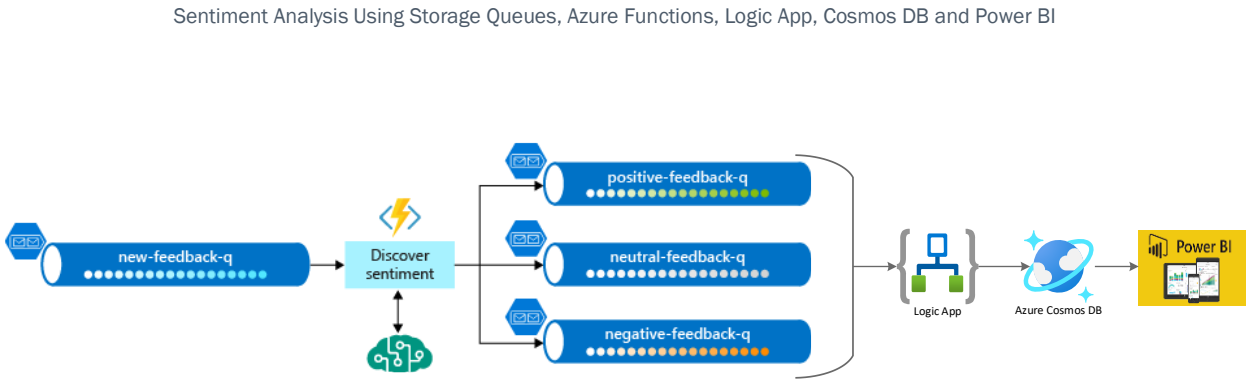
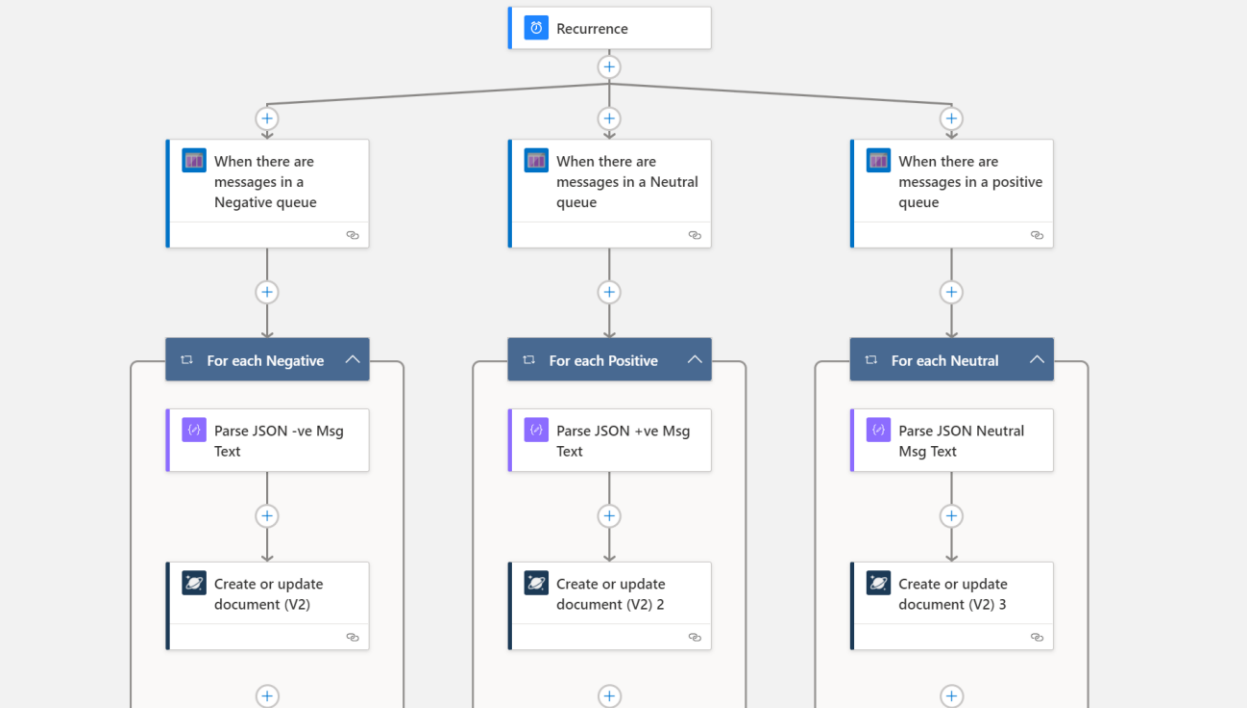
Sentiment Analysis with Storage Queues, Azure Function, Logic Apps, Cosmos DB, and Power BI

