



Cloud Development, 2021 fall. Homework 5

Report

Web API

made by Zhuman Rakhat

Almaty 2021

Task

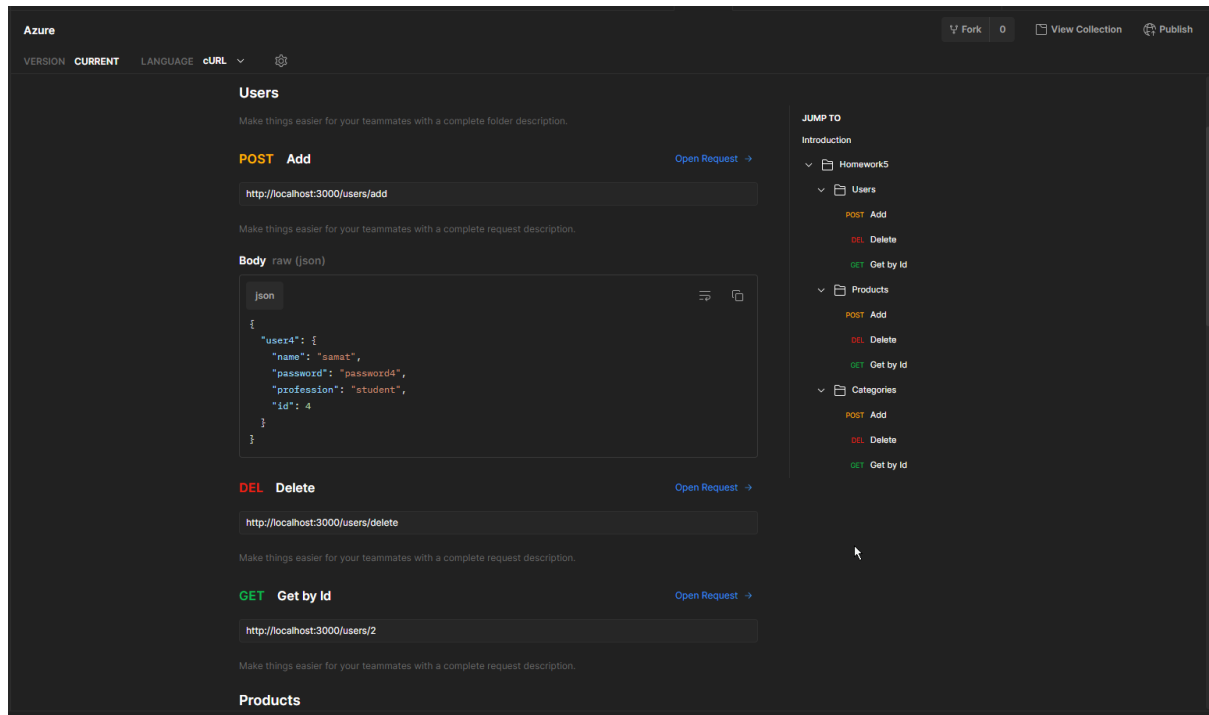
- ☒ You have to develop a simple Web API and publish it as a Web Apps Azure service.
- ☒ Then, using APIM, create a Product, including methods of your published API.

Additionally

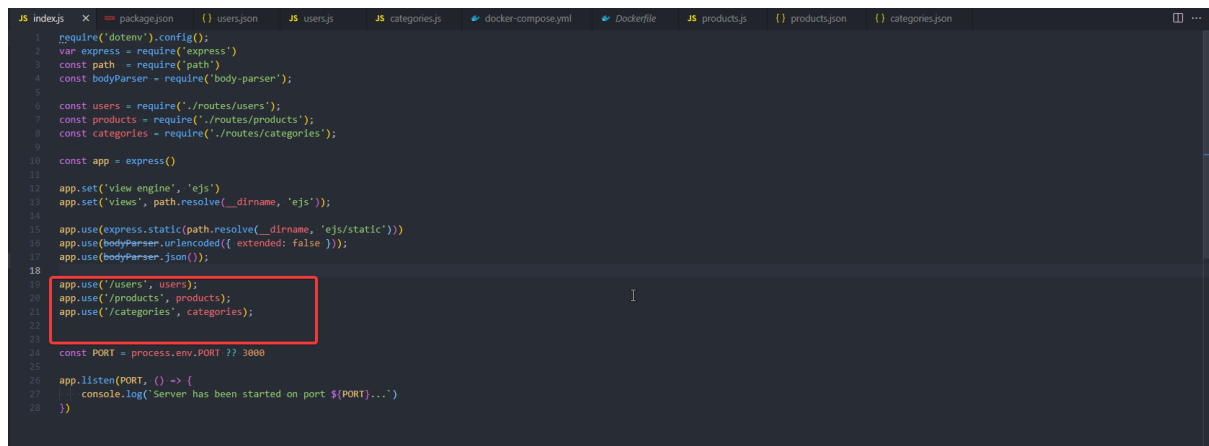
- ☒ Added subscriptions to divide products

