



MSc Business Analytics
Data Management & Business Intelligence

Azure Stream Analytics

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Introduction

In this report, we delve into the realm of Azure Stream Analytics to harness its power in processing a continuous data stream composed of ATM transactions and addressing real-time stream queries. The stream schema, comprising vital transaction details such as ATMCode, CardNumber, Type, and Amount, forms the foundation of our analysis. The journey begins with the establishment of an Azure Student account, providing us with access to Azure services and a credit allowance to facilitate experimentation. Subsequently, we embark on a meticulous setup process involving the configuration of an Event Hub and the generation of a Security Access Signature using Windows terminal, enabling secure data access.

Method

We registered for an Azure Students account via the dedicated portal designed for students, granting us access to Azure services along with credits to explore cloud resources. To structure our cloud assets for the streaming analytics project, we initiated a Resource Group within Azure, ensuring a cohesive and efficient management approach.

Namespace & Eventhub creation

We first created a Namespace in order to create the event hub afterwards.

The screenshot shows the 'Create Namespace' page in the Azure portal for Event Hubs. The breadcrumb navigation at the top reads 'Home > Event Hubs >'. The page title is 'Create Namespace' with a three-dot menu icon to its right. Below the title is a 'Review + create' tab, which is the active tab. The page is divided into sections: 'Basics' and 'Networking'. The 'Basics' section contains the following configuration details:

Property	Value
Namespace name	mscba-aueb2024
Subscription	Azure for Students
Resource group	NetworkWatcherRG
Location	West Europe
Pricing tier	Standard
Throughput Units	3
Availability Zones (Zone Redundancy)	Enabled
Auto-inflate Maximum Throughput Units	Disabled

The 'Networking' section contains the following configuration details:

Property	Value
Connectivity method	Public access

At the bottom of the page, there are three buttons: 'Create', '< Previous', and 'Next >'. The 'Create' button is highlighted.

Home > Event Hubs > mscba-aueb2024 >

Create Event Hub

Event Hubs

Basics Capture **Review + create**

Event Hubs Instance
by Microsoft

Basics

Name	eventhubdemo
Partition count	1

Retention

Cleanup policy	Delete
Retention time (hrs)	1

Capture

Capture Status	Off
----------------	-----

Create

< Previous

Next >

Shared access policies

We created shared access policies in order to connect the EventHub with the data generator and the inputs for the stream analytics job.

The screenshot displays the Azure portal interface for an Event Hubs instance named 'eventhubdemo' (mscba-aueb2024/eventhubdemo). The left sidebar shows the navigation menu with 'Shared access policies' selected. The main area shows a table of policies:

Policy	Claims
sender	Send
listen	Listen

On the right, a detailed view of the 'SAS Policy: sender' is shown. It includes fields for the Primary key, Secondary key, Connection string-primary key, Connection string-secondary key, and the SAS Policy xRM ID.

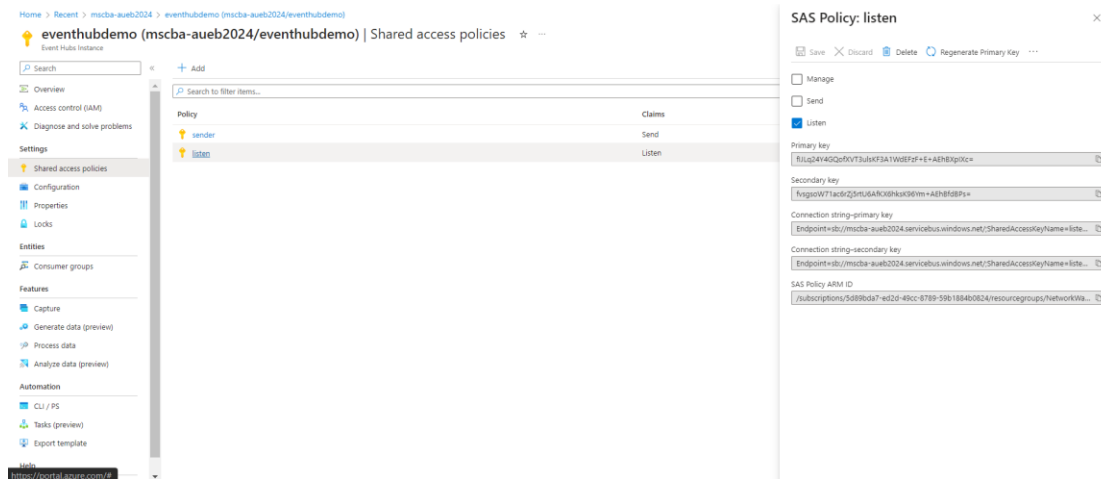
Primary key: k9S5KtH2ZwG0nE84e+WFU2G2pcNRak+AD8UJOJ0=

