



# **Cloud Development, 2021 fall. Final**

## **Report**

made by Zhuman Rakhat

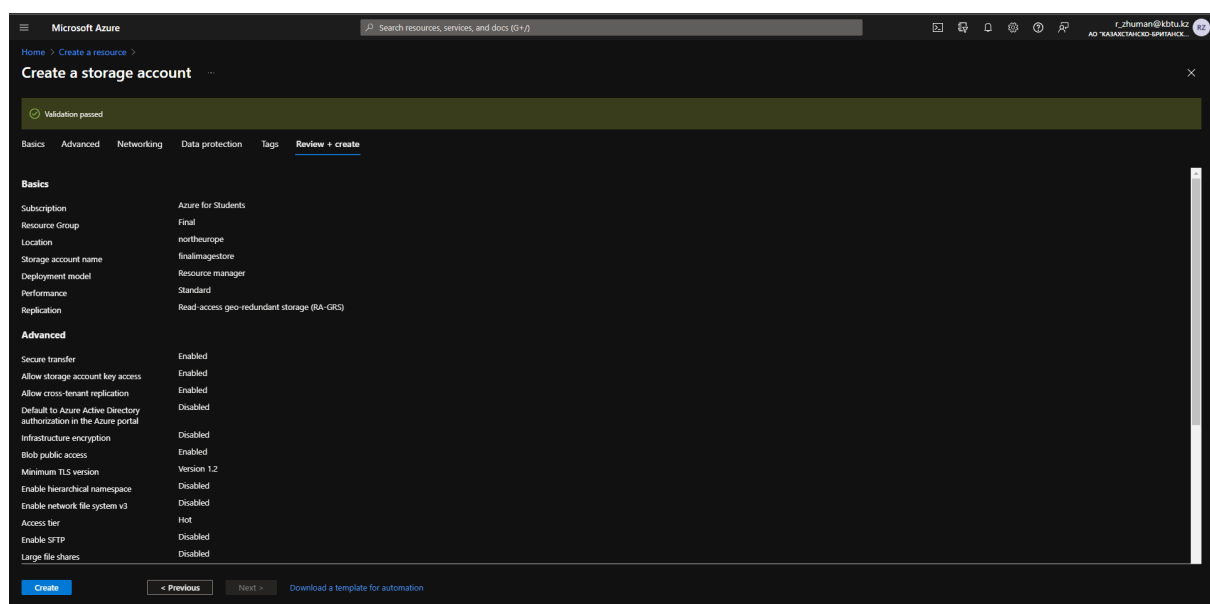
Almaty 2021

## Tasks

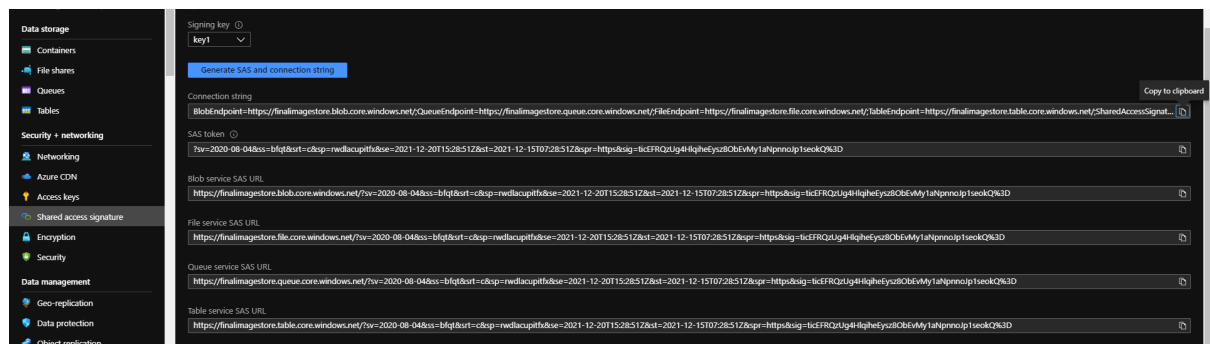
- ☒ A console application, which lets a user to save files (images) to an Azure Blob Storage
- ☒ Azure Storage Account, having a blob container, where files (images) saved from the console application will be stored.
- ☒ Function that will track the container in the storage account and save smaller versions of newly appeared files (images) to another container.
- ☒ Azure Cosmos DB, containing information about newly uploaded images (it has to be a Database named ImagesDB with a container ImagesInfo, each item has to be a JSON document, containing information about the image id, name and path)
- ☒ Logic App that tracks a container with thumbnail images and sends an email notification when a new image appears. Additionally, this app has to add documents in the ImagesDB with information about each added image.