Report

Develop Web API



Below in the code only users is described, as the rest (products, categories) are identically implemented



mock file

```
JS index.js  package.json  {} users.json  X JS users.js  JS categories.js  docker-compose.yml  Dockerfile  JS products.js  {} products.json  {} categories.json  ...
1 {
2   "user1": {
3     "name": "Rokhet",
4     "password": "password1",
5     "profession": "student",
6     "id": 1
7   },
8   "user2": {
9     "name": "andrey",
10    "password": "password2",
11    "profession": "profession",
12    "id": 2
13  },
14  "user3": {
15    "name": "bekzat",
16    "password": "password3",
17    "profession": "assistant",
18    "id": 3
19  }
20 }
```

routing

```
1 var express = require('express');
2 var router = express.Router();
3 var fs = require('fs');
4 const path = process.cwd() + '/restapi/'
5
6 router.get('/list',
7   async function(req, res) {
8     fs.readFile(path + "users.json", 'utf8', function (err, data) {
9       console.log( data );
10      res.json( data );
11    });
12  });
13
14 router.get('/:id',
15   async function(req, res) {
16     fs.readFile(path + "users.json", 'utf8', function (err, data) {
17       users = JSON.parse( data );
18       console.log(req.params.id);
19       var user = users["user" + req.params.id]
20       console.log( user );
21       res.json( user );
22     });
23   });
24
25 router.post('/add',
26   async function(req, res) {
27     const body = req.body
28     res.json(body)
29   });
30
31 router.delete('/delete/:id',
32   async function(req, res) {
33     fs.readFile(path + "users.json", 'utf8', function (err, data) {
34       data = JSON.parse( data );
35       delete data["user" + req.params.id];
36       console.log( data );
37       res.json( data );
38     });
39   });
40
41 module.exports = router;
```

Dockerfile

```
1 FROM node:14-alpine
2
3 WORKDIR /usr/src/app
4
5 COPY . /usr/src/app
6
7 RUN npm install
8
9 EXPOSE 3000
10
11 CMD [ "npm", "start" ]
```