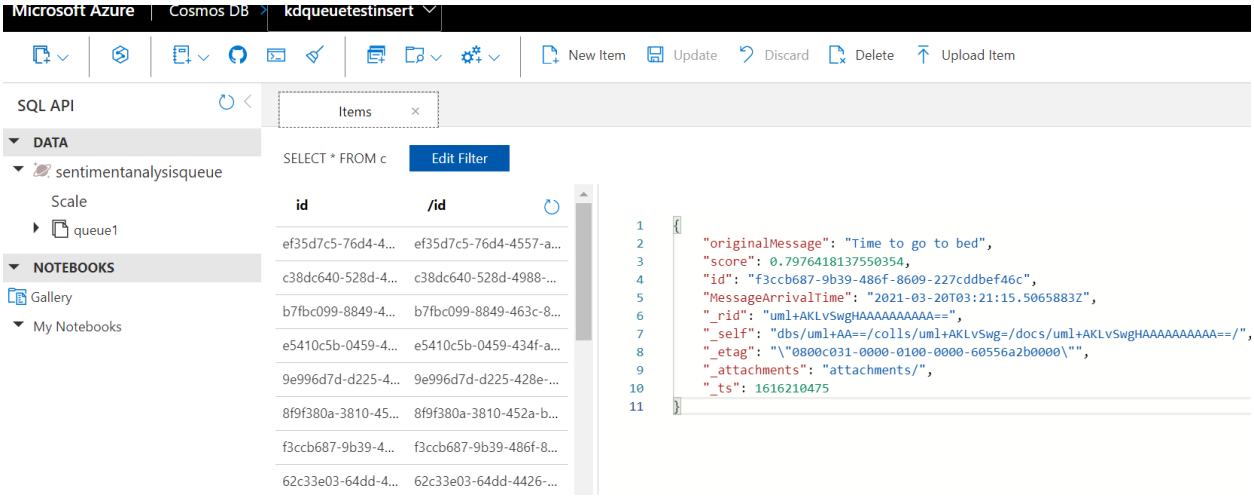
High-Level Overview of the solution



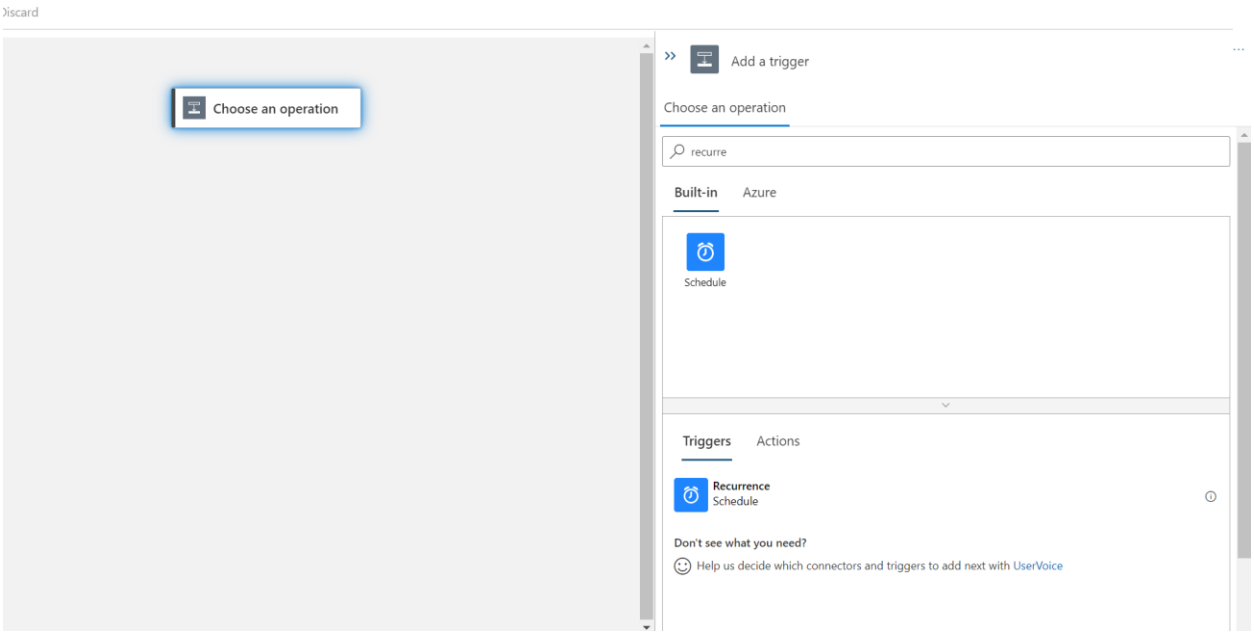
1. In the Azure portal, create an empty logic app by following the instructions in Create your logic app. When you see the **Logic Apps Designer**, return to this tutorial.
2. Once you are done with the logic app, it will look like this



3. The cosmos DB account and database have already been created. You have to create the collection with the name of your choice. For example, I created a collection with the name queue1.

