

# ////////Challenge Title

## InsightHub – Resilient Sales Aggregator

### Scenario

As part of Acme Tech's *InsightHub* analytics engine, your team is building a **sales pre-processor** that ingests raw sales from store integrations, cleans them, detects anomalies, and prepares summarized insights.

### Challenge Requirements

#### 1. Fetch Sales Data

- Simulate a network fetch using  
`HTTP_GET("https://acme.mock.api/sales")`
- Handle connection errors, retries, and log failures

#### 2. Clean and Validate Records

- Filter out sales with:
  - Missing fields (`store_id`, `product_id`, `timestamp`, `quantity`, `unit_price`)
  - Negative/zero/STRING quantities
  - Suspicious sales (`quantity * unit_price > 10,000`)
  - Duplicates (see below)

#### 3. De-Duplicate

- Remove duplicates using: `store_id + product_id + timestamp (+/- 2 seconds margin)`

#### 4. Summarize and Sort

- Output: Top 5 selling products by total amount

- Format: `Product ID, Total Sales Amount`

## 5. Output Additional Metrics

- Number of valid sales
- Number of duplicates removed
- Number of suspicious sales flagged

## 6. Structure Code Cleanly

- Use CLASSES or STRUCTs where needed (`Sale`, `SaleBatch`, etc.)
- Handle all edge cases gracefully

## 7. Retry Policy

- Retry up to 3 times if:
  - HTTP fails
  - Or response contains only invalid data
- Wait with exponential backoff: `SLEEP(500)`, `SLEEP(1000)`, `SLEEP(2000)`

## Deliverables

- At least the PseudoScript code.
- Bonus: Any written assumptions or explanations are welcome.