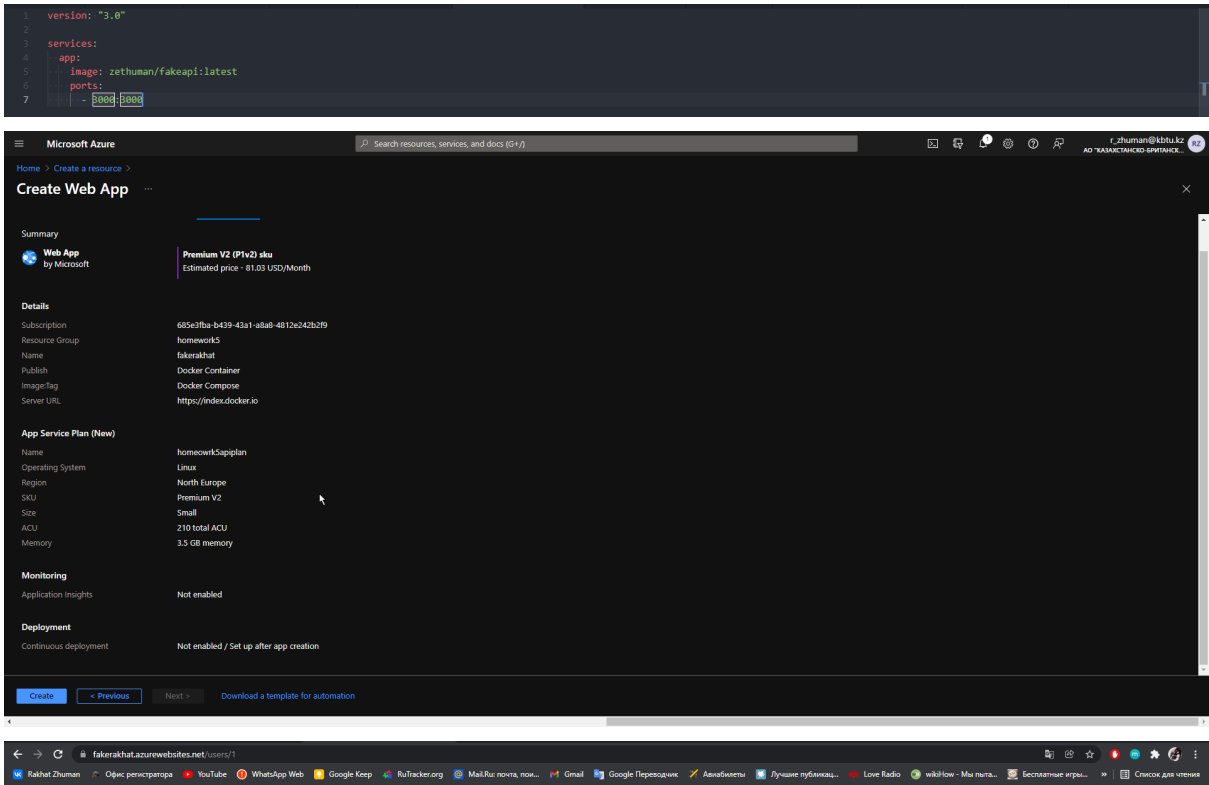
Build

```
D:\Source\NodeJS\AzureVM6>docker build -t zethuman/fakeapi:latest .
[+] Building 7.8s (18/18) FINISHED
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 31B 0.0s
=> [internal] load .dockerignore 0.0s
=> transferring context: 70B 0.0s
=> [internal] load metadata for docker.io/library/node:14-alpine 2.7s
=> [auth] library/node:pull token for registry-1.docker.io 0.0s
=> [internal] load build context 0.1s
=> transferring context: 4.34kB 0.0s
=> [1/4] FROM docker.io/library/node:14-alpine@sha256:8cb2598886478afc2212b652c5f8f093ca078dd03ff4fa0710b326321bb26e20 0.0s
=> CACHED [2/4] WORKDIR /usr/src/app 0.0s
=> [3/4] COPY . /usr/src/app 0.0s
=> [4/4] RUN npm install 3.9s
=> exporting to image 0.2s
=> exporting layers 0.2s
=> writing image sha256:be75a6458a4f3349535990b7ce7e6110d10a4e74c2253e28581d7d9aa01d7044 0.0s
=> naming to docker.io/zethuman/fakeapi:latest 0.0s

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

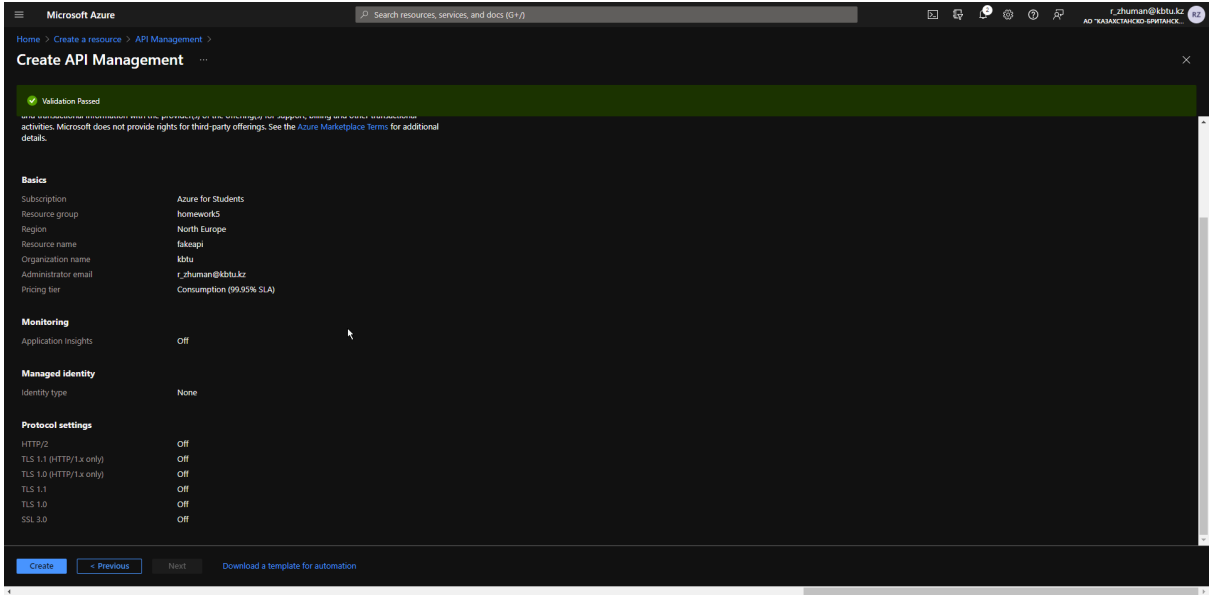
D:\Source\NodeJS\AzureVM6>docker push zethuman/fakeapi:latest
The push refers to repository [docker.io/zethuman/fakeapi]
63ba0f3d0881: Pushed
e3e99919f1d1: Pushed
f4436807d5f5: Layer already exists
0f9a2482a558: Layer already exists
8a5d6c9c178c: Layer already exists
124e924088af: Layer already exists
e2eb06d8af82: Layer already exists
latest: digest: sha256:24468b530d5148559b0aa8fb196db8bfc04733f8d3ad4252d8151fc0dfF8bbe2 size: 1784
```