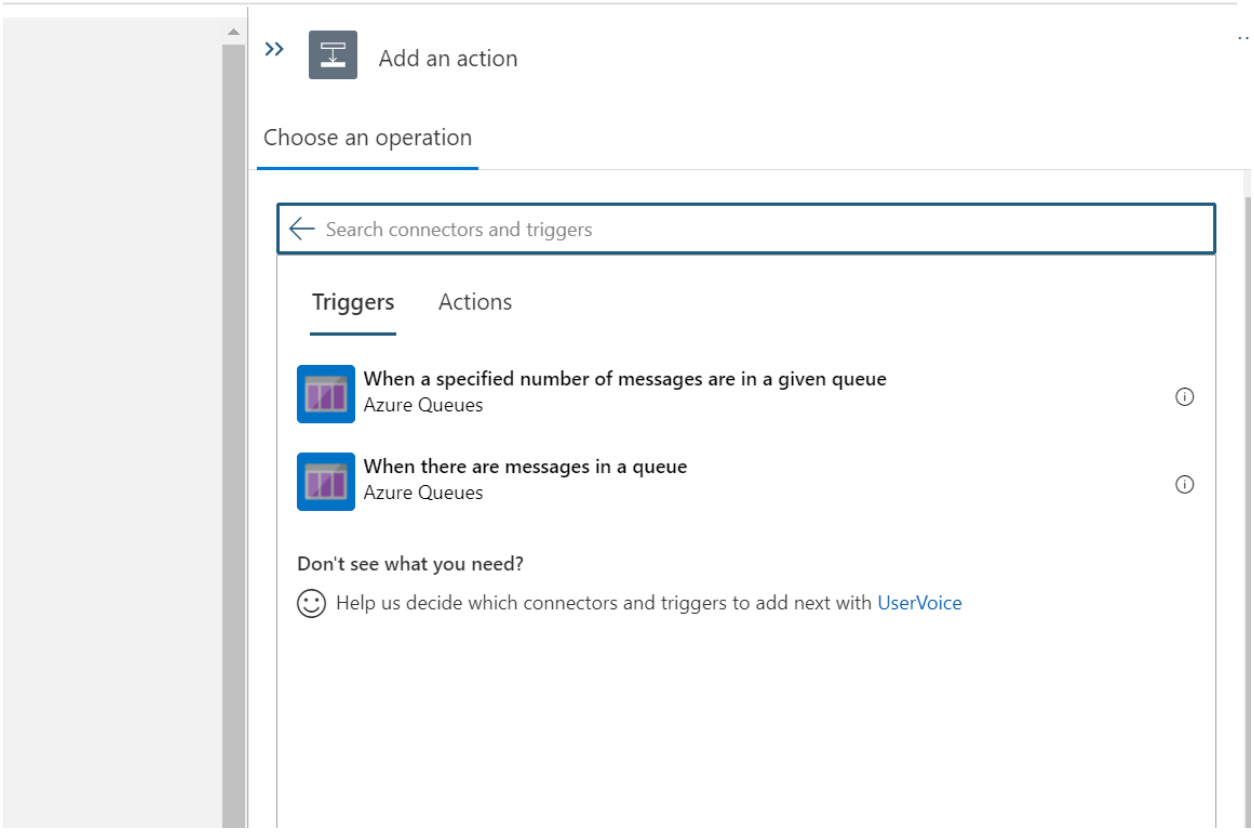


4. Make sure you select stateful workflow in the logic app, not the stateless. In the Logic Apps Designer, add recurrence action. It will run will logic app based on the time interval we want it to run.



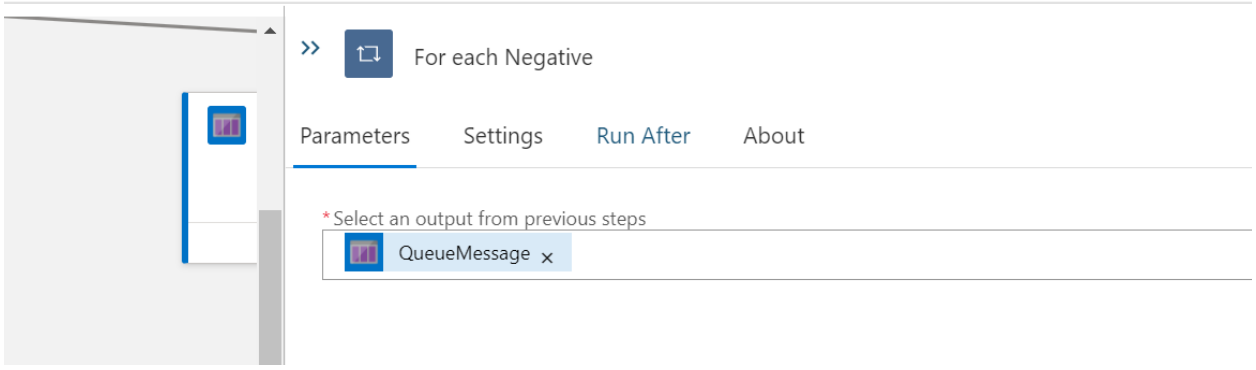
5. Select trigger “when there are messages in the queue” and provide the queue name; for example, For positive messages, provide queue name positive-feedback-q. Add a parallel step by clicking + sign and create the trigger for

negative and neutral queue also.