## Report

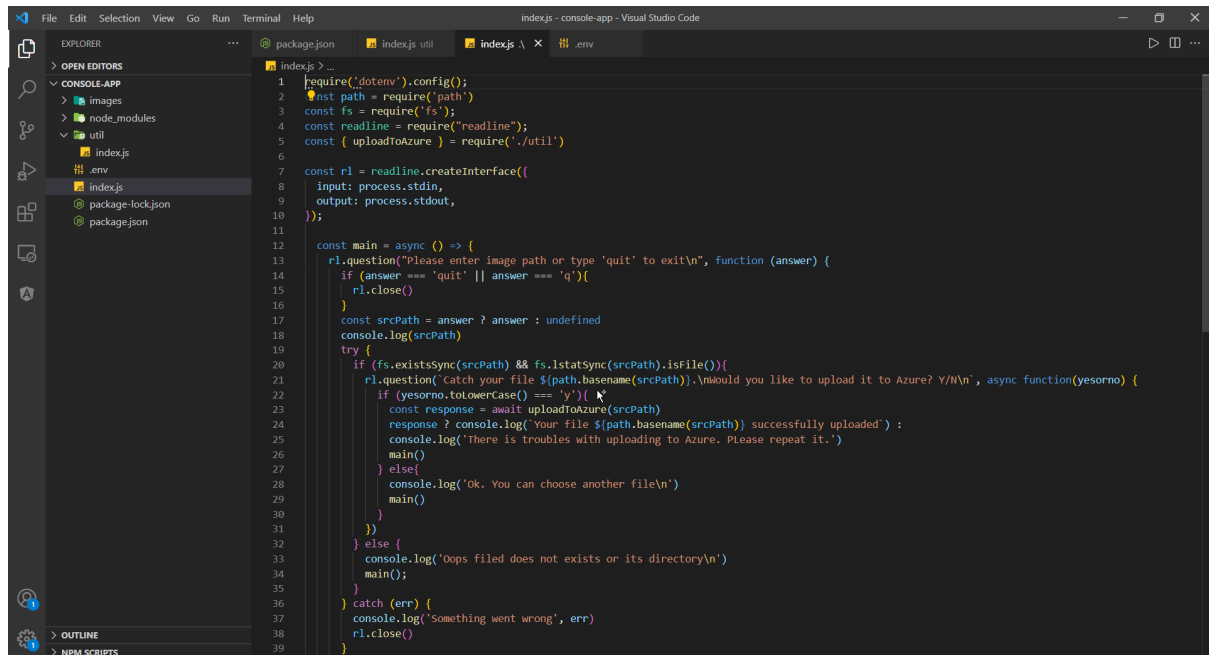
### Create Storage Account



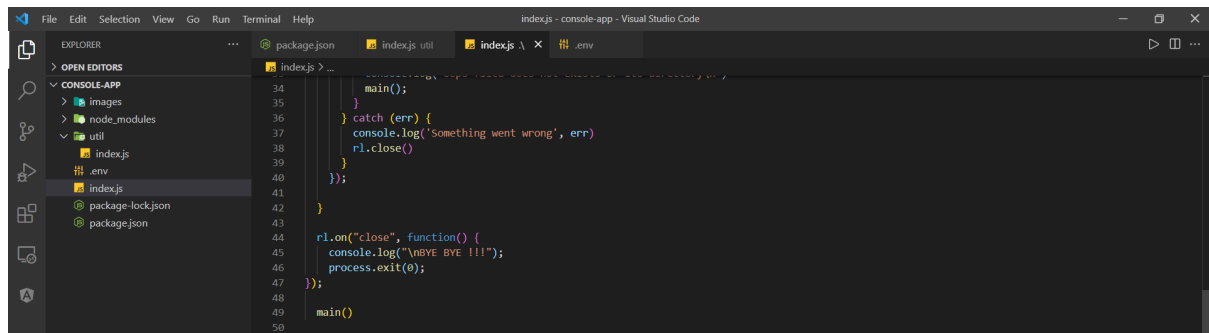
### Get credentials to connect



Create console app (there is difficult to create console app in Node JS, unless Python or C#, please be kinder)

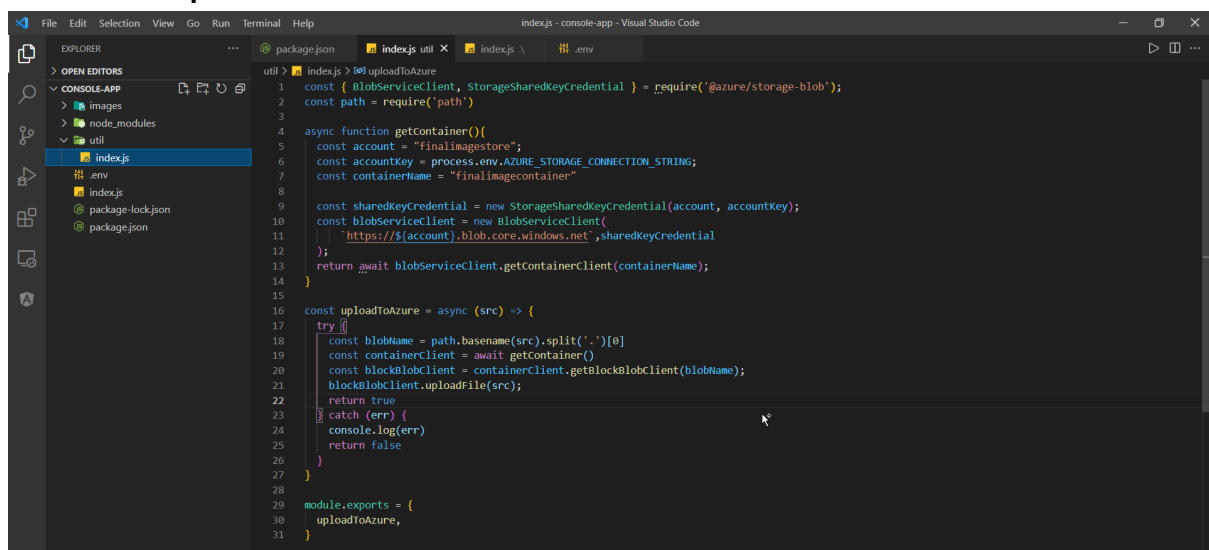


```
1 require('dotenv').config();
2 const path = require('path');
3 const fs = require('fs');
4 const readline = require('readline');
5 const { uploadToAzure } = require('./util')
6
7 const rl = readline.createInterface({
8   input: process.stdin,
9   output: process.stdout,
10 });
11
12 const main = async () => {
13   rl.question("Please enter image path or type 'quit' to exit\n", function (answer) {
14     if (answer === 'quit' || answer === 'q'){
15       rl.close()
16     }
17     const srcPath = answer ? answer : undefined
18     console.log(srcPath)
19     try {
20       if (fs.existsSync(srcPath) && fs.lstatSync(srcPath).isFile()){
21         rl.question("Catch your file ${path.basename(srcPath)}. Would you like to upload it to Azure? Y/N\n", async function(yesorno) {
22           if (yesorno.toLowerCase() === 'y'){
23             const response = await uploadToAzure(srcPath)
24             response ? console.log("Your file ${path.basename(srcPath)} successfully uploaded") :
25               console.log("There is troubles with uploading to Azure. Please repeat it.")
26             main()
27           } else{
28             console.log("Ok. You can choose another file\n")
29             main()
30           }
31         })
32       } else {
33         console.log("Oops file does not exists or its directory\n")
34         main();
35       }
36     } catch (err) {
37       console.log("Something went wrong", err)
38       rl.close()
39     }
40   })
41 }
```



```
34   main();
35 }
36 } catch (err) {
37   console.log("Something went wrong", err)
38   rl.close()
39 }
40 });
41
42 }
43
44 rl.on("close", function() {
45   console.log("\nBYE BYE !!!");
46   process.exit(0);
47 });
48
49 main()
50 }
```

