



Team 7

E-COMMERCE SENTIMENT ANALYSIS: LEVERAGING CUSTOMER REVIEWS FOR BRAND INSIGHTS

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MEET THE TEAM



**SIBORA
BOBA**

Front End (BI) +
Data Cleaning



**SELMA
DOGANATA**

Project Management
+ Backend Testing



**KALELO
DUKURAY**

Data Collection +
Data Base



**RAFID
RAHMAN**

Front End (BI) +
Organization



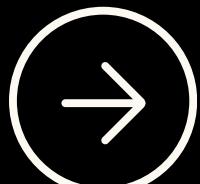
**RAMIM
TARAFDAR**

Backend + Data
Collection





BUSINESS PROBLEM



Industry Context

- Platforms like Amazon host millions of reviews that influence purchasing decisions and brand reputation.
- Those reviews are underutilized, making it difficult for brands to extract actionable insights

Problem Statement

- Despite availability of customer feedback, brands lack tools to classify and analyze reviews into actionable insights.
- This results in missed opportunities to address customer pain points and improve satisfaction

Objective

Customers:

- Help choose between iPhone and Samsung Galaxy

Phone Brands:

- Gain insights into customer sentiment and preferences
- Use data driven analysis

DATA EXPLORATION



API ACCESS

- Used Apify's API, a third-party web scraping tool.
- Extracted Amazon product reviews.
- Data Retrieve
 - Ratings
 - Review Content
 - Country of Origin
 - Titles and Descriptions
 - Timestamps

DATA WRANGLING

Data Processing:
Utilized Django's ORM (Object-Relational Mapping) built on SQL

Dataset Cleaning:

- Remove unnecessary info and duplicates
- Enforced Consistent Datatypes

Data Storage:
Ensure Data stored in a well-structure format within database

SUPPLEMENTARY DATA

Insight Generation:
Leverage NLP models for review analysis

Key Analysis:

- Sentiment Analysis
- Keyword Extraction

Outcome:

Provided valuable insights into customer perspectives

STORAGE

- Data Storage:
- Processed data stored in a SQLite database using Django's ORM.

Data Flexibility:

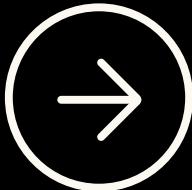
- Supports integration with SQLite (local) and PostgreSQL (scalable)

Data Consistency:

- Maintained a synchronized JSON file (json.db) alongside the SQL database to ensure consistency across formats.

Data Collection

Amazon API for data pulls; Apify's scrapper API



Data Storage

Data will be stored using a scalable database setup, leveraging SQLite and JSON for small datasets and PostgreSQL for larger, cloud-hosted datasets.

Data Cleaning

Clean the data, removing duplicates, normalizing text, and filtering out irrelevant content with Django's sql powered ORM, Python NLP tools for standardized text.

Sentiment Analysis

Use OpenAI's natural language models for sentiment classification and analysis

Data Visualization

Tableau for BI dashboards, visualizing actionable sentiment insights.