Publish a Web Apps on Azure



Create a Product using APIM

Create API Management



Create & Test APIs

Create an HTTP API

Basic Full

* Display name

* Name

Web service URL

API URL suffix

Base URL

Create Cancel

The screenshot displays the Microsoft Azure portal interface for managing APIs. The left sidebar shows the navigation menu with 'APIs' selected. The main content area shows the 'fakeapi | APIs' page. The 'Users' API is selected, and the 'Test' tab is active. The 'id' parameter is set to 1, and the 'Request URL' is https://fakeapi.azure-api.net/users/1. The 'HTTP request' section shows a GET request to the specified URL.

Microsoft Azure

fakeapi | APIs

API Management service

Search (Ctrl+F)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Events (preview)

Settings

Properties

Locks

APIs

Products

Subscriptions

Named values

Backends

API tags

Power Platform

OAuth 2.0 + OpenID Connect

Monitoring

Application insights

Metrics

Deployment + infrastructure

External cache

REVISION 1 CREATED Nov 13, 2021, 4:41:52 PM

Design Settings Test Revisions Change log

Users > Get By ID > Console

id

Query parameters

NAME	VALUE	TYPE	DESCRIPTION
+ Add parameter			

Headers

NAME	VALUE	TYPE	DESCRIPTION
+ Add header			

Apply product scope

No products

Request URL

https://fakeapi.azure-api.net/users/1

HTTP request

```
GET https://fakeapi.azure-api.net/users/1 HTTP/1.1
Host: fakeapi.azure-api.net
Ocp-Apim-Subscription-Key: .....
Ocp-Apim-Trace: true
```

Send ☐ Bypass CORS proxy

Microsoft Azure

fakeapi | APIs

Search (Ctrl+V)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Events (preview)

Settings

Properties

Locks

APIs

Products

Subscriptions

Named values

Backends

API tags

Power Platform

OAuth 2.0 + OpenID Connect

Monitoring

Application Insights

Metrics

Deployment + Infrastructure

External cache

REVISION 1 CREATED Nov 13, 2021, 4:41:52 PM

Design Settings Test Revisions Change log

Search APIs

Filter by tags

Group by tag

+ Add API

All APIs

Categories

Products

Users

POST Add

DEL Delete

GET Get By ID

GET List

Users > Get By ID > Console

HTTP request

GET https://fakeapi.azure-api.net/users/1 HTTP/1.1

Host: fakeapi.azure-api.net

Ocp-Api-Subscription-Key:

Ocp-Api-Trace: true

HTTP response

Message Trace

Generate definition

HTTP/1.1 200 OK

cache-control: private

content-encoding: gzip

content-type: application/json; charset=utf-8

date: Sat, 13 Nov 2021 11:07:22 GMT

etag: W/"46-A07VnI2P6pudp8nIayf2/t0"

ocp-api-apiid: users

ocp-api-operationid: get-by-id

ocp-api-subscriptionid: master

ocp-api-trace-location: https://apimstynov881287w6npx.blob.core.windows.net/apimst1lryf4adsomfalgoos-inspector/W50vwhyzQ_uXcT5Uplg2-217sv=2018-03-28&sr=c&sig=0xpt7AnR6B7v93uPaQnHAguk7JACTQICL6G0uX3D8ae=2022-11-13T10N342293A0628p=racucl8tracId=96c2213ef4024f10B942e020F54p?

transfer-encoding: chunked

vary: Accept-Encoding, Origin

x-powered-by: Express

```
{
  "name": "rainat",
  "password": "password1",
  "profession": "student",
  "id": 1
}
```

Send Bypass CORS proxy

Microsoft Azure

fakeapi | APIs

Search (Ctrl+V)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Events (preview)