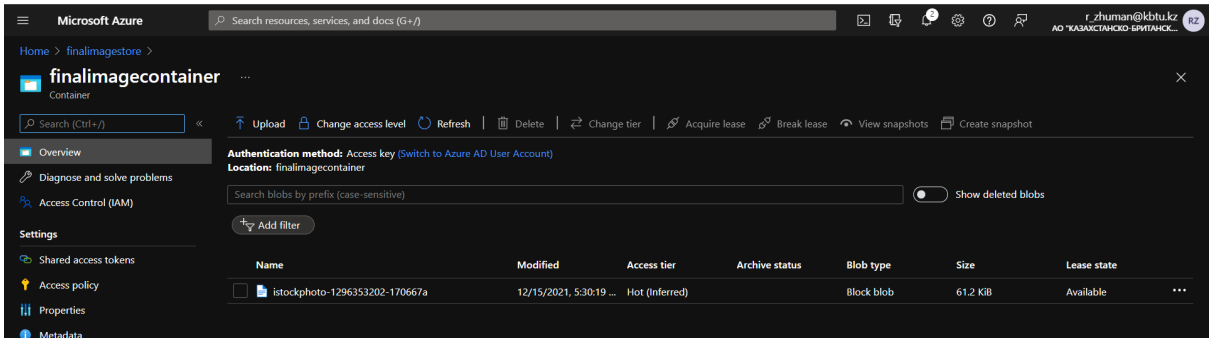
## Function to upload Azure



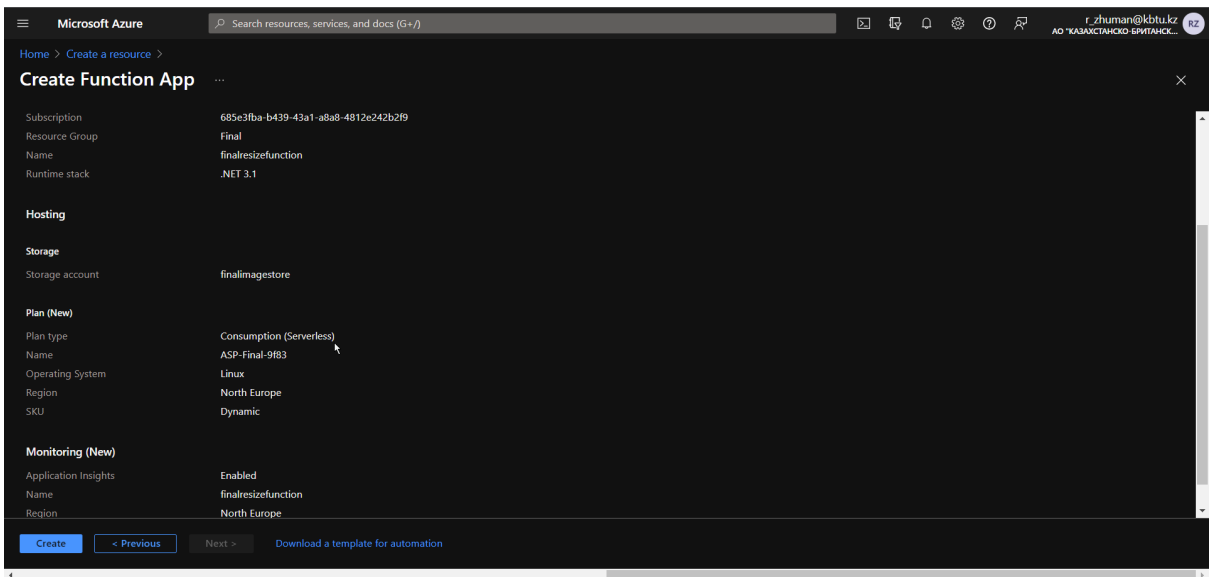
```
1 const { BlobServiceClient, StorageSharedKeyCredential } = require('@azure/storage-blob');
2 const path = require('path')
3
4 async function getContainer(){
5   const account = "finalimagestore";
6   const accountKey = process.env.AZURE_STORAGE_CONNECTION_STRING;
7   const containerName = "finalimagecontainer"
8
9   const sharedKeyCredential = new StorageSharedKeyCredential(account, accountKey);
10   const blobServiceClient = new BlobServiceClient(
11     `https://${account}.blob.core.windows.net`, sharedKeyCredential
12   );
13   return await blobServiceClient.getContainerClient(containerName);
14 }
15
16 const uploadToAzure = async (src) => {
17   try {
18     const blobName = path.basename(src).split('.')[0]
19     const containerClient = await getContainer()
20     const blockBlobClient = containerClient.getBlockBlobClient(blobName);
21     blockBlobClient.uploadFile(src);
22     return true
23   } catch (err) {
24     console.log(err)
25     return false
26   }
27 }
28
29 module.exports = {
30   uploadToAzure,
31 }
```