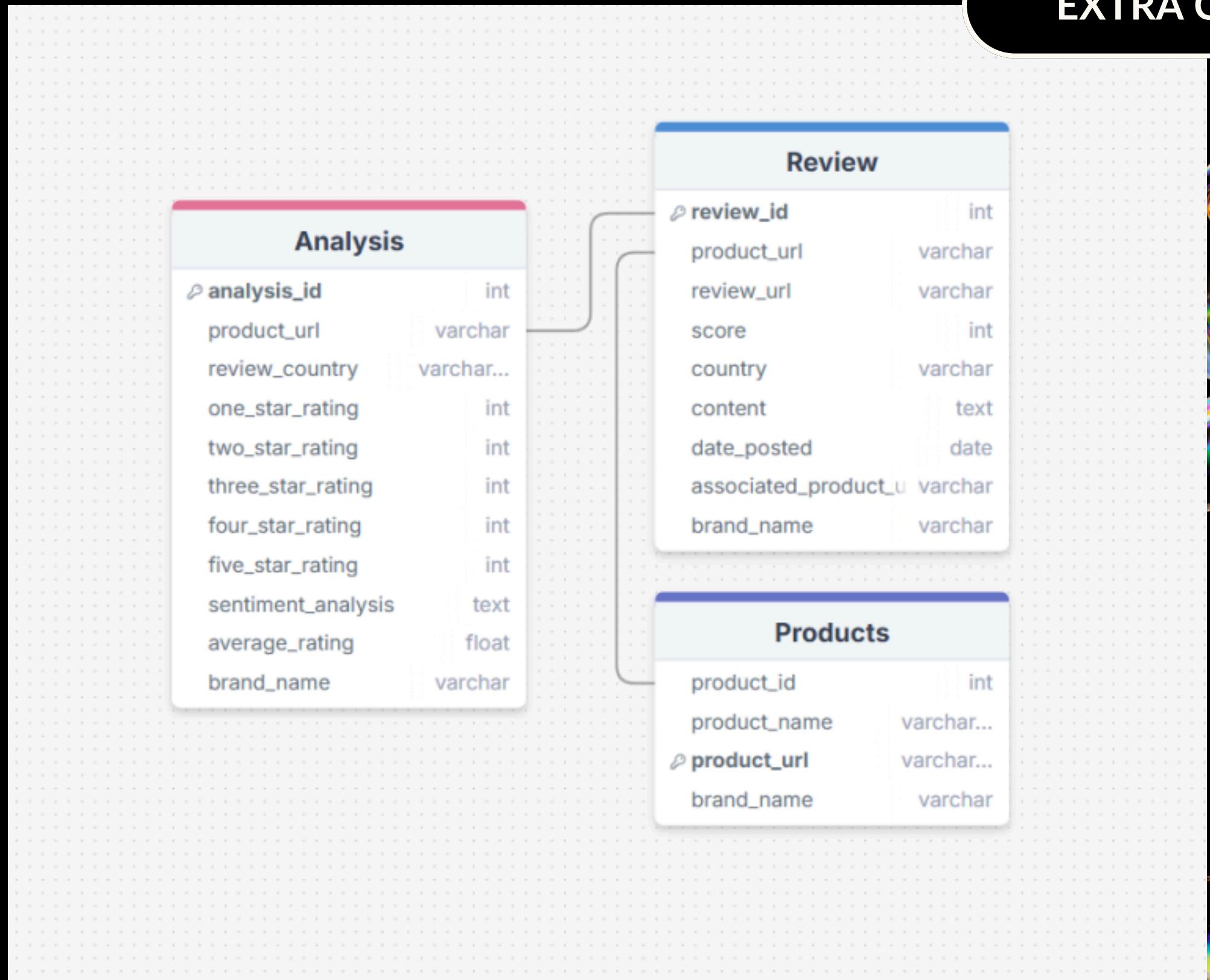
TOOL SELECTION



DATA MODEL

