

**Kauno technologijos universitetas**  
Informatikos fakultetas

**Laboratorinis darbas Nr. 2**

P175B120 Paslaugų programavimas debesų kompiuterijoje

**Arnas Bradauskas**  
Studentas

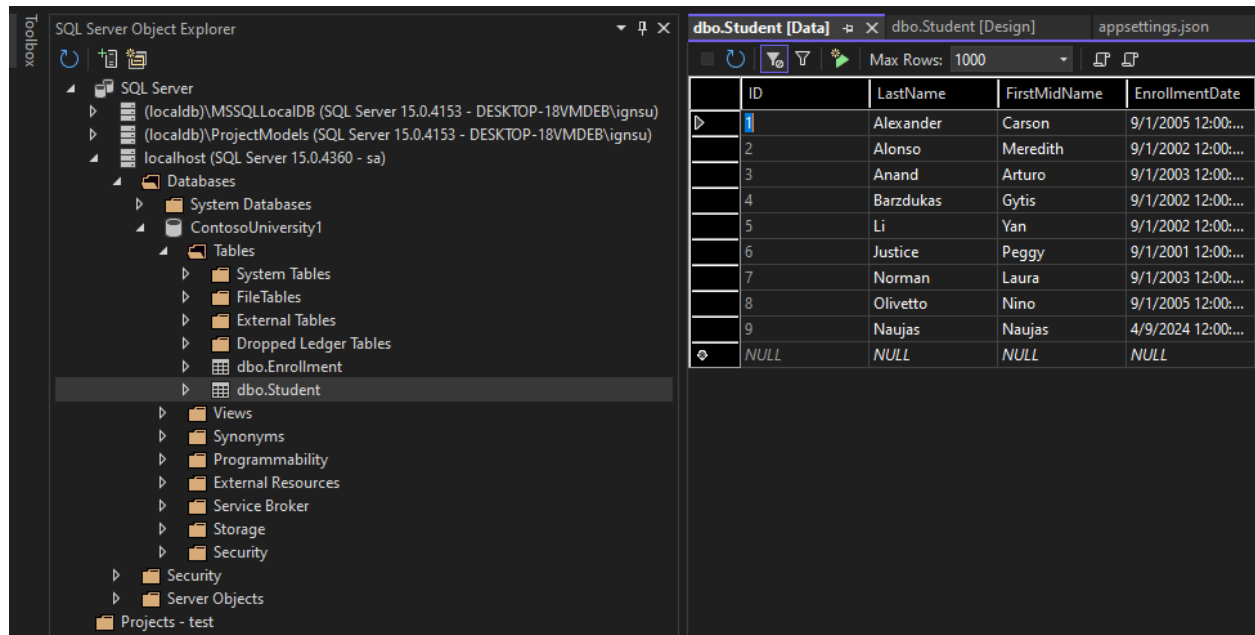
**Doc. Vytautas Pilkauskas**  
Dėstytojas