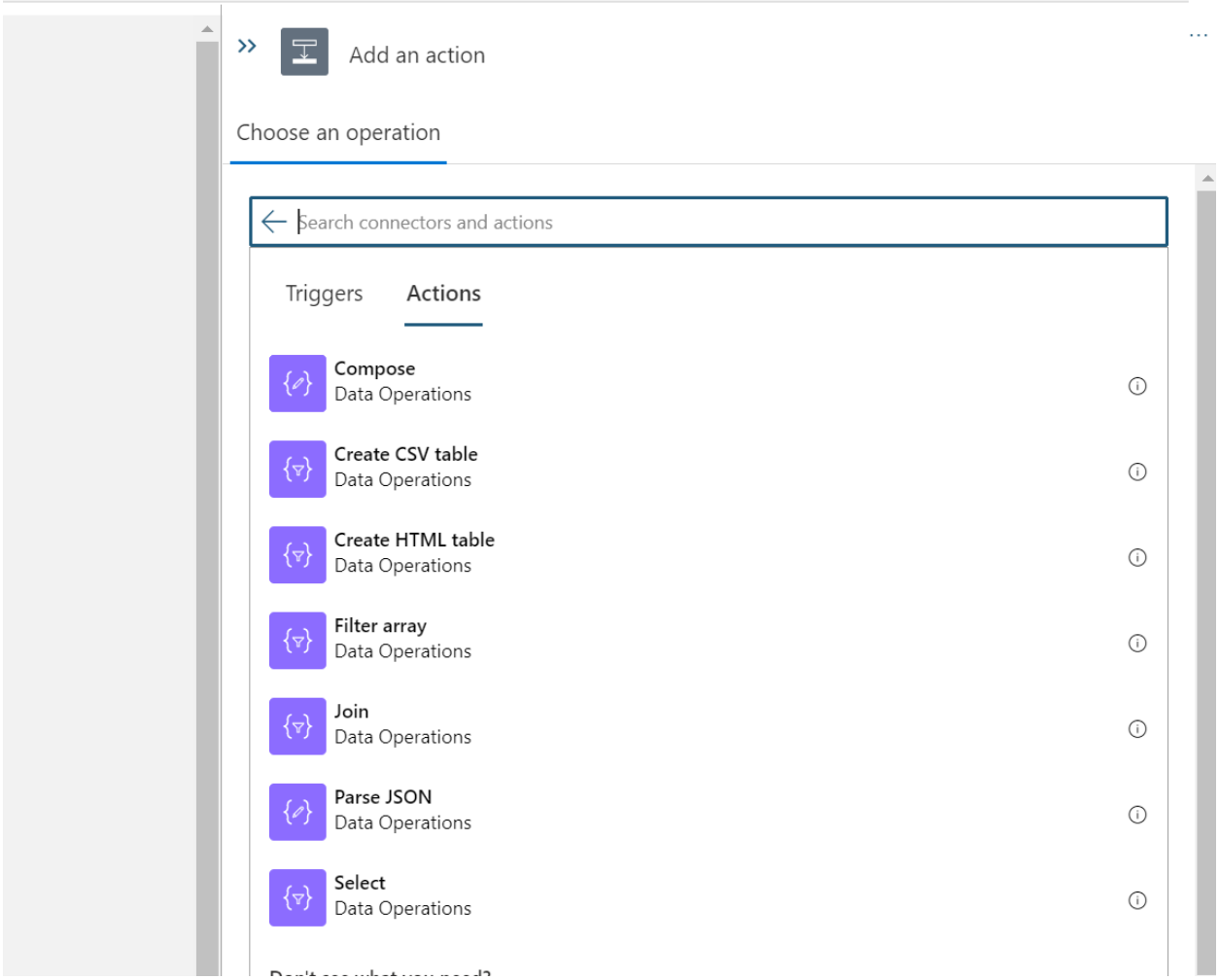
6. Add “For Each” loop as we have to process all arrived messages in the queue. Inside ‘For Each’ add ParseJson action. As queue messages are stored as JSON, we have to parse and select the fields we want for our analysis. We are ignoring some default fields added by queue metadata.

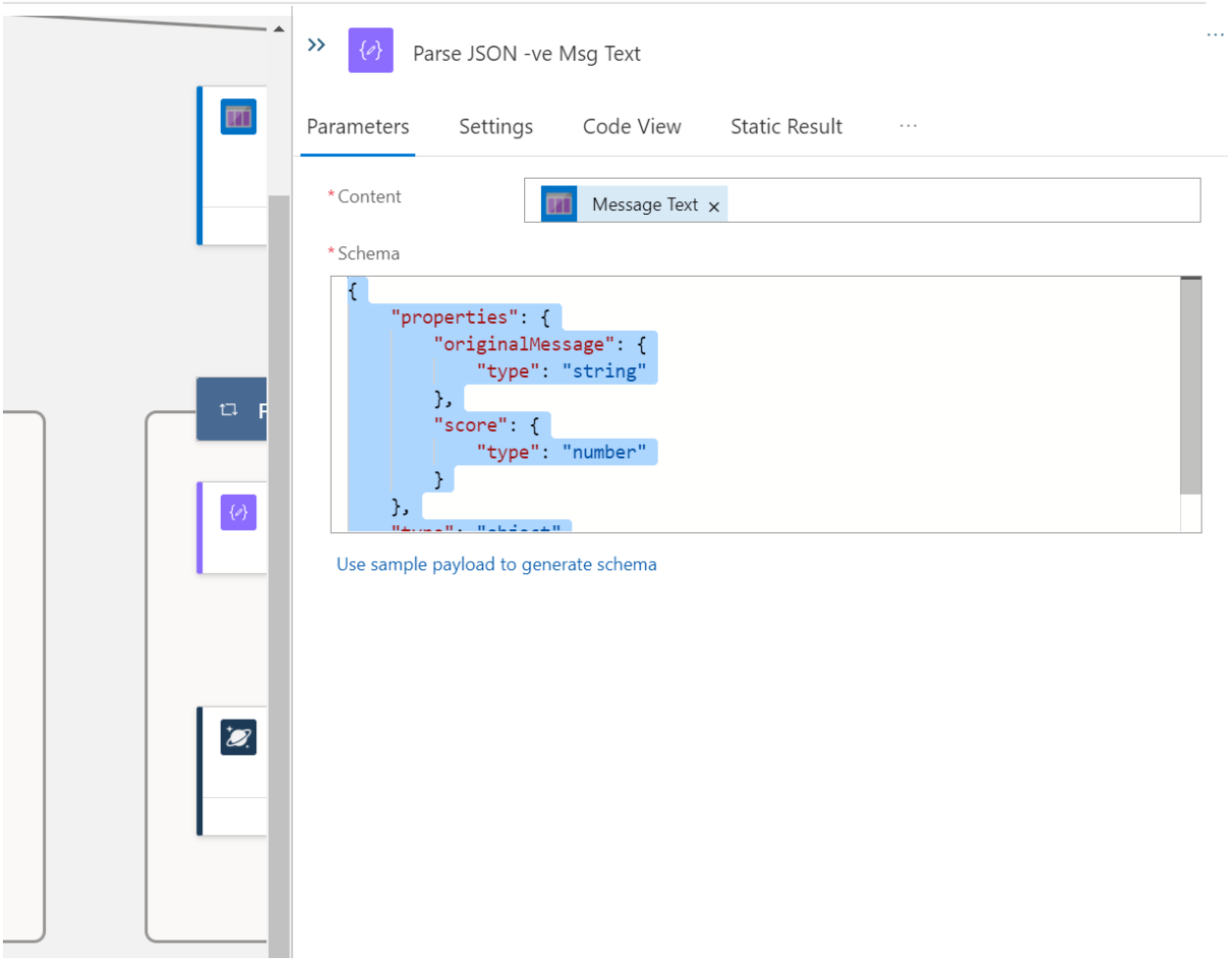
    1. Add “queuemessage” from the previous step as a parameter in For Each loop