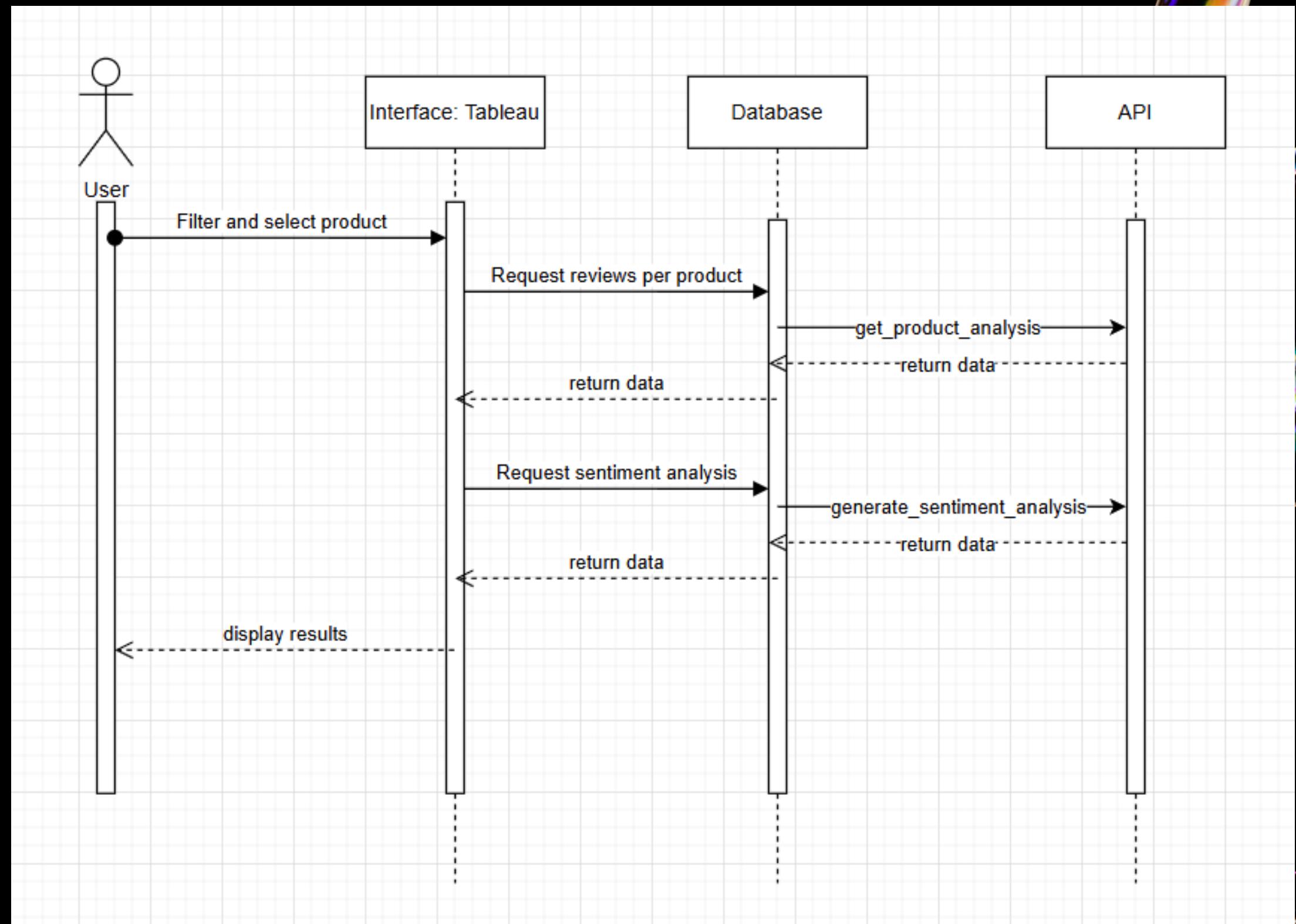
EXTRA CREDIT: 3-5 DIAGRAMS

EXTRA CREDIT: DBMS DESIGN