Settings

Properties

Locks

APIs

Products

Subscriptions

Named values

Backends

API tags

Power Platform

OAuth 2.0 + OpenID Connect

Monitoring

Application Insights

Metrics

Deployment + Infrastructure

External cache

REVISION 1 CREATED Nov 13, 2021, 4:41:52 PM

Design Settings Test Revisions Change log

Search APIs

Filter by tags

Group by tag

+ Add API

All APIs

Categories

Products

Users

POST Add

DEL Delete

GET Get By ID

GET List

Users > Delete > Console

DELETE https://fakeapi.azure-api.net/users/delete/1 HTTP/1.1

Host: fakeapi.azure-api.net

Ocp-Api-Subscription-Key:

Ocp-Api-Trace: true

HTTP response

Message Trace

Generate definition

HTTP/1.1 200 OK

cache-control: private

content-encoding: gzip

content-type: application/json; charset=utf-8

date: Sat, 13 Nov 2021 11:08:21 GMT

etag: W/"43-k4en-vhG5UkVvX8K5vL0y0t"

ocp-api-apiid: users

ocp-api-operationid: delete

ocp-api-subscriptionid: master

ocp-api-trace-location: https://apimstynov881287w6npx.blob.core.windows.net/apimst1lryf4adsomfalgoos-inspector/W50vwhyzQ_uXcT5Uplg2-227sv=2018-03-28&sr=c&sig=0xpt7AnR6B7v93uPaQnHAguk7JACTQICL6G0uX3D8ae=2022-11-13T10N342293A0628p=racucl8tracId=3e9bedac8214c50d4d18a6018444691

transfer-encoding: chunked

vary: Accept-Encoding, Origin

x-powered-by: Express

```
{
  "user2": {
    "name": "andrey",
    "password": "password2",
    "profession": "professor",
    "id": 2
  },
  "user3": {
    "name": "bekzat",
    "password": "password3",
    "profession": "professor",
    "id": 3
  }
}
```

Send Bypass CORS proxy

Microsoft Azure

fakeapi | APIs

Search (Ctrl+V)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Events (preview)

Settings

Properties

Locks

APIs

Products

Subscriptions

Named values

Backends

API tags

Power Platform

OAuth 2.0 + OpenID Connect

Monitoring

Application Insights

Metrics

Deployment + Infrastructure

External cache

REVISION 1 CREATED Nov 13, 2021, 4:41:52 PM

Design Settings Test Revisions Change log

Search APIs

Filter by tags

Group by tag

+ Add API

All APIs

Categories

Products

Users

POST Add

DEL Delete

GET Get By ID

GET List

Users > Add > Console

POST https://fakeapi.azure-api.net/users/add HTTP/1.1

Host: fakeapi.azure-api.net

Ocp-Api-Subscription-Key:

Ocp-Api-Trace: true

HTTP response

Message Trace

Generate definition

HTTP/1.1 200 OK

cache-control: private

content-encoding: gzip

content-type: application/json; charset=utf-8

date: Sat, 13 Nov 2021 11:09:16 GMT

etag: W/"2-vyGpHvF0dHvP0llecKcyIZ0"

ocp-api-apiid: users

ocp-api-operationid: add

ocp-api-subscriptionid: master

ocp-api-trace-location: https://apimstynov881287w6npx.blob.core.windows.net/apimst1lryf4adsomfalgoos-inspector/W50vwhyzQ_uXcT5Uplg2-237sv=2018-03-28&sr=c&sig=0xpt7AnR6B7v93uPaQnHAguk7JACTQICL6G0uX3D8ae=2022-11-13T10N342293A0628p=racucl8tracId=06ccf20b7944eF8c09980b6807421

transfer-encoding: chunked

vary: Accept-Encoding, Origin

x-powered-by: Express

```
{
  "user4": {
    "name": "samat",
    "password": "password4",
    "profession": "student",
    "id": 4
  }
}
```

