

# Liudmyla Lashchuk

## Brief Description of Completed Task

In this project, I implemented an IoT sensor data processing system using Apache Kafka. The project consists of three main parts:

### 1. Creating Kafka Topics

Three unique topics were created:

- `building_sensors_*` - for receiving data from sensors
- `temperature_alerts_*` - for storing overheating warnings
- `humidity_alerts_*` - for storing alerts about incorrect humidity levels

### 2. Sensor Producer

A Python script was written to simulate the operation of a single sensor. Each run generates:

- Random temperature (25-45°C),
- Random humidity (15-85%),
- Unique `sensor_id`,
- Timestamp

### 3. Processing and Alert Generation

Another Python script reads data and sends notifications to the appropriate topics:

- Temperature > 40°C -> record in `temperature_alerts`
- Humidity > 80% or <20% -> record in `humidity_alerts`

### 4. Final Consumer

A separate script subscribes to the two alert topics and outputs received alerts to the console.



```
File Edit Selection View Go Run Terminal Help
admin_list_topics.py X sensor_producer.py alerts_processor.py alerts_consumer.py
admin_list_topics.py > ...
1 from confluent_kafka.admin import AdminClient
2 from configs import kafka_config
3
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Sent: ('sensor_id': 1379, 'timestamp': '2025-11-19T23:32:38.712811', 'temperature': 25.89, 'humidity': 23.8)
Stopping sensor...
PS C:\Users\liudu\OneDrive\Desktop\goit_kafka_project> & "C:/Program Files/Python313/python.exe" c:\Users\liudu\OneDrive\Desktop\goit_kafka_project>alerts_processor.py
Alerts processor started. Listening to building_sensors_liudu@li...
Stopping alerts processor...
PS C:\Users\liudu\OneDrive\Desktop\goit_kafka_project> python sensor_producer.py
starting sensor with ID: 3445
C:\Users\liudu\OneDrive\Desktop\goit_kafka_project> sensor_producer.py:34: DeprecationWarning: datetime.datetime.utcnow() is deprecated and scheduled for removal in a future version. Use timezone-aware objects to represent datetimes in UTC: datetime.datetime.now(datetime.UTC).
  "timestamp": datetime.utcnow().isoformat(),
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:44:56.715534', 'temperature': 36.12, 'humidity': 46.40)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:44:59.962211', 'temperature': 36.6, 'humidity': 41.32)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:02.166529', 'temperature': 40.01, 'humidity': 45.94)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:04.354893', 'temperature': 39.61, 'humidity': 19.96)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:06.544118', 'temperature': 36.4, 'humidity': 35.34)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:08.731240', 'temperature': 38.46, 'humidity': 55.70)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:10.919063', 'temperature': 27.77, 'humidity': 65.28)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:13.110793', 'temperature': 36.23, 'humidity': 51.83)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:15.386123', 'temperature': 41.2, 'humidity': 34.40)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:17.499277', 'temperature': 26.8, 'humidity': 27.41)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:19.688999', 'temperature': 42.5, 'humidity': 62.22)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:21.885223', 'temperature': 36.1, 'humidity': 78.45)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:24.073202', 'temperature': 32.12, 'humidity': 72.37)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:26.268566', 'temperature': 41.81, 'humidity': 41.41)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:28.457875', 'temperature': 20.73, 'humidity': 68.26)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:30.659939', 'temperature': 40.02, 'humidity': 81.47)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:32.848631', 'temperature': 33.88, 'humidity': 42.91)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:35.036701', 'temperature': 33.1, 'humidity': 19.99)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:37.226095', 'temperature': 40.01, 'humidity': 49.97)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:39.414343', 'temperature': 36.02, 'humidity': 74.73)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:41.599246', 'temperature': 34.49, 'humidity': 83.21)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:43.792073', 'temperature': 41.56, 'humidity': 61.82)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:45.983318', 'temperature': 25.86, 'humidity': 58.24)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:48.187807', 'temperature': 37.78, 'humidity': 25.78)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:50.372189', 'temperature': 40.59, 'humidity': 