2. For ParseJSON, select the message text and Provide the below schema

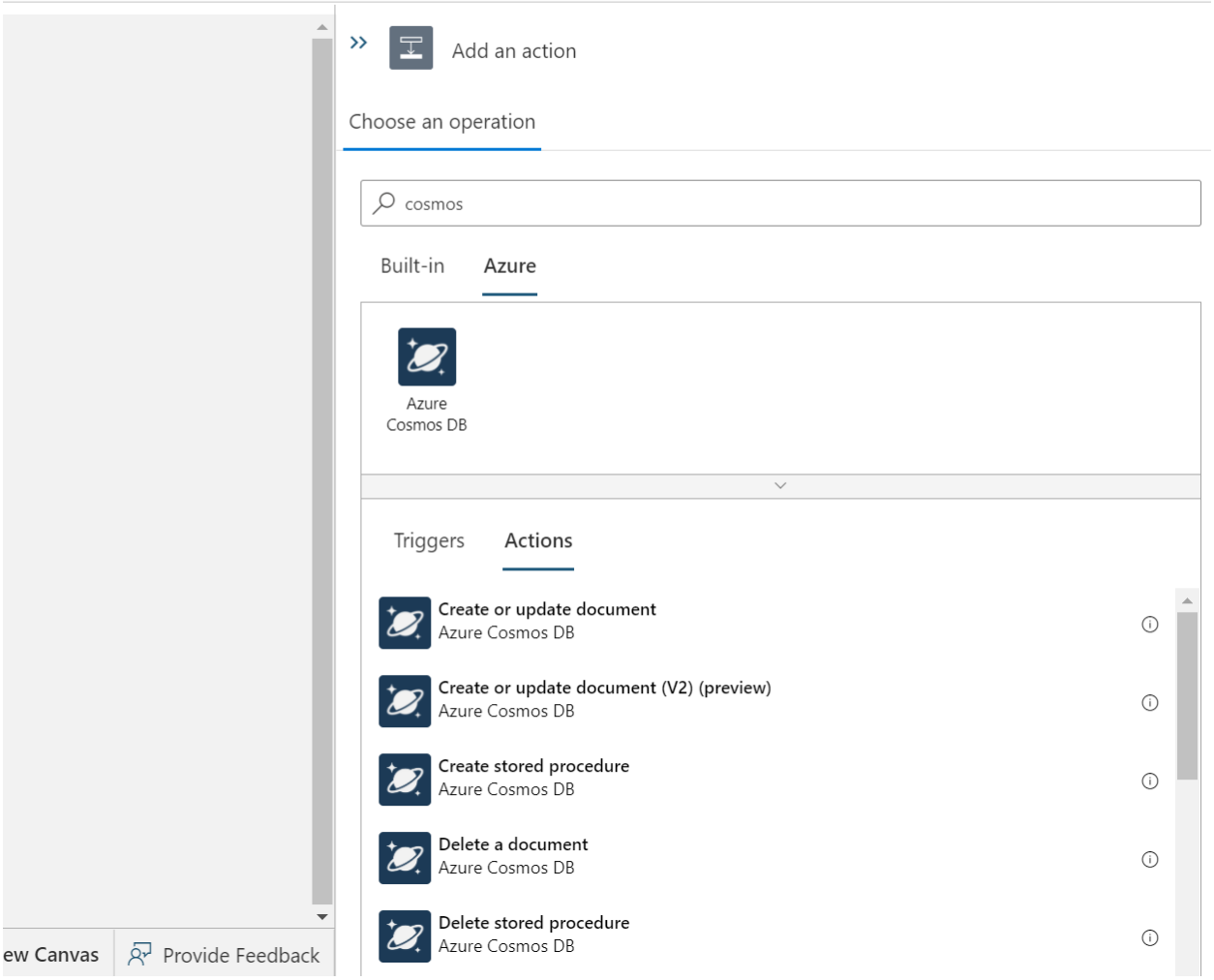
```
{
    "properties": {
        "originalMessage": {
            "type": "string"
        },
        "score": {
            "type": "number"
        }
    },
    "type": "object"
}
```


Add an action
Choose an operation
Search connectors and actions
Triggers
Actions
Compose
Data Operations
Create CSV table
Data Operations
Create HTML table
Data Operations
Filter array
Data Operations
Join
Data Operations
Parse JSON
Data Operations
Select
Data Operations



Complete these steps for all three message types.