Kaunas, 2024

# Turinys

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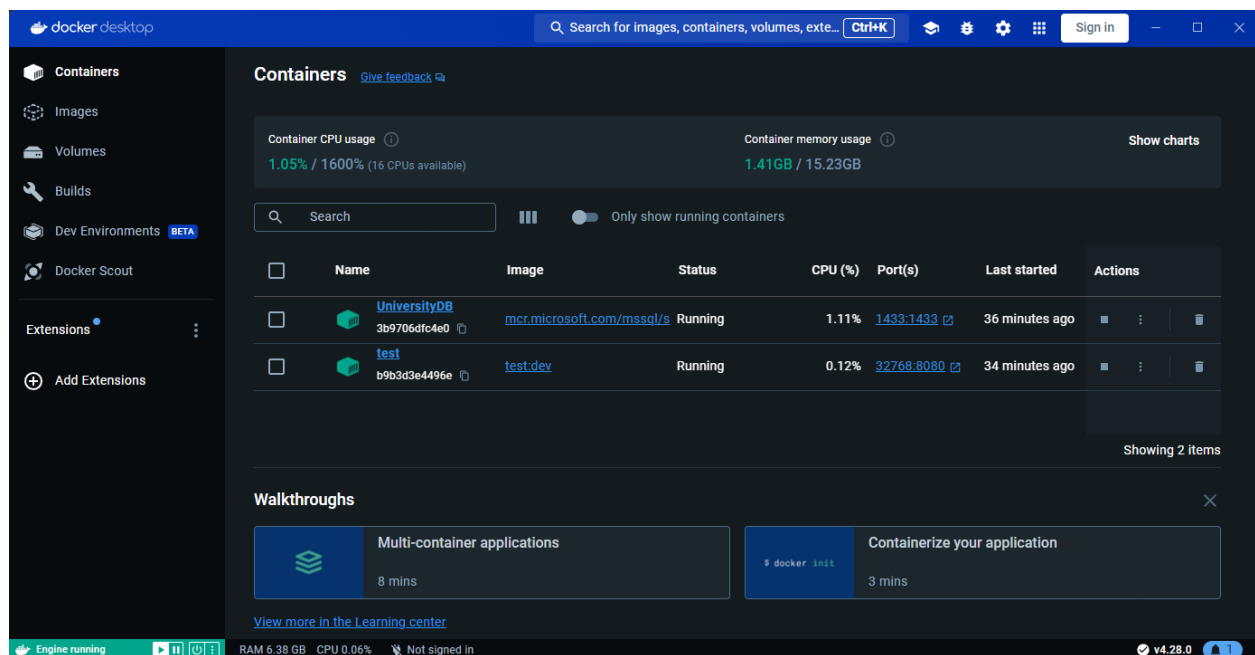
# 1 Pirma dalis



The screenshot shows the SQL Server Enterprise Developer interface. On the left, the SQL Server Object Explorer displays the hierarchy of the 'ContosoUniversity1' database, with the 'dbo.Student' table selected. On the right, the 'dbo.Student [Data]' view shows a table with 10 rows. The first 9 rows contain student data, and the 10th row is a NULL row.

ID	LastName	FirstMidName	EnrollmentDate
1	Alexander	Carson	9/1/2005 12:00:...
2	Alonso	Meredith	9/1/2002 12:00:...
3	Anand	Arturo	9/1/2003 12:00:...
4	Barzdukas	Gytis	9/1/2002 12:00:...
5	Li	Yan	9/1/2002 12:00:...
6	Justice	Peggy	9/1/2001 12:00:...
7	Norman	Laura	9/1/2003 12:00:...
8	Olivetto	Nino	9/1/2005 12:00:...
9	Naujas	Naujas	4/9/2024 12:00:...
10	NULL	NULL	NULL

1 pav. Matomi rezultatai duombazėje, su nauju įterptu objektu.



2 pav. Vaizdas Docker Desktop.

Curl

```
curl -X 'POST' \
'http://localhost:32768/api/Students' \
-H 'accept: text/plain' \
-H 'Content-Type: application/json' \
-d '{
  "id": 0,
  "lastName": "Naujas",
  "firstMidName": "Naujas",
  "enrollmentDate": "2024-04-09",
  "enrollments": [ ]
}'
```

Request URL

```
http://localhost:32768/api/Students
```

Server response

Code	Details
201 <i>Undocumented</i>	<p>Response body</p> <pre>{   "id": 9,   "lastName": "Naujas",   "firstMidName": "Naujas",   "enrollmentDate": "2024-04-09T00:00:00",   "enrollments": [] }</pre> <p>Response headers</p> <pre>content-type: application/json; charset=utf-8 date: Tue, 09 Apr 2024 18:44:20 GMT location: http://localhost:32768/api/Students/9 server: Kestrel transfer-encoding: chunked</pre>

3 pav. Sėkmingas naujo elemento įterpimas.

```
1  {
2    "Logging": {
3      "LogLevel": {
4        "Default": "Information",
5        "Microsoft.AspNetCore": "Warning"
6      }
7    },
8    "AllowedHosts": "*",
9    "ConnectionStrings": {
10     "testContext": "Server=172.17.0.2;Database=ContosoUniversity1;User Id=sa;Password=My!P@ssw0rd!;Encrypt=False"
11     //"testContext": "Server=(localdb)\\mssqllocaldb;Database=testContext-e67a355f-af08-4445-9a5a-2d76c0e3a7de;Trust
12   }
13 }
```

4 pav. Programos nustatymai, ConnectionString.

