Progressive Visual Analytics for Incident Management

Project Overview
This project explores the use of Progressive Visual Analytics (PVA) to analyze an incident management event log. Instead of processing the full dataset in a single batch, the analysis is performed incrementally using fixed-size data chunks. This allows partial results to be visualized early and continuously refined as more data becomes available.

Dataset and Processing Strategy
The dataset consists of an enriched incident event log where each row represents an event in the lifecycle of an incident (e.g., New, Active, Resolved, Closed). Incidents may appear multiple times in the log. To support meaningful analysis, the system maintains incident-level aggregates by tracking the latest known state and priority for each incident while streaming through the data progressively.

Progressive Computation Flow
The analysis begins by reading the CSV file in fixed-size chunks. For each chunk, the system updates incident-level metadata such as the latest incident state and priority. Interactive filters are then applied at the incident level, ensuring consistent and intuitive behavior. After filtering, the system updates a cumulative count of unique incidents and immediately refreshes the visualization. This process repeats until all chunks have been processed.

Diagram Explanation (Code Flow)
The progressive workflow can be summarized as follows:

1. **Read Chunk**: Load a fixed-size portion of the incident log.
2. **Update Incident State**: Store the latest state and priority for each incident.
3. **Apply Interactive Filters**: Filter incidents by current state and priority threshold.
4. **Progressive Aggregation**: Update the cumulative set of unique incidents.
5. **Visual Update**: Refresh the chart to reflect the current partial results.

This loop represents a progressive pipeline where computation and visualization evolve together, allowing analysts to observe trends early and adjust parameters while the analysis is still running.

Conclusion
By combining progressive computation with interactive visualization, this project demonstrates how PVA techniques can reduce time-to-insight and support human-in-the-loop decision-making. The approach closely mirrors real-world incident monitoring scenarios, where analysts benefit from early feedback and continuous refinement rather than waiting for complete batch results.