54.25)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:52.568264', 'temperature': 28.24, 'humidity': 65.92)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:54.749676', 'temperature': 28.81, 'humidity': 48.40)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:56.934203', 'temperature': 26.68, 'humidity': 55.83)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:45:59.127896', 'temperature': 37.17, 'humidity': 75.65)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:01.316588', 'temperature': 35.26, 'humidity': 72.95)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:03.504897', 'temperature': 27.13, 'humidity': 33.40)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:05.695280', 'temperature': 44.18, 'humidity': 78.74)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:07.887072', 'temperature': 35.57, 'humidity': 76.15)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:10.083569', 'temperature': 25.36, 'humidity': 48.40)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:12.283163', 'temperature': 36.58, 'humidity': 32.34)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:14.452716', 'temperature': 43.77, 'humidity': 16.53)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:16.658078', 'temperature': 40.2, 'humidity': 52.89)
Sent: ('sensor_id': 3445, 'timestamp': '2025-11-19T23:46:18.853933', 'temperature': 35.31, 'humidity': 19.36)
```

```
File Edit Selection View Go Run Terminal Help
admin_list_topics.py X sensor_producer.py alerts_processor.py alerts_consumer.py
admin_list_topics.py > ...
1 from confluent_kafka.admin import AdminClient
2 from configs import kafka_config
3
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
+ CategoryInfo          (SecurityError: (0) [], PSSecurityException
+ FullyQualifiedObjectNames
PS C:\Users\liudu\OneDrive\Desktop\goit_kafka_project> python sensor_producer.py
starting sensor with ID: 6263
C:\Users\liudu\OneDrive\Desktop\goit_kafka_project> sensor_producer.py:34: DeprecationWarning: datetime.datetime.utcnow() is deprecated and scheduled for removal in a future version. Use timezone-aware objects to represent datetimes in UTC: datetime.datetime.now(datetime.UTC).
  "timestamp": datetime.utcnow().isoformat(),
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:02.969578', 'temperature': 28.48, 'humidity': 72.48)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:08.275807', 'temperature': 44.24, 'humidity': 79.40)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:08.459278', 'temperature': 41.38, 'humidity': 28.13)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:10.649361', 'temperature': 31.02, 'humidity': 41.39)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:12.836288', 'temperature': 28.72, 'humidity': 68.34)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:15.022708', 'temperature': 39.71, 'humidity': 51.44)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:17.216228', 'temperature': 39.73, 'humidity': 63.14)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:19.405463', 'temperature': 43.25, 'humidity': 42.12)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:21.593858', 'temperature': 38.74, 'humidity': 72.52)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:23.781738', 'temperature': 42.34, 'humidity': 19.71)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:25.969899', 'temperature': 26.6, 'humidity': 51.65)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:28.159405', 'temperature': 37.36, 'humidity': 59.09)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:30.349661', 'temperature': 41.13, 'humidity': 74.45)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:32.534414', 'temperature': 27.24, 'humidity': 19.49)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:34.724827', 'temperature': 27.48, 'humidity': 79.34)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:36.918367', 'temperature': 35.56, 'humidity': 74.14)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:39.109567', 'temperature': 28.26, 'humidity': 16.90)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:41.300264', 'temperature': 37.47, 'humidity': 22.62)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:43.499727', 'temperature': 39.61, 'humidity': 32.69)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:45.687273', 'temperature': 41.52, 'humidity': 65.95)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:47.880844', 'temperature': 29.49, 'humidity': 54.21)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:50.068369', 'temperature': 28.15, 'humidity': 66.71)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:52.259831', 'temperature': 30.16, 'humidity': 77.28)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:54.450807', 'temperature': 34.57, 'humidity': 76.33)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:56.652276', 'temperature': 35.14, 