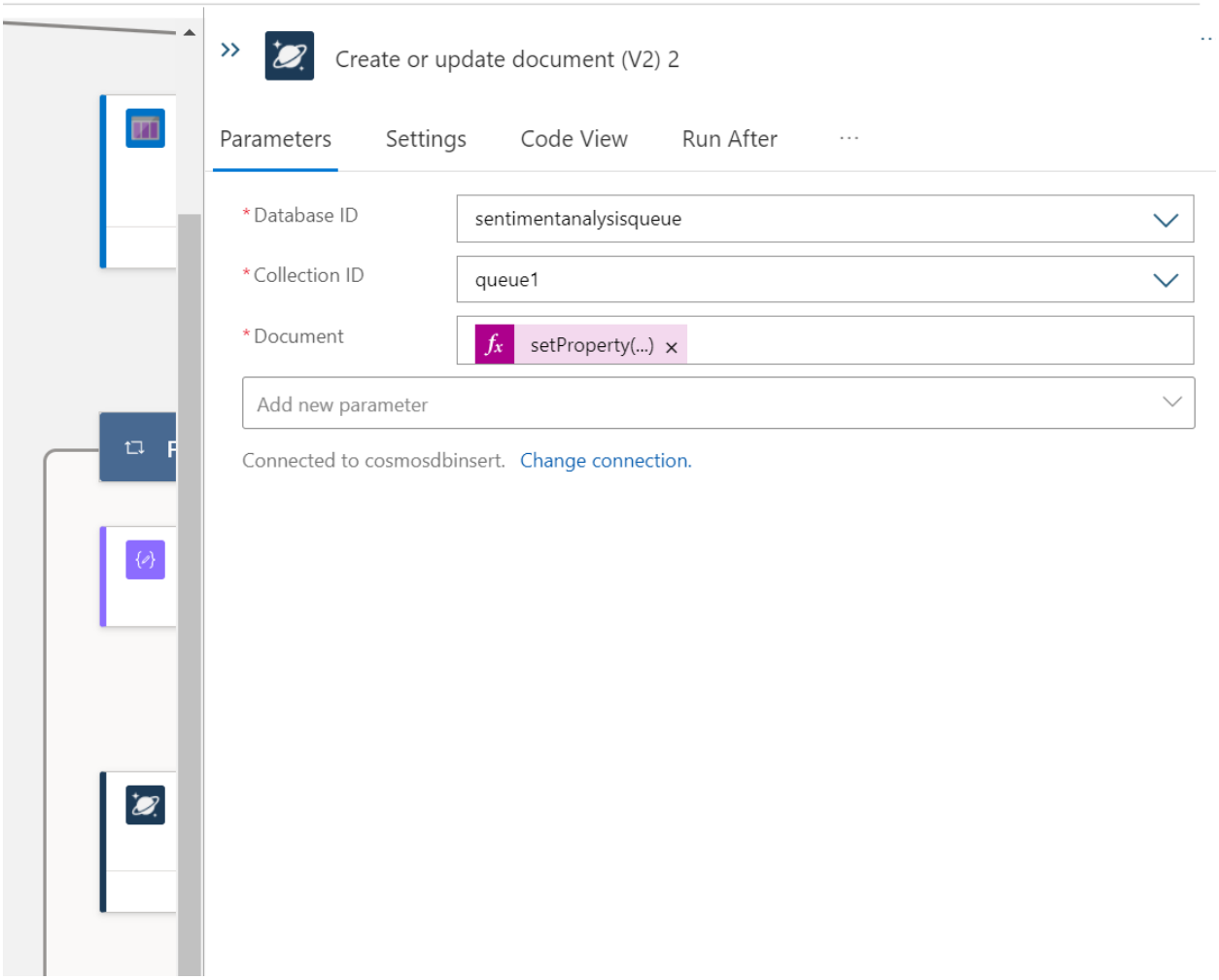
7. Inside ‘For Each’ after ParseJSON action, add ‘Create or update document (V2) (preview)’ to insert messages into cosmos DB collection.



8. In parameter for ‘Create or update document (V2) (preview)’ Select database ID as “sentimemntanalysisqueue” and Collection as queue1 and under document user

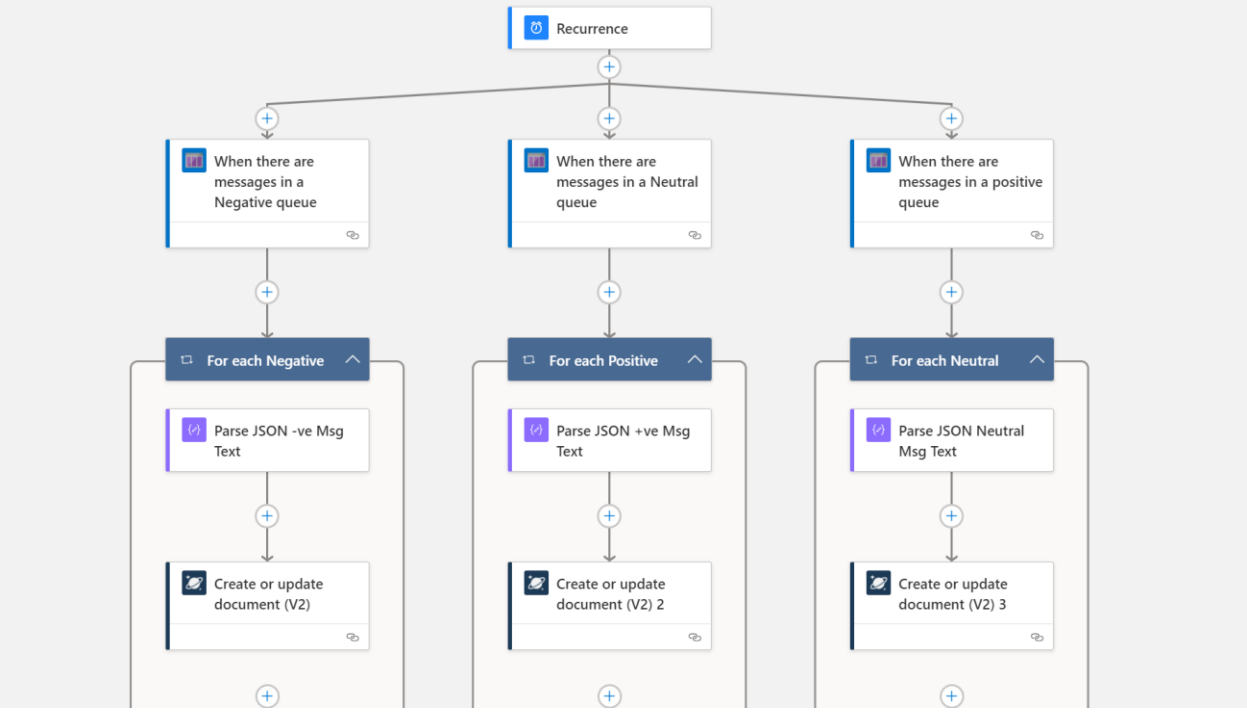
dynamic content and function to insert message and add ID field for uniqueness. The formula looks like this

```
setProperty(setProperty(body('Parse_JSON_+ve_Msg_Text'),'id',guid()),'MessageArrivalTime',utcNow())
```