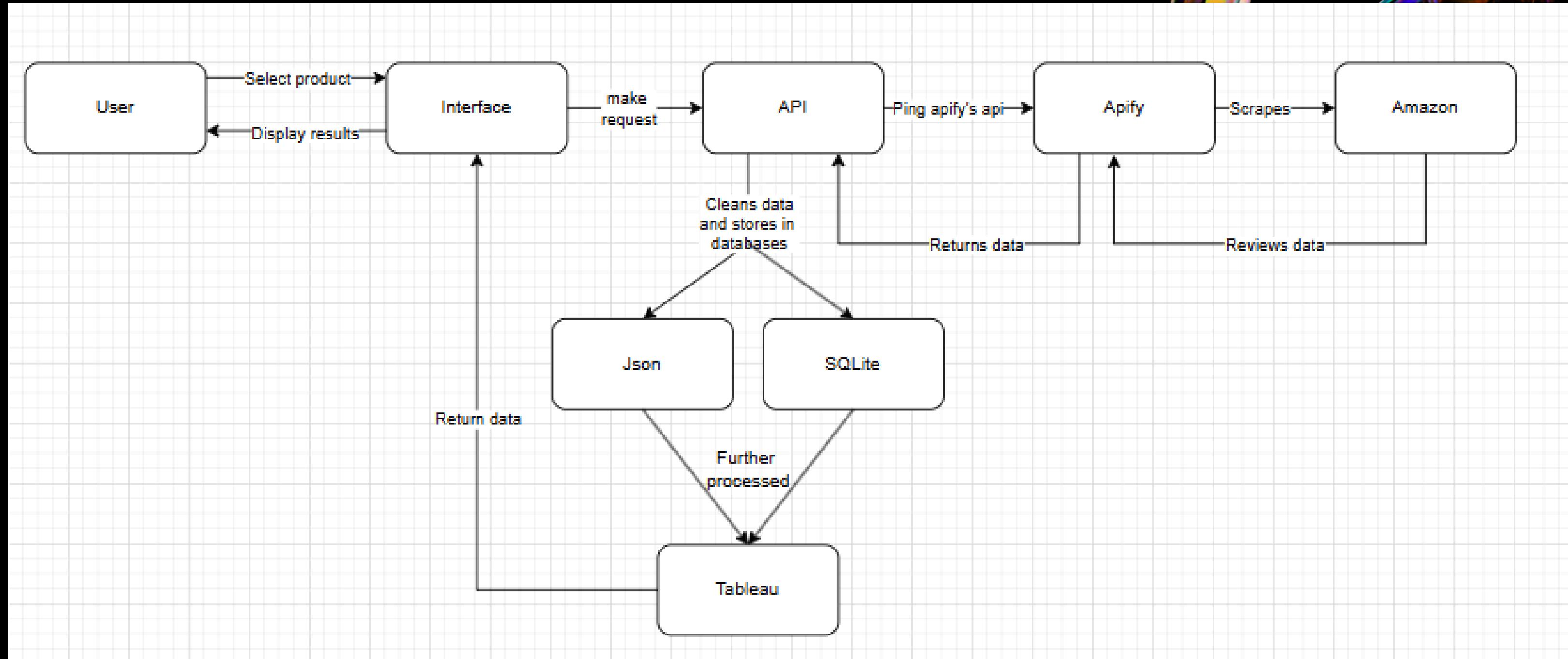
SEQUENCE DIAGRAM

EXTRA CREDIT: 3-5 DIAGRAMS