Secondary key: q5KtH8nRagZyJ75SpW1691d8arW243j+ADhCj+H0=

Connection string-primary key: Endpoint=ib://mscba-aueb2024.servicebus.windows.net/SharedAccessKey/Name=send...

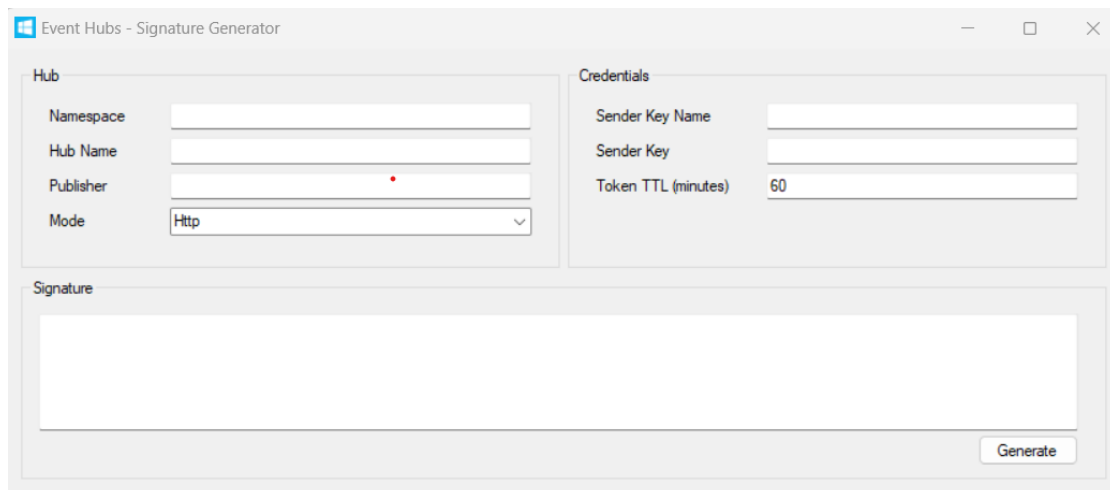
Connection string-secondary key: Endpoint=ib://mscba-aueb2024.servicebus.windows.net/SharedAccessKey/Name=send...

SAS Policy xRM ID: /subscriptions/5d98bda7-ef2d-48cc-8789-59b1884b0824/resourcegroups/networksta...



Signature generator:

We generated a secure code in order to send data within our Azure Event Hub and modified the given Generator.html file by including the necessary scripts and data structure to enable the sending of data to our Event Hub. Then, we employed Generator.html to transmit simulated data to the Event Hub, effectively validating the data intake process.