## Result

```
F:\Source\Azure\console-app>node index.js
Please enter image path or type 'quit' to exit
F:\Source\Azure\console-app>images\istockphoto-1296353202-170667a.jpg
F:\Source\Azure\console-app>images\istockphoto-1296353202-170667a.jpg
Catch your file istockphoto-1296353202-170667a.jpg.
Would you like to upload it to Azure? Y/N
y
Your file istockphoto-1296353202-170667a.jpg successfully uploaded
Please enter image path or type 'quit' to exit
quit
BYE BYE !!!
F:\Source\Azure\console-app>
```



## Create Function App



## Update keys in HW1 with new credentials from storage account

```
local.settings.json
imageResizeTrigger > local.settings.json > ...
1 {
2   "IsEncrypted": false,
3   "Values": {
4     "AzureWebJobsStorage": "DefaultEndpointsProtocol=https;AccountName=finalimagestore;AccountKey=BSnyJFFRg2ou8tMEZFVgCHXD12jGoD10ohSxexYUlyjzexk2ZctNRTTEUKSI5ohVx7PmkCY9/mXG6xdVSh",
5     "FUNCTIONS_WORKER_RUNTIME": "dotnet",
6     "BlobConnectionString": "DefaultEndpointsProtocol=https;AccountName=finalimagestore;AccountKey=BSnyJFFRg2ou8tMEZFVgCHXD12jGoD10ohSxexYUlyjzexk2ZctNRTTEUKSI5ohVx7PmkCY9/mXG6xdVSh"
7   }
8 }
```

## Publish function app

```
F:\Source\Azure\HW\HW1\imageResizeTrigger>func azure functionapp publish finalresizefunction
Microsoft (R) Build Engine версии 16.7.2+b60ddb6f4 для .NET
(C) Корпорация Майкрософт (Microsoft Corporation). Все права защищены.

Определение проектов для восстановления...
Все проекты обновлены для восстановления.
imageResizeTrigger -> F:\Source\Azure\HW\HW1\imageResizeTrigger\bin\publish\imageResizeTrigger.dll

Сборка успешно завершена.
Предупреждений: 0
Ошибок: 0

Прошло времени 00:00:04.95

Getting site publishing info...
Uploading package...
Uploading 5.01 MB [#####]
Upload completed successfully.
Deployment completed successfully.
Syncing triggers...
Functions in finalresizefunction:
  imageResizeTrigger - [blobTrigger]

F:\Source\Azure\HW\HW1\imageResizeTrigger>
```

## Upload new image

```
F:\Source\Azure\console-app>node index.js
Please enter image path or type 'quit' to exit
F:\Source\Azure\console-app\images\istockphoto-992637094-170667a.jpg
F:\Source\Azure\console-app\images\istockphoto-992637094-170667a.jpg
Catch your file istockphoto-992637094-170667a.jpg.
Would you like to upload it to Azure? Y/N
y
Your file istockphoto-992637094-170667a.jpg successfully uploaded
Please enter image path or type 'quit' to exit
quit

BYE BYE !!!

F:\Source\Azure\console-app>
```

## Origin

Microsoft Azure

Search resources, services, and docs (G+/I)

Home > finalimagestore > finalimagecontainer

Container

Search (Ctrl+F) < Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Metadata

Authentication method: Access key (Switch to Azure AD User Account)

Location: finalimagecontainer

Search blobs by prefix (case-sensitive) Show deleted blobs

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
istockphoto-1296353202-170667a	12/15/2021, 5:30:19 ...	Hot (Inferred)		Block blob	61.2 KiB	Available
istockphoto-992637094-170667a	12/15/2021, 5:33:12 ...	Hot (Inferred)		Block blob	58.83 KiB	Available

## Resized

Microsoft Azure

Search resources, services, and docs (G+/I)

Home > finalimagestore > resized

Container

Search (Ctrl+F) < Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Metadata

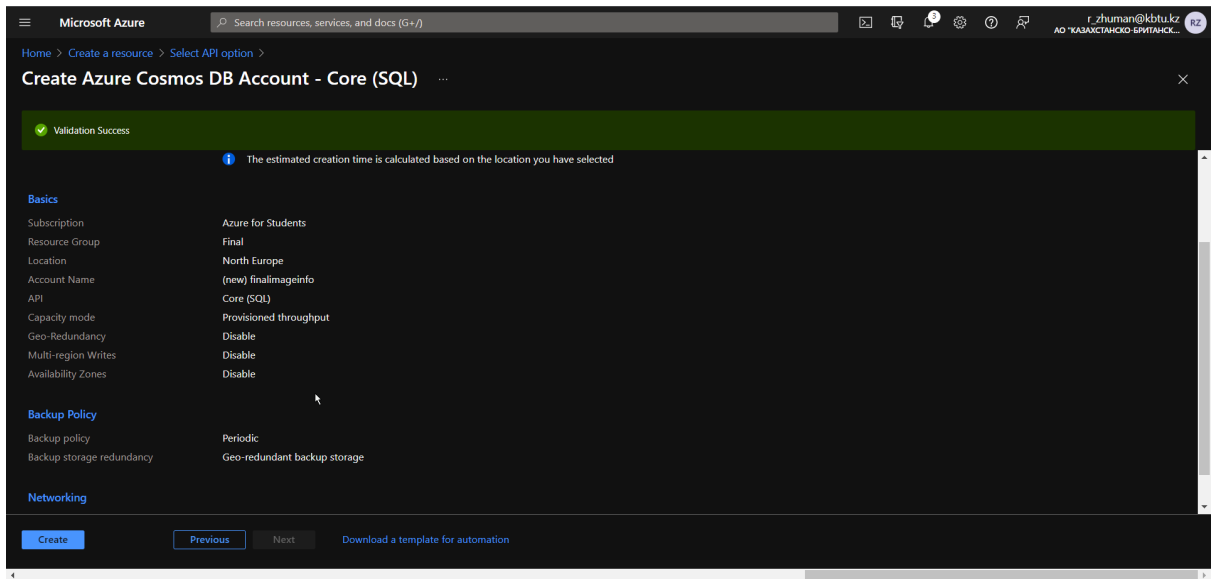
Authentication method: Access key (Switch to Azure AD User Account)

