Reviews JSON
- Amazon Product Dataset

- Stanford Amazon Meta Dataset

📌 **Task:**

- **Combine** all three datasets into a **single structured sample dataset** focused on **one category & year** (e.g., **Electronics - 2021** or **Sports - 2022**).
- **Clean and preprocess** the data to ensure consistency.
- **Transform** the dataset to be **Tableau-ready** for analysis.

Assignment Breakdown & Evaluation Criteria

💡 **Data Storytelling & Dashboard Design (50%)**

Your **Tableau dashboards** must create a **cohesive, interactive narrative** answering **critical business questions**. Avoid generic charts—**make data speak!**

Minimum Required Dashboards:

Sentiment Analysis & Customer Emotions

- **Word cloud & sentiment heatmap** highlighting common themes in customer reviews.
- **Dynamic filters** for star ratings and keywords.
- **Insight:** How do customers feel about different products?

Review Trends Over Time

- **Time-series analysis** with trend lines for review volume changes.
- **Filters for product categories, ratings, and purchase dates.**
- **Insight:** Do seasonal trends affect product reviews?

Product Comparison Dashboard

- **Bar charts or scatter plots** comparing high vs. low-reviewed products.
- **Product ratings, review volume, and keyword insights.**
- **Insight:** Which products receive consistently high ratings?

Fraud Detection & Anomalies

- **Outlier analysis** of fake reviews, spam content, and unusual review patterns.
- **Filters to highlight sudden spikes in reviews.**
- **Insight:** Can we detect potential fake reviews using data?

Purchase Behavior Patterns

- **Heatmap & relationship analysis** between verified purchases, review sentiment, and ratings.
- **Customer demographics breakdown.**
- **Insight:** Do verified purchases influence ratings?

Dashboard Interactivity & Usability (30%)

✅ **Filters, dropdowns, hover effects, and drill-down interactions.**
✅ **No clutter—every visualization must have a clear purpose.**
✅ **Tooltips must provide additional insights.**
✅ **Mobile-Optimized Design (Bonus).**

Business Insights & Critical Questions Answered (20%)

Your dashboards should provide insights to help businesses make decisions.

🔹 Answer at least **5 critical business questions**, such as (these are just examples please don't use these no marks will be awarded):

1. Which **product categories** drive the most customer engagement?
2. What are the **key differentiators** between high-rated and low-rated products?
3. Are there **seasonal trends** in review volume and sentiment?
4. Do **verified purchases** correlate with higher trust scores?
5. How do **keywords in reviews** affect sales performance?

Additional Requirements for Visual Appeal & Insightfulness

✓ **Color Consistency & Storytelling Flow:** Use a well-structured color scheme across dashboards.
✓ **Text Annotations & Insights Summaries:** Highlight key takeaways.
✓ **Data-Driven Storytelling:** Avoid static charts—make every visualization actionable.
✓ **Advanced Tableau Features (Bonus):**

- **LOD Expressions** for advanced calculations.
- **AI-Powered Insights & Forecasting.**
- **Dynamic storytelling mode for presentations.**

Final Deliverables

✓ **Interactive Tableau dashboard** with all insights integrated.
✓ **README file** with dashboard navigation details & key insights.
✓ **Screenshots of dashboards** stored in **images/** folder.
✓ **Push all files to GitHub** (A2/ folder).
✓ **Submit the .twb/.twbx file on Google Classroom.**

Reminder:

Your Tableau dashboard should be **self-explanatory and engaging**—no separate reports needed!
Let data tell the story. 🎭📊