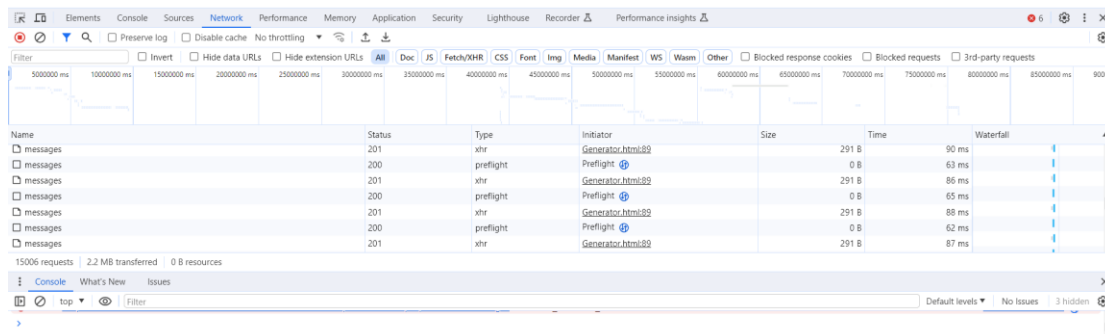



```

71 | | | | servicebusnamespace + "/" + servicebus.windows.net/" + hubName + "/" + publishers/" + deviceName + "/" + messages", true);
72 | | | | xmlhttprequest.setRequestHeader('Content-Type',
73 | | | | "application/atom+xml;type=entry;charset=utf-8");
74 | | | | xmlhttprequest.setRequestHeader("Authorization", sas);
75 |
76 | | | | xmlhttprequest.onreadystatechange = function () {
77 | | | | if (this.readyState == 4) {
78 | | | | |
79 | | | | | if (this.status == 201) {
80 | | | | | | | document.getElementById('status').innerHTML =
81 | | | | | | | | 'Sent: ' + jsonData;
82 | | | | | | | } else {
83 | | | | | | | | document.getElementById('status').innerHTML =
84 | | | | | | | | this.status;
85 | | | | | | | }
86 | | | | | }
87 | | | | }
88 | | | | xmlhttprequest.send(jsonData);
89 |
90 | | | | }, 1000);
91 |
92 | | | | }
93 | }
94 | </script>
95 | </body>
96 | </html>

```

Send Data Sent: { "ATMCode": 19, "CardNumber": 3554025590595485, "Type": 0, "Amount": 18 }



Stream analytics job

We set up a Stream Analytics Job, outlining where the data comes from and where it goes. This arrangement enabled ongoing analysis, handling live data streams to derive insights and generate actionable results. Afterwards, we incorporated the Event Hub and uploaded Reference Data files as the data sources in our Stream Analytics Job to ensure the job has the necessary information for processing.

New Stream Analytics job ...

Basics Storage Tags Review + create

Basics

Subscription	Azure for Students
Resource group	NetworkWatcherRG
Name	streamanalyticsdemo2024
Location	West Europe
Hosting environment	Cloud
Streaming units	1

➤ Stream input

Input details

streaminput

[Test](#) [Delete](#) [Open Event Hub](#)

Input alias
streaminput

☐ Provide Event Hub settings manually
☒ Select Event Hub from your subscriptions

Subscription
Azure for Students

Event Hub namespace * ⓘ
mscba-aueb2024

Event Hub name * ⓘ
☐ Create new ☒ Use existing
eventhubdemo

Event Hub consumer group * ⓘ
☐ Create new ☒ Use existing
consumergroup1

Authentication mode
Managed Identity: System assigned
Managed Identity has permissions to the selected Event Hub.

Partition key ⓘ

Event serialization format * ⓘ
JSON

Save

➤ areainput

Input details

areainput

Test

Delete

Open Blob storage/ADLS Gen2

Input alias

areainput

Provide Blob storage/ADLS Gen2 settings manually

Select Blob storage/ADLS Gen2 from your subscriptions

Subscription

Azure for Students

Storage account *

storageaccountdemo2024

Container *

Create new

Use existing

ref

Authentication mode

Managed Identity: System assigned

Managed Identity has permissions to the selected Blob storage/ADLS Gen2.

Path pattern *

AREA.json

Date format

YYYY/MM/DD

Time format

HH

Save

➤ atminput

Input details

atminput

Test

Delete

Open Blob storage/ADLS Gen2

Input alias

atminput

Provide Blob storage/ADLS Gen2 settings manually

Select Blob storage/ADLS Gen2 from your subscriptions

Subscription

Azure for Students

Storage account *

storageaccountdemo2024

Container *

Create new

Use existing

ref

Authentication mode

Managed Identity: System assigned

Managed Identity has permissions to the selected Blob storage/ADLS Gen2.

Path pattern *

Atm.json

Date format

YYYY/MM/DD

Time format

HH

Save

➤ Custinput

Input details ✕

atminput

[Test](#)
[Delete](#)
[Open Blob storage/ADLS Gen2](#)

Input alias

atminput

☐ Provide Blob storage/ADLS Gen2 settings manually
☒ Select Blob storage/ADLS Gen2 from your subscriptions

Subscription

Azure for Students

Storage account *

storageaccountdemo2024

Container *

☐ Create new ☒ Use existing

ref

Authentication mode

Managed Identity: System assigned

Managed Identity has permissions to the selected Blob storage/ADLS Gen2.