Location: resized

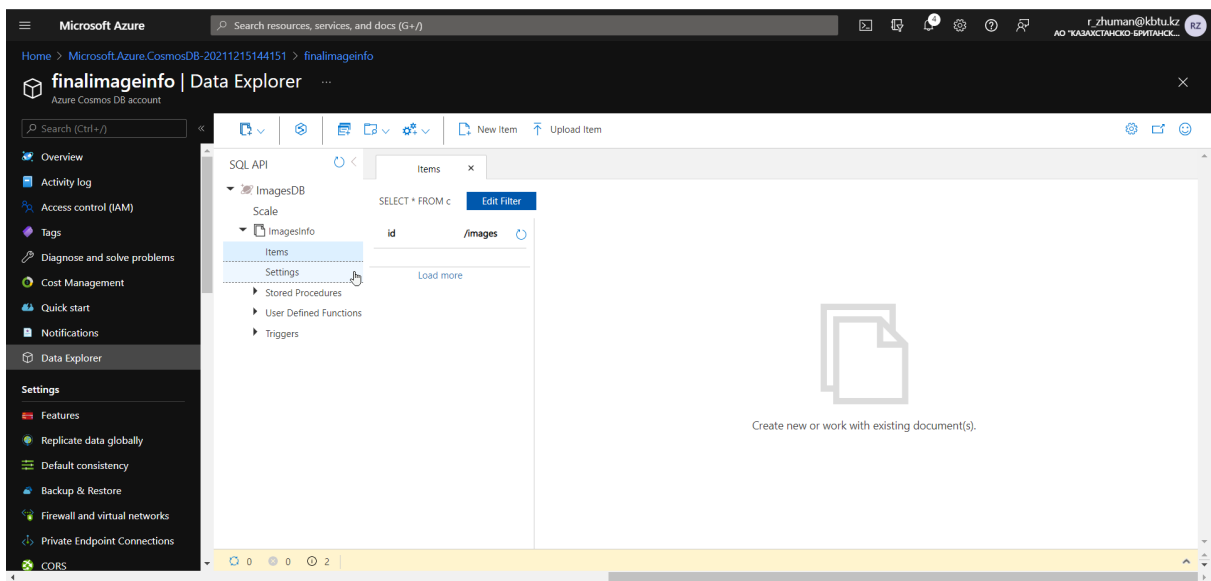
Search blobs by prefix (case-sensitive) Show deleted blobs

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
istockphoto-1296353202-170667a	12/15/2021, 5:30:23 ...	Hot (Inferred)		Block blob	20.66 KiB	Available
istockphoto-992637094-170667a	12/15/2021, 5:33:13 ...	Hot (Inferred)		Block blob	20.02 KiB	Available