Send Bypass CORS proxy

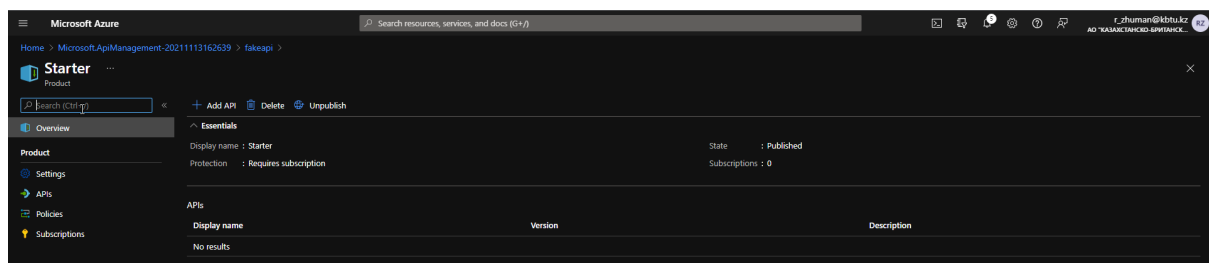
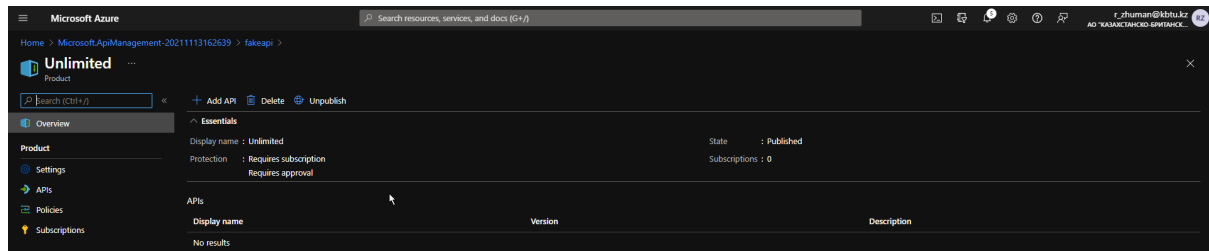
Create products