Path pattern *

Atm.json

Date format

YYYY/MM/DD

Time format

HH

[Save](#)

Home > Stream Analytics jobs > streamanalyticsdemo2024

streamanalyticsdemo2024 | Inputs ☆

Stream Analytics job

+ Add input Refresh

Alias	Source type	Type	Authentication mode	Resource
areainput	Reference	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024
atminput	Reference	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024
cutinput	Reference	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024
streaminput	Stream	Event Hub	Managed identity	msciba-aue62024/eventhubdemo

Successful connection test
Connection to input 'streaminput' succeeded.

Successful connection test
Connection to input 'atminput' succeeded.

Successful connection test
Connection to input 'cutinput' succeeded.

Storage account

Creation of storage account in order to build a container which hosts the reference data files.

Home > Storage accounts >

Create a storage account

Basics Advanced Networking Data protection Encryption Tags **Review**

Basics

Subscription	Azure for Students
Resource Group	NetworkWatcherRG
Location	westeurope
Storage account name	storageaccountdemo2024
Deployment model	Resource manager
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)

Advanced

Enable hierarchical namespace	Disabled
Enable network file system v3	Disabled
Allow cross-tenant replication	Disabled
Access tier	Hot
Enable SFTP	Disabled
Large file shares	Disabled

Networking

Network connectivity	Public endpoint (all networks)
Default routing tier	Microsoft network routing
Public IP address	Provisioned

Create < Previous Next > Download a template for automation [Give feedback](#)

Home > Storage accounts >

Create a storage account

Basics Advanced Networking Data protection Encryption Tags **Review**

Basics

Blob anonymous access	Enabled
Minimum TLS version	Version 1.2
Permitted scope for copy operations (preview)	From any storage account

Data protection

Point-in-time restore	Disabled
Blob soft delete	Enabled
Blob retention period in days	7
Container soft delete	Enabled
Container retention period in days	7
File share soft delete	Enabled
File share retention period in days	7
Versioning	Disabled
Blob change feed	Disabled
Version-level immutability support	Disabled

Encryption

Encryption type	Microsoft-managed keys (MMK)
Enable support for customer-managed keys	Blobs and files only
Enable infrastructure encryption	Disabled

Create < Previous Next > Download a template for automation [Give feedback](#)

Stream output

We designated Blob Storage to collect the processed data from your Stream Analytics Job, storing it for future use or analysis. During the setup of our analytics framework, we faced hurdles concerning the configuration of streaming units. To overcome these challenges, we adapted our settings to utilize a single processing streaming unit and established eight storage outputs for each query, enabling concurrent processing of all tasks.

Output details

streamoutput

[Test](#) [Delete](#) [Open Blob storage/ADLS Gen2](#)

Output alias

streamoutput

☐ Provide Blob storage/ADLS Gen2 settings manually

☒ Select Blob storage/ADLS Gen2 from your subscriptions

Subscription

Azure for Students

Storage account *

storageaccountdemo2024

Container *

☐ Create new ☒ Use existing

myoutputcontainer

Authentication mode

Managed Identity: System assigned

Managed identity has permissions to the selected Blob storage/ADLS Gen2.

Event serialization format *

JSON

Format

Line separated

Encoding

UTF-8

Save

Home > streamanalyticdemo2024

streamanalyticdemo2024 | Outputs

Stream Analytics job

Add output Refresh

Alias 1	Type	Authentication mode	Resource	
streamoutput1	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024	
streamoutput2	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024	
streamoutput3	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024	
streamoutput4	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024	
streamoutput5	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024	
streamoutput6	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024	
streamoutput7	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024	
streamoutput8	Blob storage/ADLS Gen2	Managed identity	storageaccountdemo2024	

Successful connection test
Connection to output 'streamoutput1' succeeded.

Successful connection test
Connection to output 'streamoutput8' succeeded.

Successful connection test
Connection to output 'streamoutput6' succeeded.

Show hidden icons

Output details

streamoutput2

Test

Delete

Open Blob storage/ADLS Gen2

Output alias

streamoutput2

Provide Blob storage/ADLS Gen2 settings manually

Select Blob storage/ADLS Gen2 from your subscriptions

Subscription

Azure for Students

Storage account *

storageaccountde~2024

Container *

Create new

Use existing

myoutputcontainer

Authentication mode

Managed Identity: System assigned

Managed identity has permissions to the selected Blob storage/ADLS Gen2.