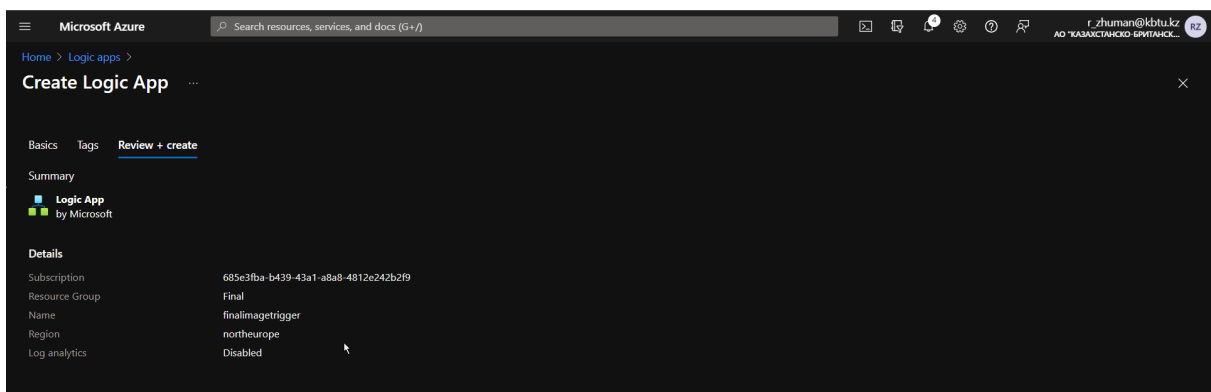
## Create Azure Cosmos DB Account



## Create Database and Container

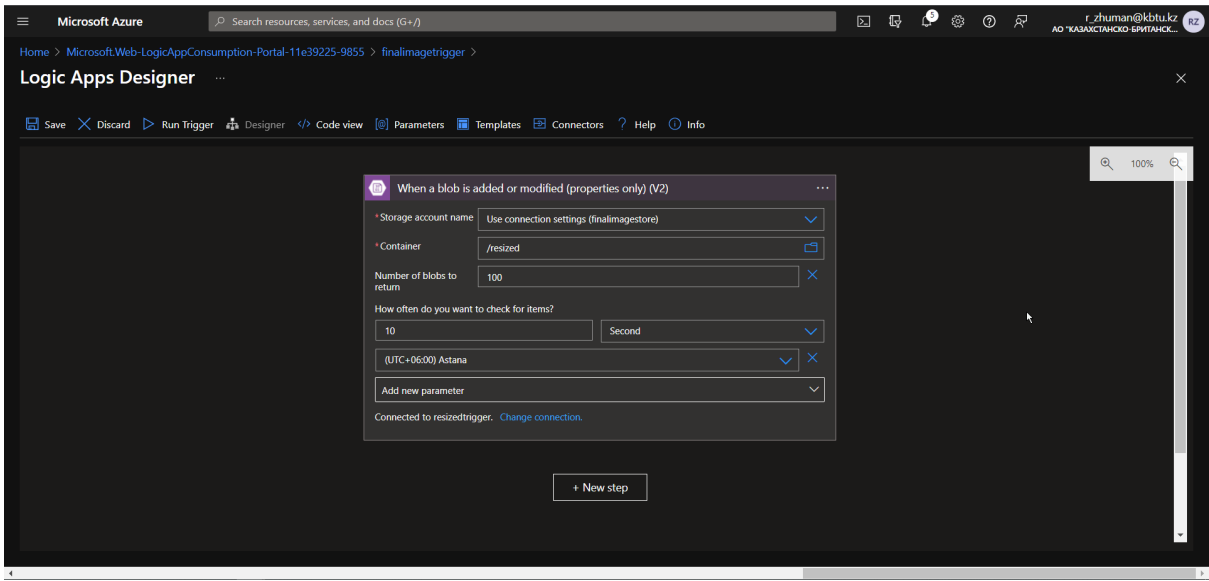