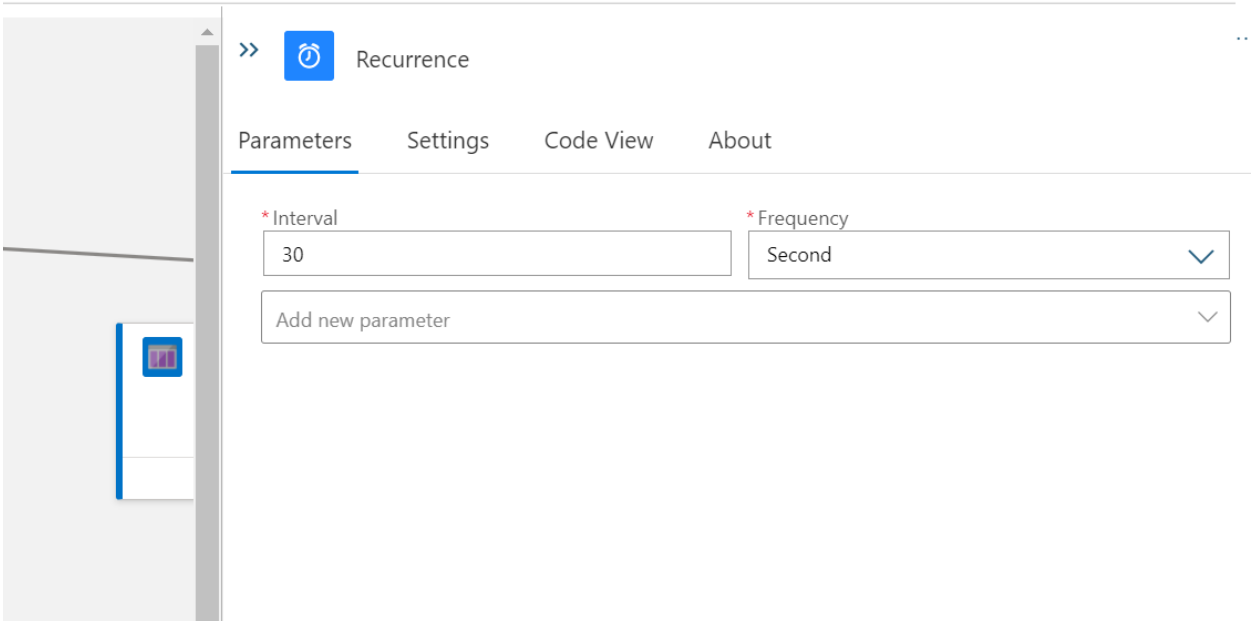


Complete above cosmos DB steps for all three message types.

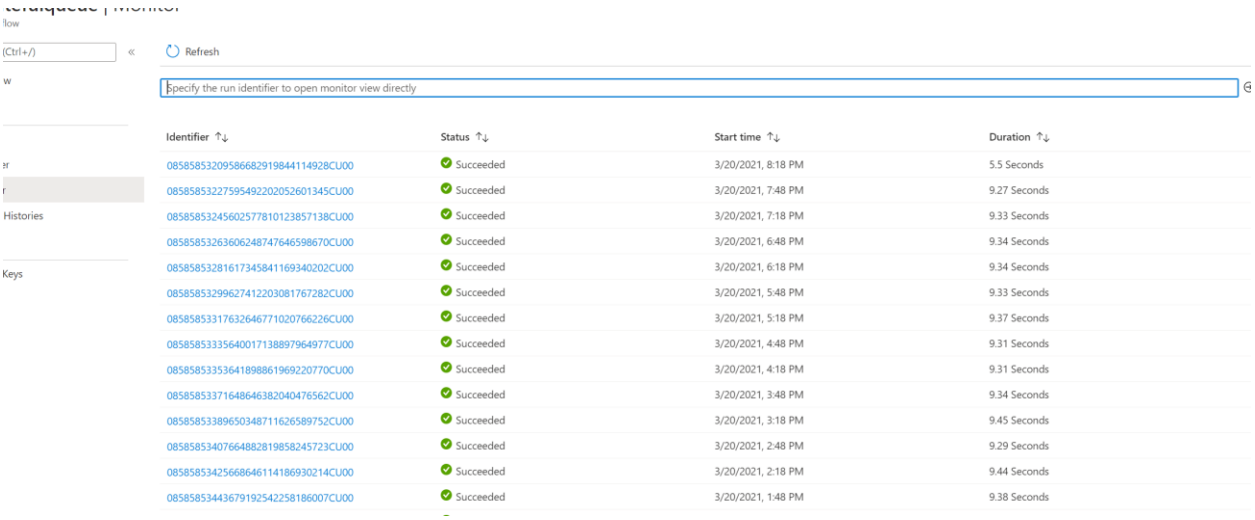
9. Once you are done with step 8, your logic app should look like this