Event serialization format *

JSON

Format

Line separated

Encoding

UTF-8

Save

SQL Queries

Query1

Test query

Save query

Discard changes

1

2

3

4

5

6

7

8

9

10

11

12

/*1*/

SELECT

System.Timestamp() AS EventTime,

SUM(CASE WHEN Type = 0 AND ATHCode = 21 THEN Amount ELSE 0 END) AS TotalAmount

INTO

[streamoutput]

FROM

[streaminput]

GROUP BY

SlidingWindow(minute, 10)

Input preview

Test results

Job simulation (preview)

Download results

EventTime	TotalAmount
datetime	bigint
"2024-01-09T20:54:45.1995275Z"	0
"2024-01-09T20:54:45.2151552Z"	0
"2024-01-09T21:04:45.1995275Z"	0

Showing 3 rows from 'streamoutput'.

Ln 5, Col 27

Query 2

Test querySave queryDiscard changes

13

14

15

16

17

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19

20

21

22

23

24

```
/*2*/  
  
SELECT  
    System.Timestamp() AS WindowStart,  
    SUM(CASE WHEN Type = 1 AND ATMCode = 21 THEN Amount ELSE 0 END) AS TotalAmount  
INTO  
    [streamoutput2]  
FROM  
    [streaminput]  
GROUP BY  
    TumblingWindow(hour, 1)
```

Input previewTest resultsJob simulation (preview)

Download results

WindowStart	TotalAmount
datetime	bigint
"2024-01-09T21:00:00.0000000Z"	0

Showing 0 rows from 'streamoutput2'.Ln 16, Col 39

An hour later:

Test querySave queryDiscard changes

13

14

15

16

17

18

19

20

21

22

```
/*2*/  
  
SELECT  
    System.Timestamp() AS WindowStart,  
    SUM(CASE WHEN Type = 1 AND ATMCode = 21 THEN Amount ELSE 0 END) AS TotalAmount  
INTO  
    [streamoutput2]  
FROM  
    [streaminput]  
GROUP BY
```

Input previewTest resultsJob simulation (preview)

Download results

WindowStart	TotalAmount
datetime	bigint
"2024-01-09T21:00:00.0000000Z"	0

Showing 0 rows from 'streamoutput2'.Ln 22, Col 31

Query 3

25 /*3*/
26
27 SELECT
28 MIN(System.Timestamp()) AS WindowStart,
29 SUM(CASE WHEN Type = 1 AND ATMCODE = 21 THEN Amount ELSE 0 END) AS TotalAmount
30 INTO
31 [streamoutput3]
32 FROM
33 [streaminput]
34 GROUP BY
35 HoppingWindow(minute, 60, 30)
36

Input previewTest resultsJob simulation (preview)

Download results

WindowStart datetime	TotalAmount bigint
"2024-01-09T21:00:21.2812542Z"	0
"2024-01-09T21:00:21.2812542Z"	0

Showing 0 rows from 'streamoutput3'.Ln 35, Col 34.

An hour later:

> Test query Save query Discard changes

25 /*3*/
26
27 SELECT
28 MIN(System.Timestamp()) AS WindowStart,
29 SUM(CASE WHEN Type = 1 AND ATMCODE = 21 THEN Amount ELSE 0 END) AS TotalAmount
30 INTO
31 [streamoutput3]
32 FROM
33 [streaminput]
34 GROUP BY

Input previewTest resultsJob simulation (preview)

Download results

WindowStart datetime	TotalAmount bigint
"2024-01-09T21:01:12.8313297Z"	0
"2024-01-09T21:01:12.8313297Z"	0
"2024-01-09T21:01:12.8313297Z"	0
"2024-01-09T21:01:12.8313297Z"	0

Showing 0 rows from 'streamoutput3'.Ln 36, Col 1.