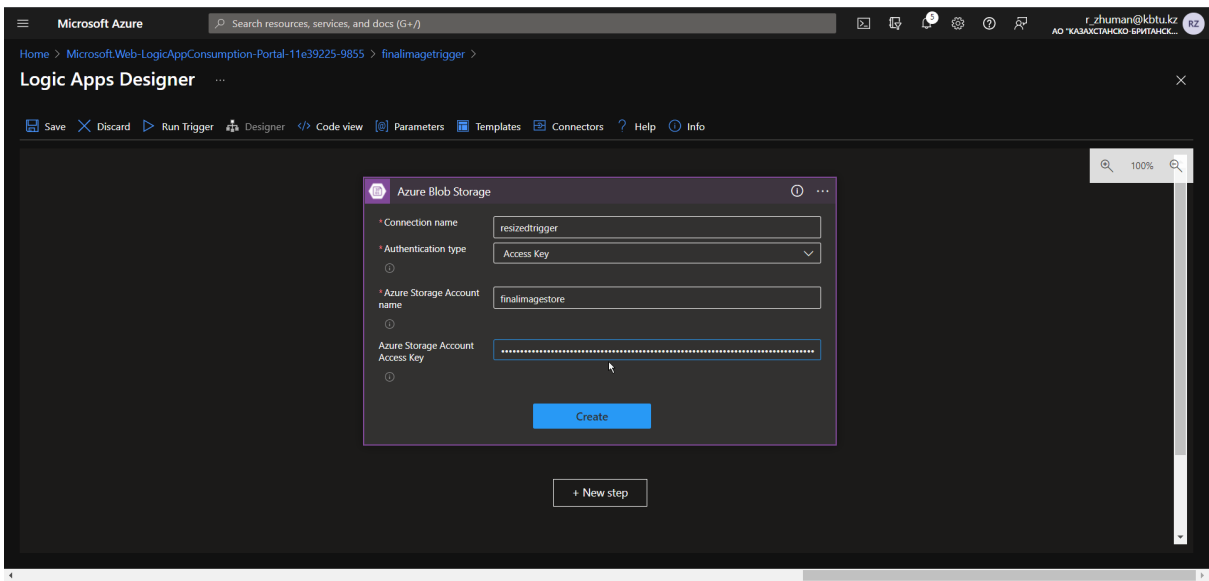


## Create Logic App

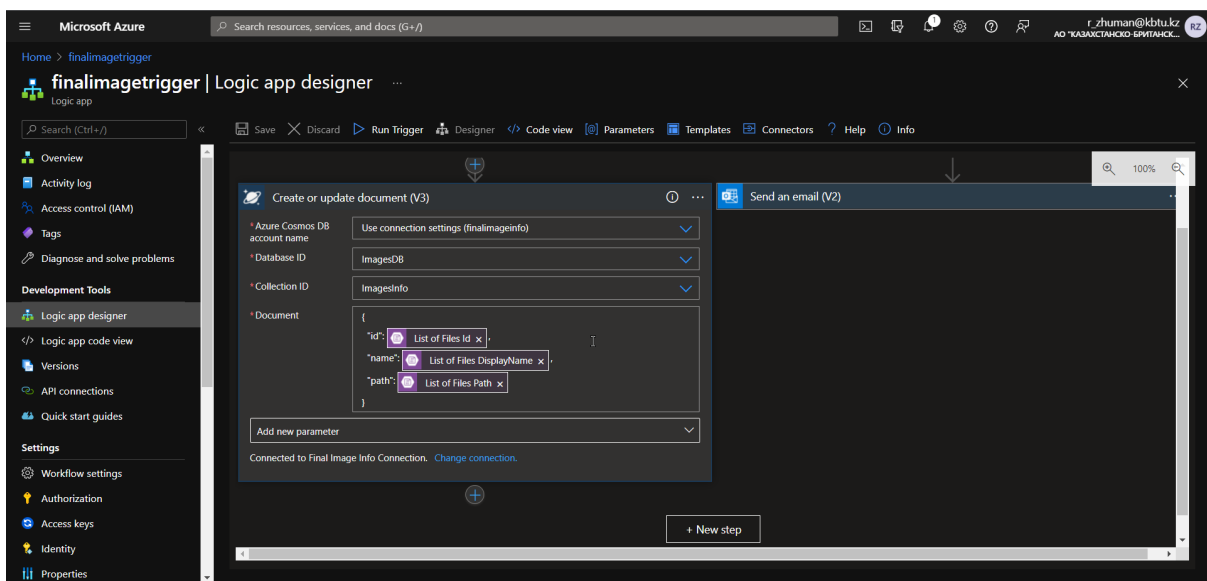
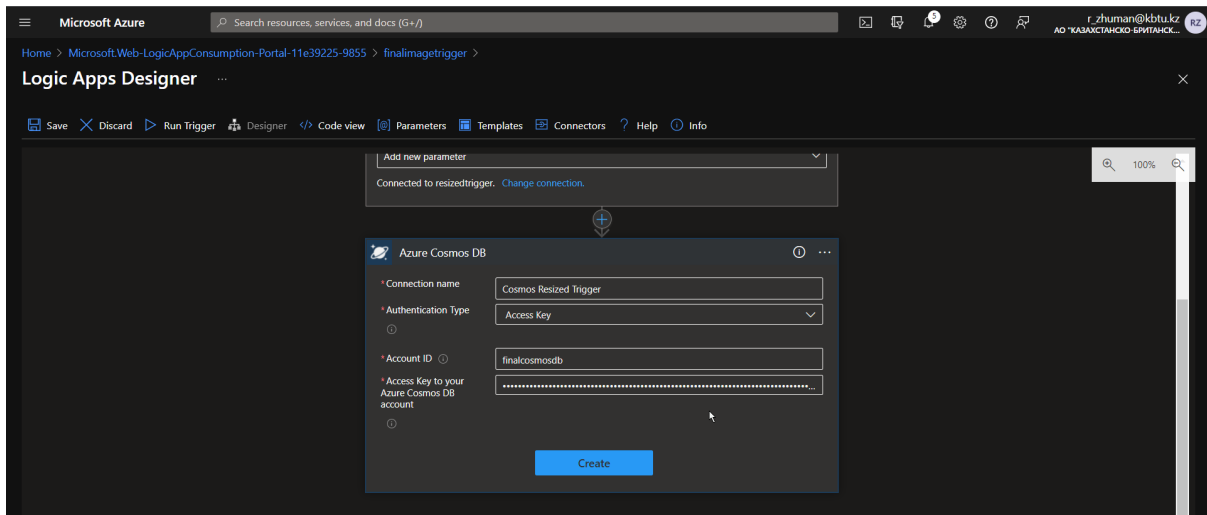