1. Starter

Subscribers will be call only **users** and 5 calls/min

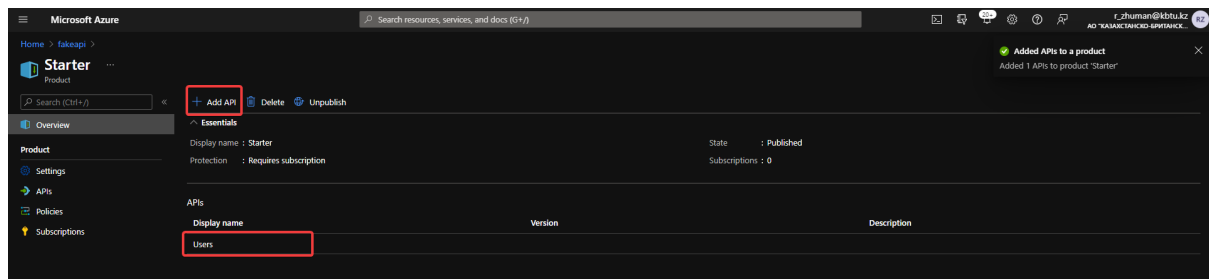
2. Unlimited

Subscribers will be call **all** methods unlimited calls per minute

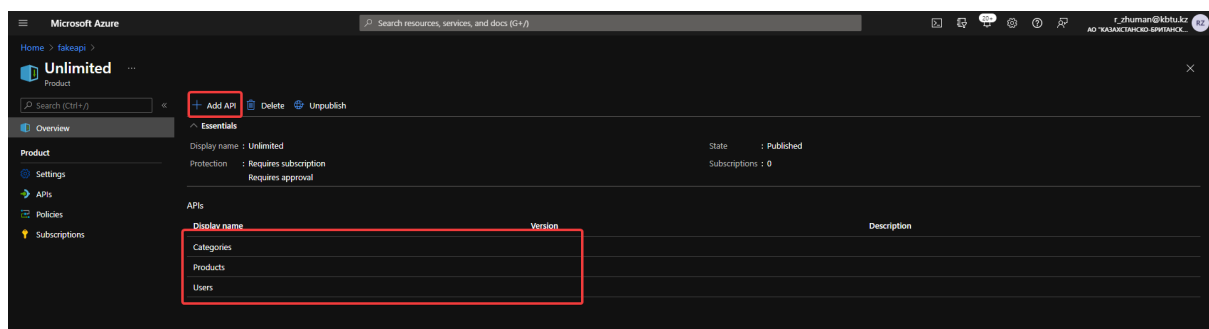


Add APIs to Products

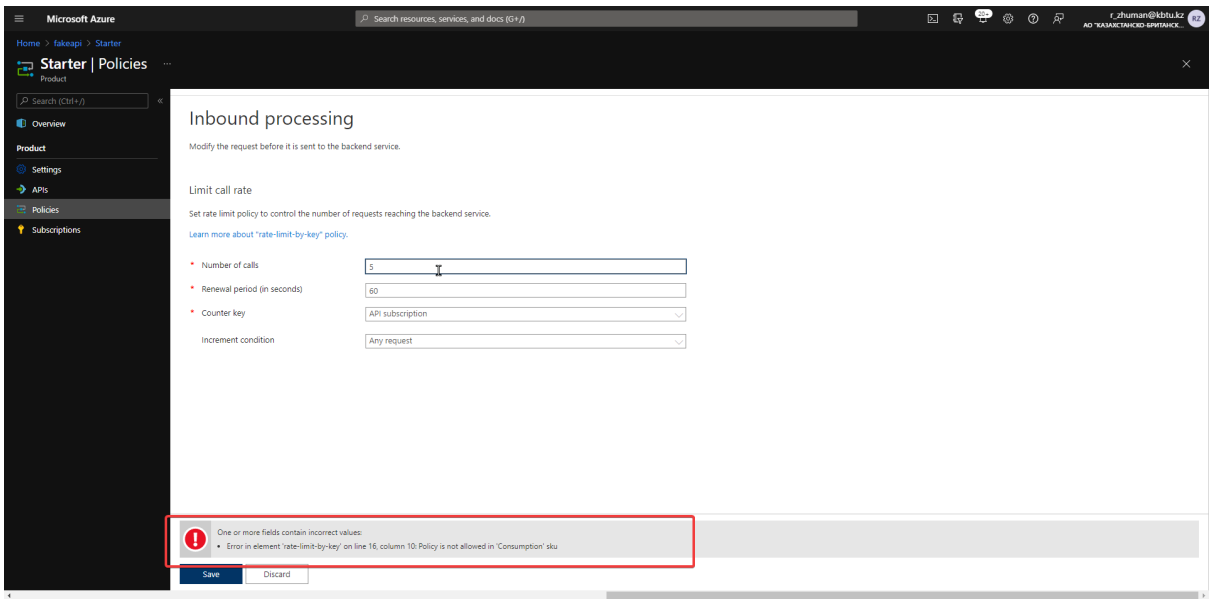
Starter



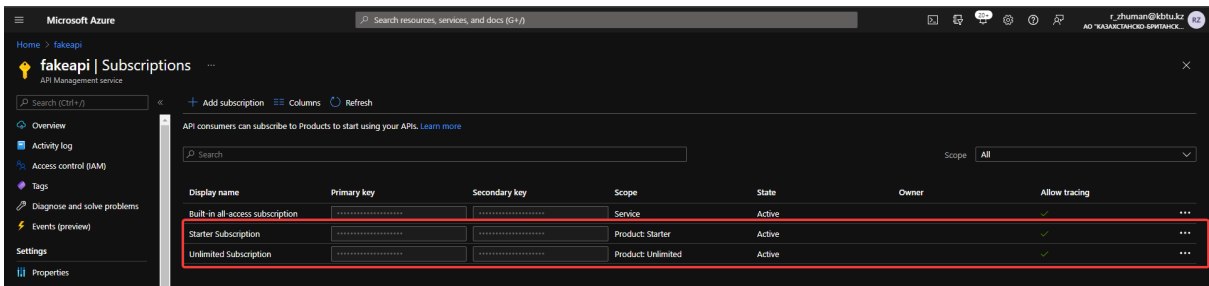
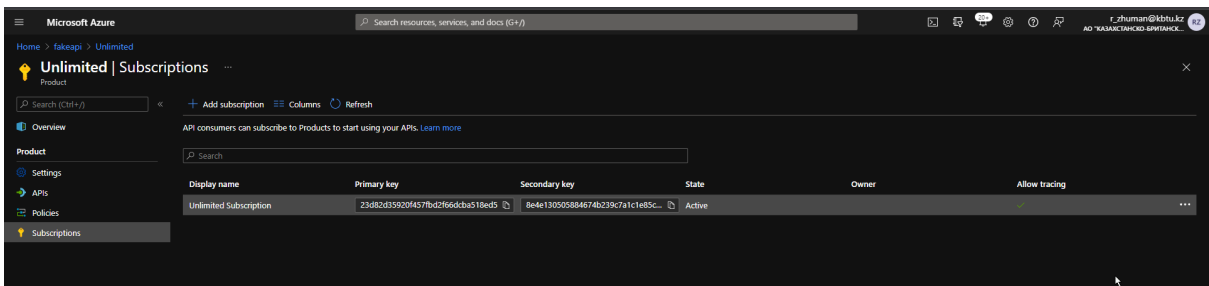
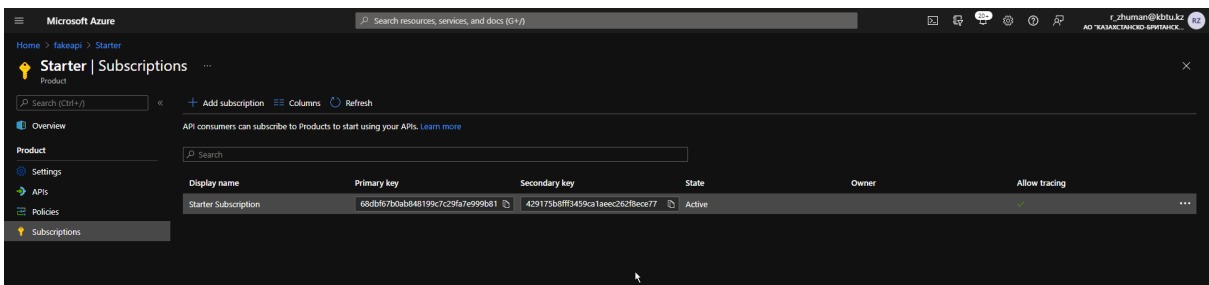
Unlimited