Query 4

Test querySave queryDiscard changes

37

/*4*/

38

39

SELECT

40

System.Timestamp() AS WindowStart,

41

ATMCode,

42

SUM(CASE WHEN Type = 1 THEN Amount ELSE 0 END) AS TotalAmount

43

INTO

44

[streamoutput4]

45

FROM

46

[streaminput]

47

GROUP BY

48

SlidingWindow(hour, 1), ATMCode

Input preview

Test results

Job simulation (preview)

Download results

WindowStart	ATMCode	TotalAmount
datetime	bigint	bigint
"2024-01-09T21:02:07.6314985Z"	20	22
"2024-01-09T21:02:07.6471352Z"	10	45
"2024-01-09T21:02:07.6471352Z"	13	46
"2024-01-09T21:02:07.6471352Z"	15	0
"2024-01-09T21:02:07.6471352Z"	16	17

Showing 0 rows from 'streamoutput4'.

Ln 40, Col 23

An hour later:

Test querySave queryDiscard changes

37

/*4*/

38

39

SELECT

40

System.Timestamp() AS WindowStart,

41

ATMCode,

42

SUM(CASE WHEN Type = 1 THEN Amount ELSE 0 END) AS TotalAmount

43

INTO

44

[streamoutput4]

45

FROM

46

[streaminput]

47

GROUP BY

Input preview

Test results

Job simulation (preview)

Download results

WindowStart	ATMCode	TotalAmount
datetime	bigint	bigint
"2024-01-09T21:02:52.2603000Z"	20	22
"2024-01-09T21:02:52.2759173Z"	10	45
"2024-01-09T21:02:52.2759173Z"	13	46
"2024-01-09T21:02:52.2759173Z"	15	0
"2024-01-09T21:02:52.2759173Z"	16	17

Showing 0 rows from 'streamoutput4'.

Ln 43, Col 5

Query 5

[▶ Test selected query](#)
[📄 Save query](#)
[✕ Discard changes](#)

```

6
7 SELECT
8 System.Timestamp() AS WindowStart,
9 SUM(CASE WHEN [Input].[Type] = 1 THEN [Input].[Amount] ELSE 0 END) AS TotalAmount, [refinputatm].[area_code] AS AreaCode
10 FROM [Input]
11 INNER JOIN [refinputatm] ON [Input].[ATMCode] = [refinputatm].[atm_code]
12 INNER JOIN [refinputarea] ON [refinputarea].[area_code] = [refinputatm].[area_code]
13 GROUP BY [refinputatm].[area_code], TumblingWindow(hour, 1)
14

```

[Input preview](#)
[Test results](#)
[Job simulation \(preview\)](#)

[Download results](#)

WindowStart <i>datetime</i>	TotalAmount <i>bigint</i>	AreaCode <i>bigint</i>
"2024-01-09T15:00:00.0000000Z"	158	5
"2024-01-09T15:00:00.0000000Z"	50	9
"2024-01-09T15:00:00.0000000Z"	10	3
"2024-01-09T15:00:00.0000000Z"	418	1
"2024-01-09T15:00:00.0000000Z"	100	2

Showina 8 rows from 'output'.
 Ln 7. Col 1

An hour later:

```

17 SELECT System.Timestamp() AS WindowStart,
18 SUM([Input].[Amount]) AS TotalAmount, [refinputcustomer].[gender], [refinputarea].[area_city]
19 INTO [output6]
20 FROM [Input]
21 INNER JOIN [refinputatm] ON [Input].[ATMCode] = [refinputatm].[atm_code]
22 INNER JOIN [refinputarea] ON [refinputarea].[area_code] = [refinputatm].[area_code]
23 INNER JOIN [refinputcustomer] ON [refinputcustomer].[area_code] = [refinputatm].[area_code]
24 GROUP BY [refinputarea].[area_city], [refinputcustomer].[gender], TumblingWindow(hour, 1)
25
26 SELECT 1 AS Alert, [Input].[CardNumber], count([Input].[Type])

```

[Input preview](#)
[Test results](#)
[Job simulation \(preview\)](#)

[Download results](#)

WindowStart <i>datetime</i>	TotalAmount <i>bigint</i>	AreaCode <i>bigint</i>
"2024-01-09T22:00:00.0000000Z"	54	5
"2024-01-09T22:00:00.0000000Z"	15	10