# Design Logic App

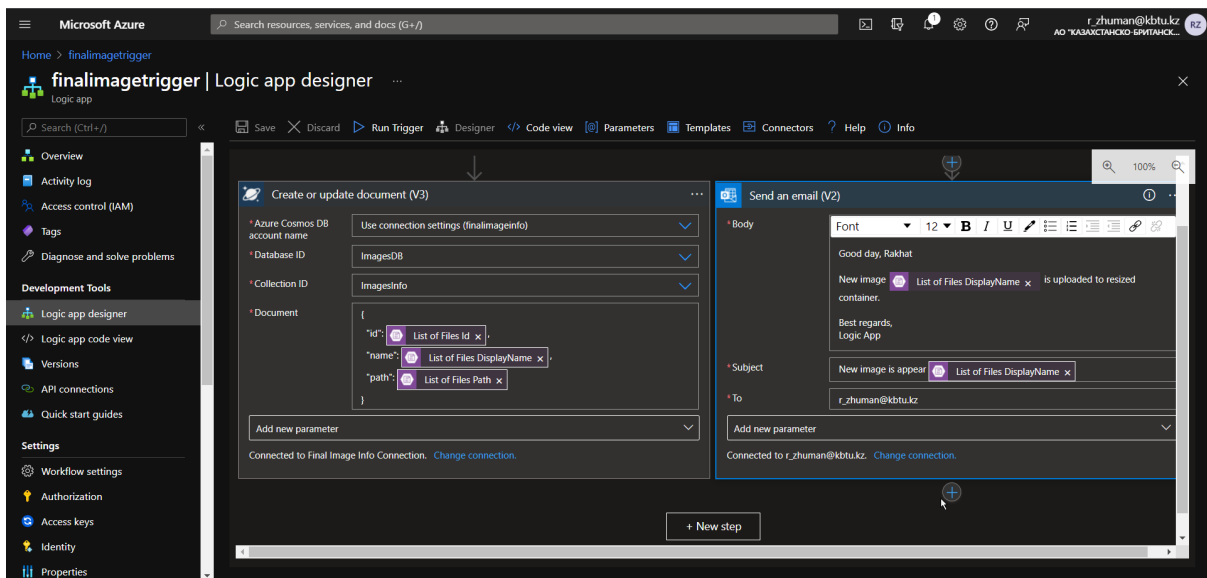
## Configure container settings



## Create and configure Cosmos DB settings



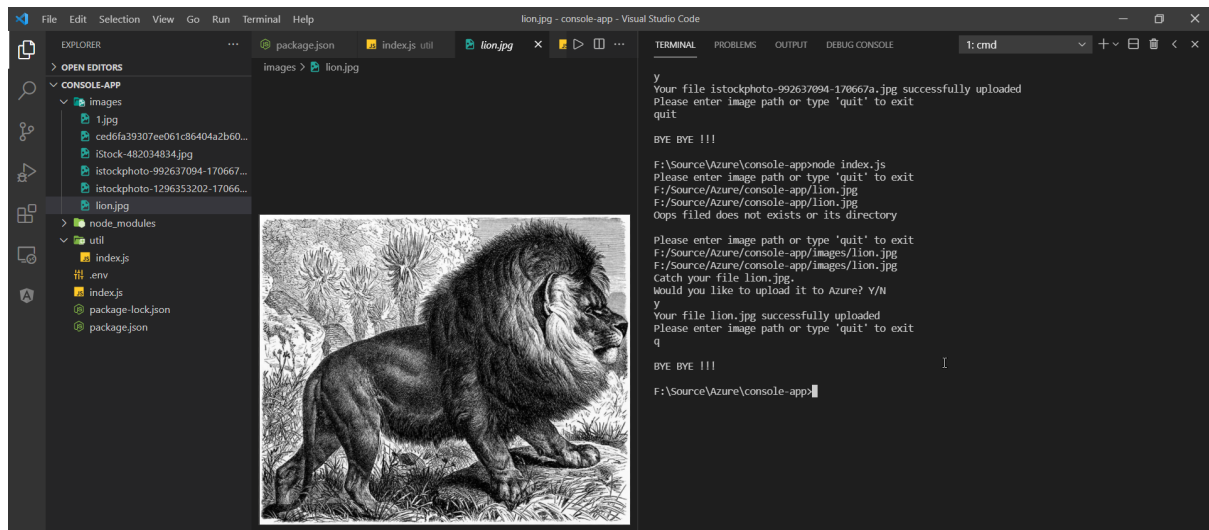
## Create and config Outlook settings



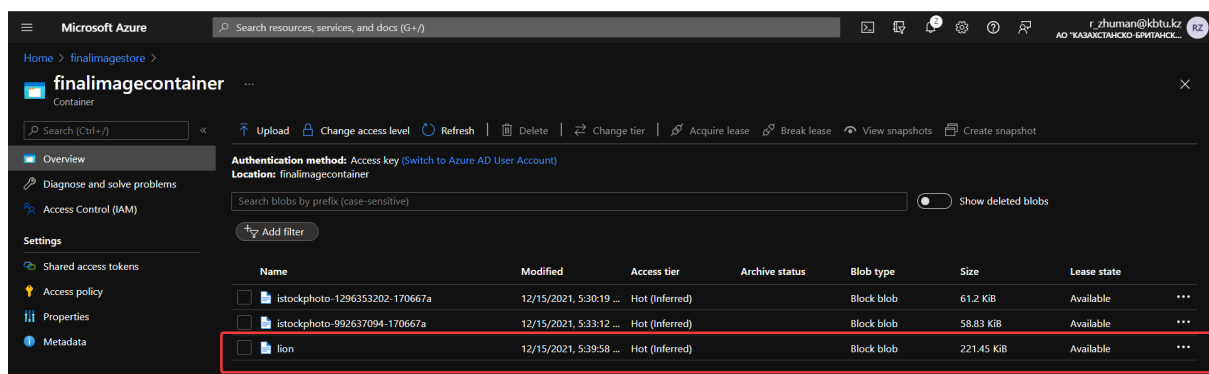


## Tests

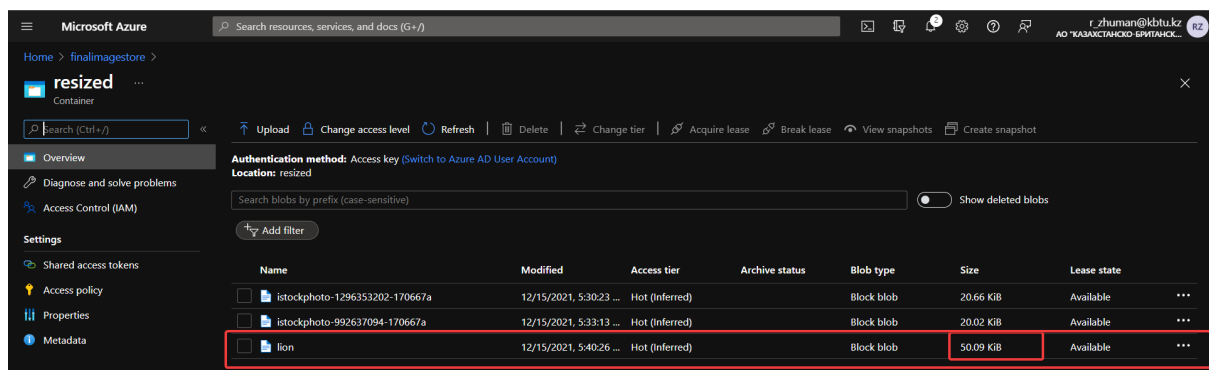
### Upload image via console app



### Check in blob container



### Check is function resized image



### Check is trigger success

The screenshot shows the 'Runs history' page for a Logic App named 'finalimageinfo'. The 'Run Details' tab is selected, showing a successful run on 12/15/2021 at 5:40 PM with a duration of 510 milliseconds. The run details include a flow diagram with the following steps:

- When a blob is added or modified (properties only) (V2)
- Create or update document (V3)
- Send an email (V2)

The flow diagram shows the 'When a blob is added or modified' trigger connected to 'Create or update document', which is then connected to 'Send an email'. All steps are marked with a green checkmark, indicating successful execution.

## Check record in Cosmos DB

The screenshot shows the 'Data Explorer' page for the 'finalimageinfo' Azure Cosmos DB account. The 'Items' tab is selected, showing a list of items in the 'ImagesDB' database. The 'Items' list shows a single item with the following details:

- id: /images
- name: lion
- path: /resized/lion
- rid: qxEVAp0mUcKAAADAAAAA--
- self: docs/qxEVAp0mUcKAAADAAAAA--
- etag: "\4400d870-0000-0c00-0000-61b9d4330000"
- attachments: attachments/
- ts: 1639568435

The 'name' field is highlighted with a red box, showing the value 'lion'.

## Check Outlook

The screenshot shows the Outlook interface. The 'Inbox' is selected, showing a list of emails. The email from 'Rakhat E. Zhuman' is highlighted, with the subject 'New image is appear lion'. The email content is displayed on the right, showing the following text:

New image is appear lion

This message was sent with Low importance

Rakhat E. Zhuman  
Fri, 12/15/2021 5:40 PM  
To: Rakhat E. Zhuman

Good day, Rakhat

New image lion is uploaded to resized container.

Best regards,  
Logic App

The 'name' field in the email content is highlighted with a red box, showing the value 'lion'.

## Tests ended successfully!

## Clean up subscription

The screenshot shows a terminal window with the following commands and output:

```

Bash
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

rakhat@Azure:~$ az group delete --name Final --no-wait --yes
rakhat@Azure:~$
  
```