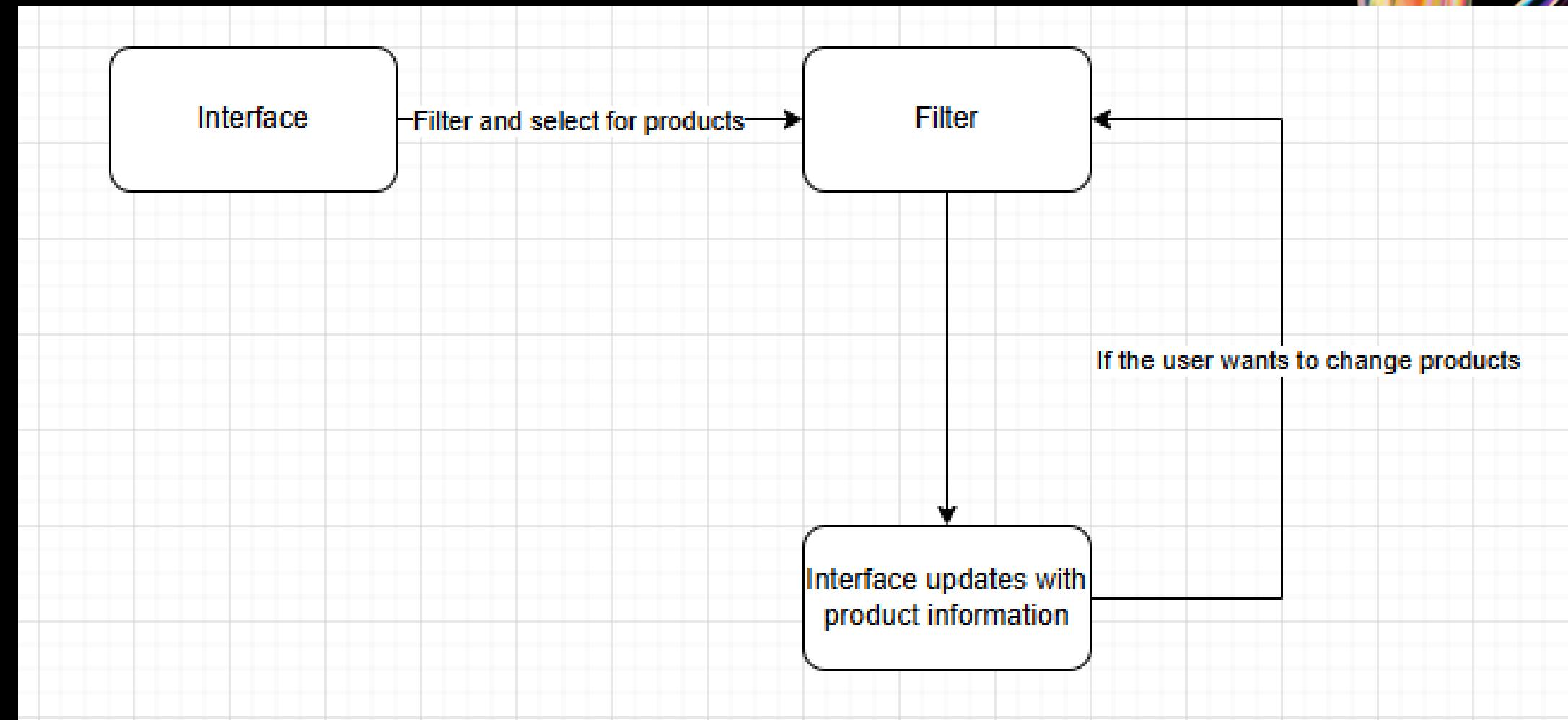
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DATA FLOW