Query 6

```

16 SELECT System.Timestamp() AS WindowStart,
17 SUM([Input].[Amount]) AS TotalAmount, [refinputcustomer].[gender],[refinputarea].[area_city]
18 INTO [output6]
19 FROM [Input]
20 INNER JOIN [refinputatm] ON [Input].[ATMCode]=[refinputatm].[atm_code]
21 INNER JOIN [refinputarea] ON [refinputarea].[area_code]=[refinputatm].[area_code]
22 INNER JOIN [refinputcustomer] ON [refinputcustomer].[area_code]=[refinputatm].[area_code]
23 GROUP BY [refinputarea].[area_city], [refinputcustomer].[gender],TumblingWindow(hour,1)

```

input preview **Test results** Job simulation (preview)

Download results

WindowStart <i>datetime</i>	TotalAmount <i>bigint</i>	gender <i>string</i>	area_city <i>string</i>
"2024-01-09T18:00:00.0000000Z"	54	"Male"	"Tacoma"
"2024-01-09T18:00:00.0000000Z"	162	"Female"	"Tacoma"
"2024-01-09T18:00:00.0000000Z"	158	"Male"	"Omaha"
"2024-01-09T18:00:00.0000000Z"	79	"Female"	"Omaha"
"2024-01-09T18:00:00.0000000Z"	476	"Male"	"Springfield"

Showing 5 rows from 'output6' In 22, Col 10

An hour later:

```

17 SELECT System.Timestamp() AS WindowStart,
18 SUM([Input].[Amount]) AS TotalAmount, [refinputcustomer].[gender],[refinputarea].[area_city]
19 INTO [output6]
20 FROM [Input]
21 INNER JOIN [refinputatm] ON [Input].[ATMCode]=[refinputatm].[atm_code]
22 INNER JOIN [refinputarea] ON [refinputarea].[area_code]=[refinputatm].[area_code]
23 INNER JOIN [refinputcustomer] ON [refinputcustomer].[area_code]=[refinputatm].[area_code]
24 GROUP BY [refinputarea].[area_city], [refinputcustomer].[gender],TumblingWindow(hour,1)
25

```

input preview **Test results** Job simulation (preview)

Download results

WindowStart <i>datetime</i>	TotalAmount <i>bigint</i>	gender <i>string</i>	area_city <i>string</i>
"2024-01-09T22:00:00.0000000Z"	15	"Male"	"Baltimore"

Showing 0 rows from 'output6' In 25, Col 1

Query 7

```

25 SELECT 1 AS Alert, [Input].[CardNumber], count([Input].[Type])
26 INTO [output7]
27 FROM [Input]
28 INNER JOIN refinputcustomer
29 ON [Input].[CardNumber]=[refinputcustomer].[card_number]
30 WHERE [Input].[Type]=1
31 GROUP BY [Input].[CardNumber], [Input].[Type],SlidingWindow(hour,1)
32 HAVING count([Input].[Type])=2
33

```

Query 8


```
33
34 SELECT 1 AS Alert, [Input].[ATMCode], [reinputcustomer].[area_code]
35 INTO [output8]
36 FROM [Input]
37 INNER JOIN reinputcustomer
38 ON [Input].[CardNumber]=[reinputcustomer].[card_number]
39 WHERE [reinputcustomer].[area_code]!=[Input].[ATMCode]
40 GROUP BY [Input].[ATMCode], [reinputcustomer].[area_code], SlidingWindow(hour, 1)
```

Input preview Test results Job simulation (preview)

Showing data from uploaded file 'Atm.json'.

View in JSON ▾ **Table**  Raw  Reset  Upload sample input  Download sample data


atm_code	area_code
<i>bigint</i>	<i>bigint</i>
1	20
2	17
3	18
4	19

 Success In 29 Cr

An hour later:

```
34
35 SELECT 1 AS Alert, [Input].[ATMCode], [reinputcustomer].[area_code]
36 INTO [output8]
37 FROM [Input]
38 INNER JOIN reinputcustomer
39 ON [Input].[CardNumber]=[reinputcustomer].[card_number]
40 WHERE [reinputcustomer].[area_code]!=[Input].[ATMCode]
41 GROUP BY [Input].[ATMCode], [reinputcustomer].[area_code], SlidingWindow(hour, 1)
42
43 SELECT
```

Input preview **Test results** Job simulation (preview)

 Download results

Alert	ATMCode	area_code
<i>bigint</i>	<i>bigint</i>	<i>bigint</i>
1	13	6
1	15	7
1	10	8