Unfortunately, in my Consumption sku it is **impossible** to limit the subscriber for **5 calls/min**



Add Subscriptions



Tests

POST <https://fakeapi.azure-apl.net/users/add> Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

Headers 8 hidden **Starter Subscription**

KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/> Ocp-Apim-Subscription-Key	68dbf67b0ab848199c7c29fa7e999b81	
Key	Value	Description

Body Cookies Headers (8) Test Results Status: 200 OK Time: 1109 ms Size: 346 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "users4": {
3     "name": "samat",
4     "password": "password4",
5     "profession": "student",
6     "id": 4
7   }
8 }
```

POST <https://fakeapi.azure-apl.net/products/add> Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

Headers 8 hidden **Starter Subscription**

KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/> Ocp-Apim-Subscription-Key	68dbf67b0ab848199c7c29fa7e999b81	
Key	Value	Description

Body Cookies Headers (8) Test Results Status: 401 Access Denied Time: 161 ms Size: 422 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "statusCode": 401,
3   "message": "Access denied due to invalid subscription key. Make sure to provide a valid key for an active subscription."
4 }
```

POST <https://fakeapi.azure-apl.net/products/add> Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

Headers 8 hidden **Unlimited Subscription**

KEY	VALUE	DESCRIPTION
<input checked="" type="checkbox"/> Ocp-Apim-Subscription-Key	23db2d35920f457fbd2f66dcba518ed5	
Key	Value	Description

Body Cookies Headers (8) Test Results Status: 200 OK Time: 179 ms Size: 757 B Save Response

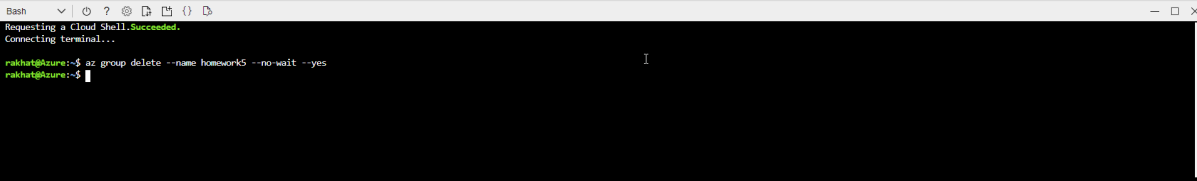
Pretty Raw Preview Visualize JSON

```
17 {
18   "id": 2,
19   "product3": {
20     "name": "Fill CC2",
21     "description": "TWS earphones",
22     "price": 68,
23     "currency": "USD",
24     "category": "electronics",
25     "id": 3
26   },
27 },
28 {
29   "product4": {
30     "name": "Man shoes",
31     "description": "Shoes",
32     "price": 258,
33     "currency": "USD",
34     "category": "clothes",
35     "id": 4
36   }
37 }
38 }
```

All tests completed successfully!

Clean up workspace

```
>> az group delete --name homework5 --no-wait --yes
```

A terminal window with a light gray title bar containing the text 'Bash' and standard window controls. The terminal content shows the command 'az group delete --name homework5 --no-wait --yes' being executed. The prompt is 'rakhut@Azure:~\$'. The output shows 'Requesting a Cloud Shell.Succeeded.' and 'Connecting terminal...'.

```
Bash
Requesting a Cloud Shell.Succeeded.
Connecting terminal...
rakhut@Azure:~$ az group delete --name homework5 --no-wait --yes
rakhut@Azure:~$
```