'humidity': 68.03)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:46:58.847181', 'temperature': 44.91, 'humidity': 58.66)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:01.038333', 'temperature': 25.86, 'humidity': 55.57)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:03.232728', 'temperature': 37.46, 'humidity': 53.04)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:05.428793', 'temperature': 35.38, 'humidity': 40.36)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:07.626807', 'temperature': 41.84, 'humidity': 61.07)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:09.822709', 'temperature': 30.83, 'humidity': 31.79)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:12.018705', 'temperature': 36.92, 'humidity': 27.53)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:14.225471', 'temperature': 38.58, 'humidity': 74.12)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:16.411755', 'temperature': 41.61, 'humidity': 17.40)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:18.597276', 'temperature': 28.11, 'humidity': 58.52)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:20.781833', 'temperature': 30.88, 'humidity': 46.39)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:22.968207', 'temperature': 30.97, 'humidity': 57.40)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:25.156965', 'temperature': 30.26, 'humidity': 33.24)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:27.349578', 'temperature': 33.55, 'humidity': 65.45)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:29.537484', 'temperature': 40.4, 'humidity': 83.70)
Sent: ('sensor_id': 6263, 'timestamp': '2025-11-19T23:47:31.733521', 'temperature': 43.56, 'humidity': 38.53)
```

```
File Edit Selection View Go Run Terminal Help
got_kafka_project

admin_list_topics.py X sensor_producer.py alerts_processor.py alerts_consumer.py

admin_list_topics.py > ...
1 from confluent_kafka.admin import AdminClient
2 from configs import kafka_config
3

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\liud\OneDrive\Desktop\got_kafka_project> python alerts_processor.py
Alerts processor started. Listening to building_sensors_ljudykila...
c:\Users\liud\OneDrive\Desktop\got_kafka_project\alerts_processor.py:45: DeprecationWarning: datetime.datetime.utcnow() is deprecated and scheduled for removal in a future version. Use timezone-aware objects to represent datetimes in UTC: datetime.datetime.now(datetime.UTC).
    ts = data.get("timestamp", datetime.utcnow().isoformat())
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:44:56.715534', 'temperature': 36.12, 'humidity': 46.02}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:44:59.962211', 'temperature': 36.0, 'humidity': 41.32}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:02.166529', 'temperature': 40.61, 'humidity': 45.94}
Temperature alert sent: {'sensor_id': 3445, 'temperature': 40.61, 'humidity': 45.94, 'timestamp': '2025-11-19T23:45:02.166529', 'alert_type': 'TEMPERATURE', 'message': 'Temperature too high: 40.61°C > 40°C'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:04.354893', 'temperature': 39.61, 'humidity': 19.96}
Humidity alert sent: {'sensor_id': 3445, 'temperature': 39.61, 'humidity': 19.96, 'timestamp': '2025-11-19T23:45:04.354893', 'alert_type': 'HUMIDITY', 'message': 'Humidity out of range: 19.96 %'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:06.544118', 'temperature': 36.4, 'humidity': 36.34}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:08.731740', 'temperature': 38.80, 'humidity': 55.76}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:10.919083', 'temperature': 27.77, 'humidity': 65.28}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:13.116793', 'temperature': 36.23, 'humidity': 51.03}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:15.380123', 'temperature': 41.0, 'humidity': 34.80}
Temperature alert sent: {'sensor_id': 3445, 'temperature': 41.2, 'humidity': 34.89, 'timestamp': '2025-11-19T23:45:15.380123', 'alert_type': 'TEMPERATURE', 'message': 'Temperature too high: 41.2°C > 40°C'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:17.499277', 'temperature': 26.0, 'humidity': 27.41}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:19.688899', 'temperature': 42.5, 'humidity': 62.22}
Temperature alert sent: {'sensor_id': 3445, 'temperature': 42.5, 'humidity': 62.22, 'timestamp': '2025-11-19T23:45:19.688899', 'alert_type': 'TEMPERATURE', 'message': 'Temperature too high: 42.5°C > 40°C'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:21.885323', 'temperature': 36.1, 'humidity': 78.65}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:24.072821', 'temperature': 32.12, 'humidity': 72.37}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:26.268856', 'temperature': 41.81, 'humidity': 41.41}