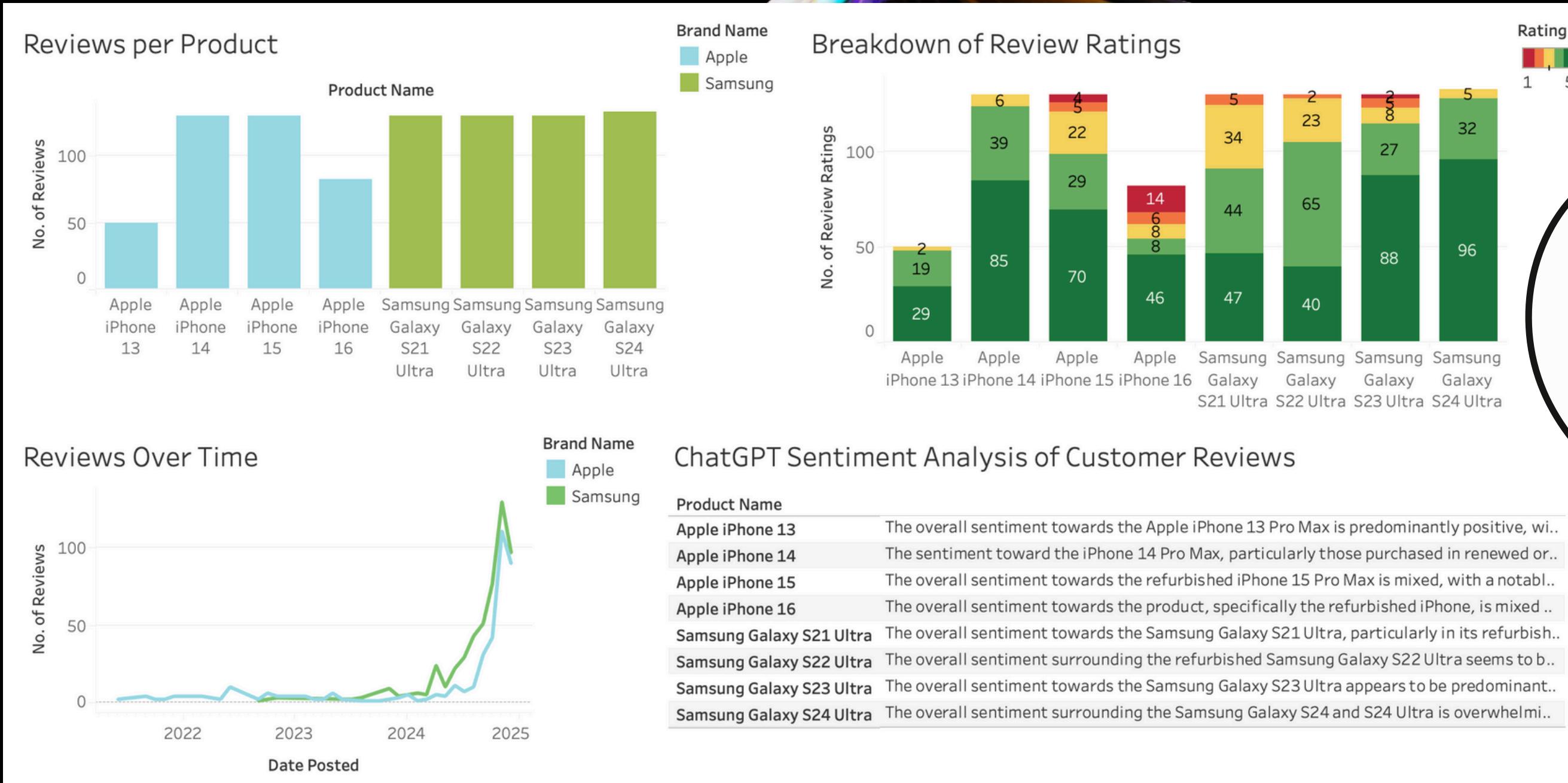
EXTRA CREDIT: 3-5 DIAGRAMS

USER FLOW



DASHBOARD

EXTRA CREDIT: AI



Users can hover over the sentiment analysis text to see a full AI generated summary highlighting customers' main criticisms and favorite features of the product.

DASHBOARD

EXTRA CREDIT: AI

iPhone Common Keywords

frequent updates poor value for money
beautiful design overpriced
amazing battery life
excellent performance
screen quality is top-notch
fragile build great camera

Samsung Common Keywords

poor low-light performance
modern design brilliant screen
amazing battery life
superior performance
too expensive stunning camera
robust build frequent updates

Our business users can see the most used phrases in iPhone and Samsung Amazon reviews, generated by ChatGPT, to highlight the characteristics that customers are taking greatest notice of.

ANALYSIS

SENTIMENT ANALYSIS

Positive Impressions:

- Camera Quality
- Battery Life
- Robust Build
- High Performance

Negative Impressions:

- High Price
- Frequent Updates
- Fragile Build

TAKEAWAYS

- The latest iPhone (iPhone 16) has the greatest no. of 1-star ratings out of all Samsung and iPhone devices

- Samsung consistently rates higher than iPhone, its latest release, Galaxy S24 Ultra, being the highest rated in years

RECOMMENDATIONS

Customers should review the grievances of iPhone 16 reviews before purchasing.

Brands should evaluate which features caused an unprecedented downturn in ratings for the iPhone 16 to avoid making the same mistake, and to address those same issues in their products.

CONCLUSION

SUMMARY OF INSIGHTS

Our sentiment analysis revealed distinct preferences and pain points, with a significant increase in reviews for Samsung over the past two years, suggesting a shift in consumer engagement towards Samsung.

POTENTIAL DIRECTIONS

- Scalability: Expand the model to analyze reviews across multiple platforms.
- Business Strategy: Leverage insights from review trends to refine pricing strategies, ensuring they align with consumer expectations and market dynamics to enhance competitiveness and profitability.
- Risk Management: Analyze trends to address potential market and perception risks.

RECOMMENDATIONS

By leveraging real-time customer feedback, brands can enhance product quality, becoming more accessible, boost customer satisfaction, and strengthen brand loyalty.

Extra Credit

- ChatGPT synthesized Data insights
 - Keywords
 - Sentiment Analysis Summary on Reviews
 - Positive / Negative Impressions (binary)
- Models
 - Database Model
 - Sequence Model
 - Data Flow Model
 - User Flow Model