**Milestone 3**

**Code 1 Explanation:**

1. **Input Parameter (num\_records)**:
   * Specifies the number of records (rows) to generate in the dataset (default: 50).
2. **Categories and Ranges**:
   * **months**: List of months to randomly assign to each record.
   * **risk\_levels**: Risk levels (Low, Medium, High) to simulate warehouse risks.
   * **sentiments**: Sentiment categories (Positive, Neutral, Negative).
3. **Random Value Generation**:
   * **warehouse\_capacity**: Random capacity between 5000 and 20,000 units.
   * **monthly\_incoming**: Random incoming stock (up to warehouse capacity).
   * **monthly\_outgoing**: Random outgoing stock (up to warehouse capacity).
4. **Data Collection**:
   * Each generated record is appended to the data list.
5. **Return Value**:
   * The data list is converted into a pandas DataFrame and returned.

**Code 2: Warehouse Data Analysis**

**Explanation of Function:**

1. **Input Parameters**:
   * file\_path: Path to the CSV file containing the dataset.
   * capacity\_threshold: Threshold for high utilization (default: 80%).
   * low\_utilization\_threshold: Threshold for low utilization (default: 40%).
   * risk\_threshold: Risk level to consider critical (default: "High").
   * sentiment\_threshold: Sentiment level to consider critical (default: "Negative").
2. **Warehouse Utilization**:
   * Utilization is calculated as:

Utilization = Monthly Incoming / Warehouse Capacity ​

1. **Risk Analysis**:
   * If utilization exceeds 80% or the risk level is "High," the system flags the month for action.
2. **Actions**:
   * **SELL**: Triggered for high utilization with "Negative" sentiment.
   * **MONITOR**: Triggered for high utilization with medium or positive sentiment.
   * **BUY**: Triggered for low utilization (below 40%).
3. **Output**:
   * Returns a list of alerts, each containing the month, action, and reason.