Temperature alert sent: {'sensor_id': 3445, 'temperature': 41.81, 'humidity': 41.41, 'timestamp': '2025-11-19T23:45:26.268856', 'alert_type': 'TEMPERATURE', 'message': 'Temperature too high: 41.81°C > 40°C'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:30.659939', 'temperature': 40.62, 'humidity': 81.47}
Temperature alert sent: {'sensor_id': 3445, 'temperature': 40.62, 'humidity': 81.47, 'timestamp': '2025-11-19T23:45:30.659939', 'alert_type': 'TEMPERATURE', 'message': 'Temperature too high: 40.62°C > 40°C'}
Humidity alert sent: {'sensor_id': 3445, 'temperature': 40.62, 'humidity': 81.47, 'timestamp': '2025-11-19T23:45:30.659939', 'alert_type': 'HUMIDITY', 'message': 'Humidity out of range: 81.47 %'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:32.848631', 'temperature': 33.80, 'humidity': 42.91}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:35.036291', 'temperature': 33.1, 'humidity': 19.95}
Humidity alert sent: {'sensor_id': 3445, 'temperature': 33.1, 'humidity': 19.95, 'timestamp': '2025-11-19T23:45:35.036291', 'alert_type': 'HUMIDITY', 'message': 'Humidity out of range: 19.95 %'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:37.226595', 'temperature': 40.81, 'humidity': 48.97}
Temperature alert sent: {'sensor_id': 3445, 'temperature': 40.81, 'humidity': 48.97, 'timestamp': '2025-11-19T23:45:37.226595', 'alert_type': 'TEMPERATURE', 'message': 'Temperature too high: 40.81°C > 40°C'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:39.414343', 'temperature': 36.02, 'humidity': 74.73}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:41.599246', 'temperature': 34.47, 'humidity': 83.21}
Humidity alert sent: {'sensor_id': 3445, 'temperature': 34.47, 'humidity': 83.21, 'timestamp': '2025-11-19T23:45:41.599246', 'alert_type': 'HUMIDITY', 'message': 'Humidity out of range: 83.21 %'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:43.797873', 'temperature': 41.96, 'humidity': 61.82}
Temperature alert sent: {'sensor_id': 3445, 'temperature': 41.96, 'humidity': 61.82, 'timestamp': '2025-11-19T23:45:43.797873', 'alert_type': 'TEMPERATURE', 'message': 'Temperature too high: 41.96°C > 40°C'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:45.983318', 'temperature': 25.86, 'humidity': 58.24}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:48.187807', 'temperature': 37.78, 'humidity': 25.78}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:50.373189', 'temperature': 40.89, 'humidity': 54.25}
Temperature alert sent: {'sensor_id': 3445, 'temperature': 40.89, 'humidity': 54.25, 'timestamp': '2025-11-19T23:45:50.373189', 'alert_type': 'TEMPERATURE', 'message': 'Temperature too high: 40.89°C > 40°C'}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:52.560264', 'temperature': 28.24, 'humidity': 65.92}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:54.748876', 'temperature': 28.81, 'humidity': 40.0}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:56.943293', 'temperature': 26.88, 'humidity': 55.80}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:45:59.127896', 'temperature': 37.17, 'humidity': 75.65}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:46:01.316558', 'temperature': 35.26, 'humidity': 72.95}
Received: {'sensor_id': 3445, 'timestamp': '2025-11-19T23:46:03.506687', 'temperature': 27.13, 'humidity': 33.40}
```

```
File Edit Selection View Go Run Terminal Help
got_kafka_project

admin_list_topics.py X sensor_producer.py alerts_processor.py alerts_consumer.py

admin_list_topics.py > ...
1 from confluent_kafka.admin import AdminClient
2 from configs import kafka_config
3

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\liud\OneDrive\Desktop\got_kafka_project> python alerts_consumer.py
Alerts final consumer started. Listening to temperature & humidity alerts...

---ALERT from topic: humidity_alerts_ljudykila ---
Sensor ID: 3445
Time: 2025-11-19T23:45:04.354893
Temperature: 39.61 °C
Humidity: 19.96 %
Type: HUMIDITY
Message: Humidity out of range: 19.96 %
-----

---ALERT from topic: humidity_alerts_ljudykila ---
Sensor ID: 3445
Time: 2025-11-19T23:45:30.659939
Temperature: 40.62 °C
Humidity: 81.47 %
Type: HUMIDITY
Message: Humidity out of range: 81.47 %
-----

---ALERT from topic: humidity_alerts_ljudykila ---
Sensor ID: 3445
Time: 2025-11-19T23:45:35.036291
Temperature: 33.1 °C
Humidity: 19.95 %
Type: HUMIDITY
Message: Humidity out of range: 19.95 %
-----

---ALERT from topic: humidity_alerts_ljudykila ---
Sensor ID: 3445
Time: 2025-11-19T23:45:41.599246
Temperature: 34.47 °C
Humidity: 83.21 %
Type: HUMIDITY
Message: Humidity out of range: 83.21 %
-----

---ALERT from topic: temperature_alerts_ljudykila ---
Sensor ID: 3445
Time: 2025-11-19T23:45:02.166529
Temperature: 40.61 °C
Humidity: 45.94 %
Type: TEMPERATURE
Message: Temperature too high: 40.61°C > 40°C
-----
```