Recurrence
When there are messages in a Negative queue
When there are messages in a Neutral queue
When there are messages in a positive queue
For each Negative
For each Positive
For each Neutral
Parse JSON -ve Msg Text
Parse JSON +ve Msg Text
Parse JSON Neutral Msg Text
Create or update document (V2)
Create or update document (V2) 2
Create or update document (V2) 3

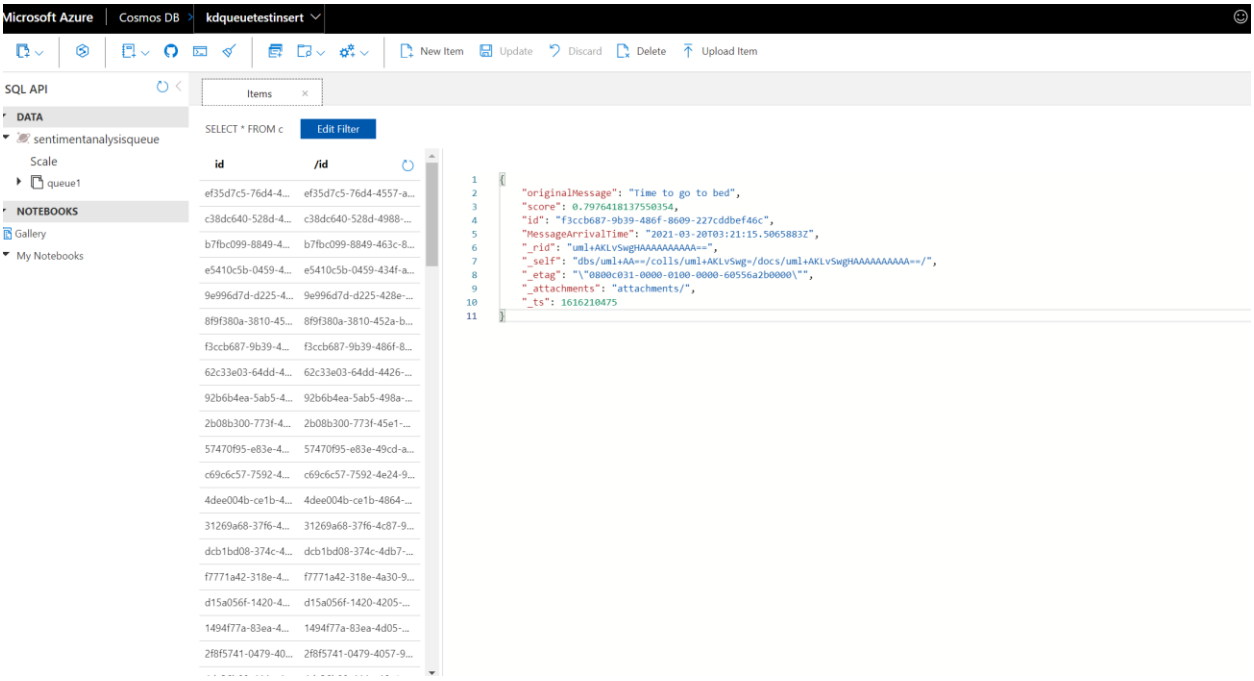
10. If you want to change the recurrence time, then go to recurrence trigger.



11. Save the Logic App and Monitor its run by going to monitor on the left side.

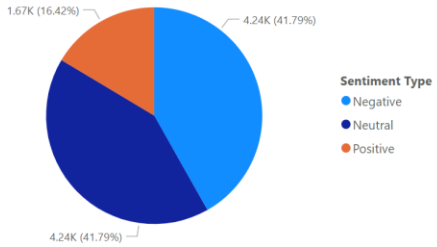


12. You can to CosmosDB and look for messages inserted in the collection.

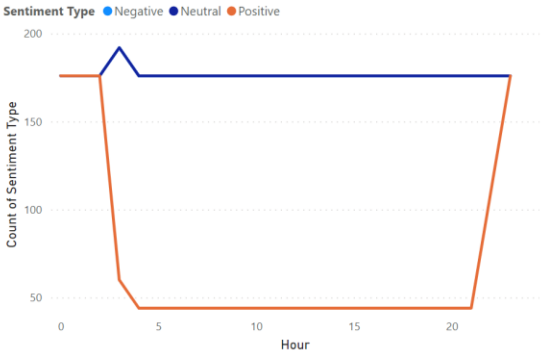


13. If you are interested in creating some visualizations, then use your reporting tool of choice.
I used Microsoft Power BI as it can connect to cosmos DB and show data in real-time. Please see the below dashboard for your reference.

Count of Sentiment Type by Sentiment Type



Count of Sentiment Type by Hour and Sentiment Type



Message	Sentiment Type	Sentiment Score	Message Arrival Time
Its nice weather outside	Neutral	0.50	3/21/2021 3:48:57 AM
USA is a country	Neutral	0.50	3/21/2021 3:48:57 AM
Time to go to bed	Neutral	0.80	3/21/2021 3:48:57 AM
Its fun doing this exercise!	Positive	0.94	3/21/2021 3:48:56 AM
I'm having fun with this exercise!	Positive	0.89	3/21/2021 3:48:56 AM
I like swimming	Positive	0.95	3/21/2021 3:48:56 AM