Manufacturing Analytics Technical Challenge

Step 1: Technical Setup

1. Sign up for a free account at Preset.io
2. Import both provided CSV files into your Preset.io environment:
    - Production metrics data (`production_metrics.csv`)
    - Device properties data (`device_properties.csv`)
3. Create a dataset that joins these tables using the `deviceKey` field
4. Create a new dashboard using your joined dataset

Step 2: Dashboard Creation

Using the joined production and device data, create visualizations that you believe would be valuable for an Operations Supervisor. The data includes information about:

- Production states (running, down, setup, standby)
- Good and reject counts
- Production timing
- Line, shift, and team information
- Part and job details
- Line properties (area, cycle time, location, etc.)

Step 3: Written Explanation

Provide a written explanation (max 2 pages) that includes:

1. Why you chose each visualization
2. How an Operations Supervisor would use this information to improve production
3. Any challenges you encountered and how you overcame them
4. The SQL query you used to join the tables and any other significant queries
5. Additional insights you'd like to surface if you had more data

Data Dictionary

Production Metrics Table

Key columns in the dataset:

- `process_state`: Current state of the line (running, changeover, etc.)
- `good_count`: Number of good labels produced
- `reject_count`: Number of rejected labels
- `duration`: Time spent in current state (in minutes)
- `deviceKey`: Production line identifier
- `shift_display_name`: Shift when activity occurred
- `team_display_name`: Team operating the line
- `part_display_name`: Type of label being produced

Device Properties Table

Key columns in the dataset:

- `deviceKey`: Unique identifier for each line (joins to production metrics table)
- `Area`: Production area designation
- `CycleTime`: Expected cycle time for the line
- `Location`: Physical location in the facility
- `Operation`: Type of operation performed
- `Type`: Production line classification

Manufacturing Context

In label printing:

- Lines should be running (producing) as much as possible
- Quick changeovers between different label types are important
- Quality (minimal rejects) is critical
- Different shifts/teams should perform consistently
- Line properties (like cycle time) affect expected performance