



# IST 615-Cloud Management

## #Lab 8

### Automated Flight Price Monitoring and Alerts



Team:

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## **Project Goal**

The goal of this project is to build an automated flight price monitoring system that tracks real-time round-trip flight prices for a specified route, price range and date range. The system will use Azure cloud services to continuously retrieve, store, analyze, and monitor flight prices. When the price drops below a predefined threshold, the system will send an email alert to notify users, enabling them to purchase tickets at the most affordable price.

Specifically, for this project, we will focus on monitoring flights from origin to destination for travel on a specific date. The system will track prices at regular intervals and send alerts when ticket prices fall below \$1,000 given by the user.

Key objectives:

1. **Automated Data Retrieval:** Continuously pull flight price data from an external API at regular intervals.
2. **Data Storage:** Store the retrieved data in Azure Blob Storage for consistency and traceability.
3. **Price Monitoring and Analysis:** Analyze the data using Azure Functions to check if prices meet the threshold.
4. **Alert System:** Send email notifications via Logic Apps when flight prices drop below \$1,000.

## **Cloud Services and Tools**

### **Azure Blob Storage**

- **Role:** Acts as the data storage repository for live price data.
- **Purpose in Solution:** Azure Blob Storage will store incoming flight ticket price data (pulled via an external API) in real-time. New data will trigger analysis through Azure Functions, allowing continuous monitoring without manual intervention.

### **Azure Functions**

- **Role:** Serverless compute service to run code on a schedule or in response to events.
- **Purpose in Solution:** Azure Functions will pull data from a flight ticket API, analyzing ticket prices for the specified dates and route. When prices fall below \$1,000, the function triggers an alert through Logic Apps.

### **Azure Logic Apps**

- **Role:** Manages email notifications.

- Purpose in Solution: Azure Logic Apps will check flight prices from Azure functions and automatically send email alerts when prices drop below \$1,000, providing a seamless integration with other Azure services and enabling easy workflow management.

## Project Architecture and Data Flow

The system consists of the following main steps:

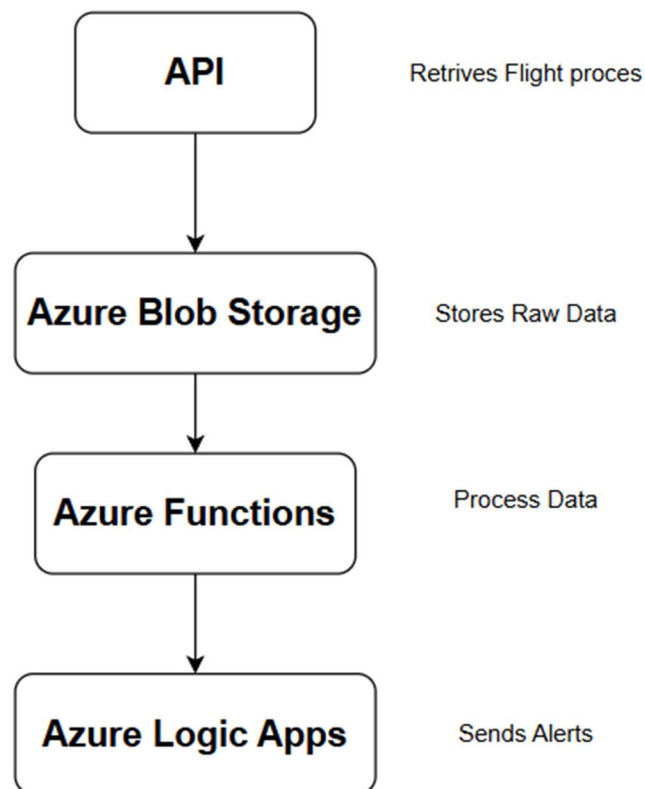
**Data Retrieval:** Azure Functions are set to pull flight ticket data at regular intervals (e.g., once every 6 hours).

**Data Storage:** The data retrieved from the API is stored in Azure Blob Storage for consistency and traceability.

**Automated Analysis:** Azure Functions evaluate the retrieved ticket prices for the specified dates and route, checking if prices are below the threshold (\$1,000).

**Alert Notification:** If a flight price meets the condition, an alert email is sent to the user(s) through Logic Apps, facilitating rapid decision-making.

## Diagram of Architecture



## Link

[https://video.syr.edu/media/t/1\\_y6t60x4a](https://video.syr.edu/media/t/1_y6t60x4a)

## Issues/Problems

- The first main issue we faced is with the APIs, as most of the Api's are paid versions, which didn't allow us to try for the real time data processing, as of now we got a sample data set from the API for one email. This was one of the mail issues with the API.
- Secondly, writing the python code in azure functions, we were not able to write the code as per our requirement. We used Visual studio to execute our code and deployed it into Azure functions.

## Conclusion

This project effectively uses Azure's data storage and compute capabilities in combination with Logic Apps's notification system to track real-time flight ticket prices, providing timely alerts for the desired travel dates. This pipeline offers a practical application of cloud automation in consumer services.

## Links / References

Azure Blob Storage documentation: <https://docs.microsoft.com/en-us/azure/storage/blobs/>

Azure Functions documentation: <https://docs.microsoft.com/en-us/azure/azure-functions/>

Azure Logic App's documentation: <https://learn.microsoft.com/en-us/azure/logic-apps/logic-apps-overview>

API: <https://api.flightapi.io/>