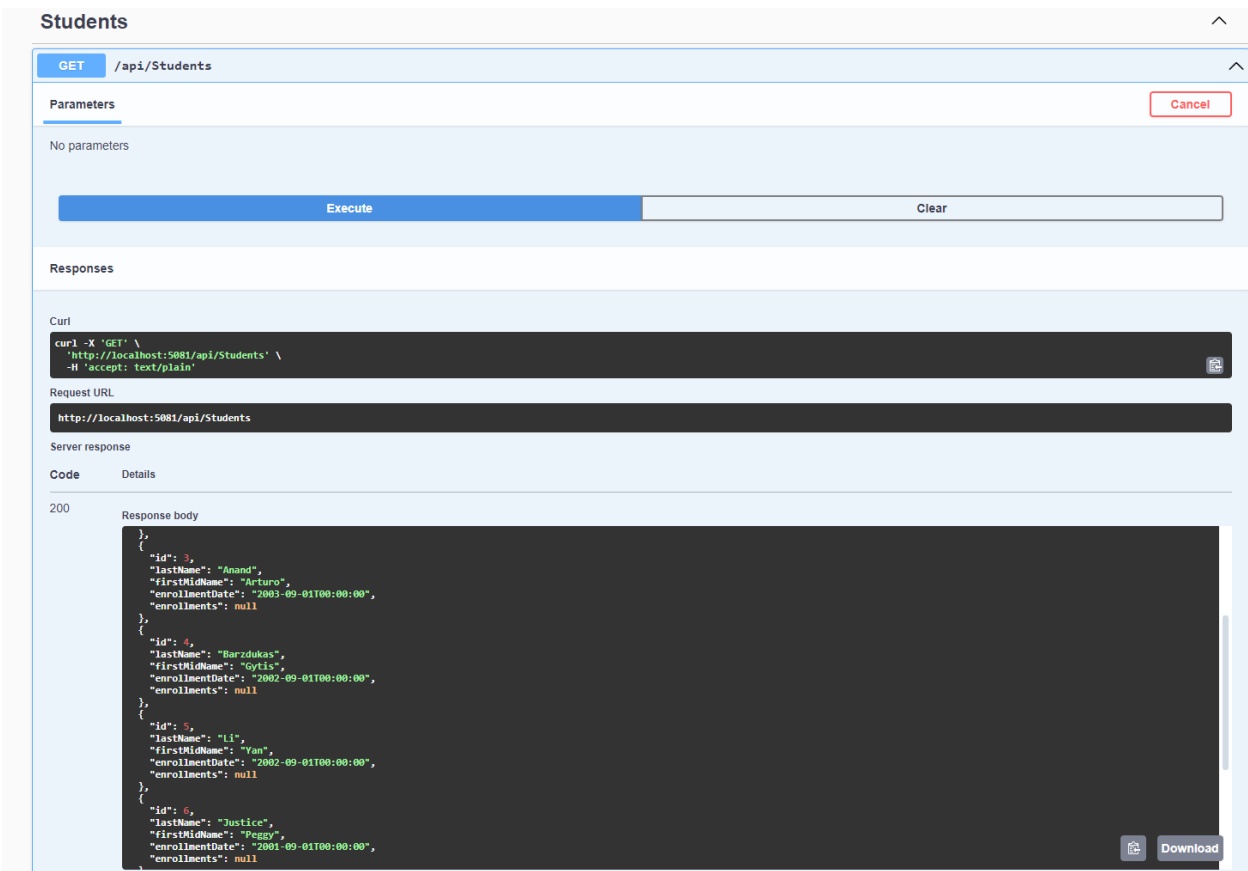
```

{
  "Name": "bridge",
  "Id": "acle76a71bcc2d31562331bf8d2e13f2ff176acd5eb18c28b7efae709f59a968",
  "Created": "2024-04-09T17:57:55.361831414Z",
  "Scope": "local",
  "Driver": "bridge",
  "EnableIPv6": false,
  "IPAM": {
    "Driver": "default",
    "Options": null,
    "Config": [
      {
        "Subnet": "172.17.0.0/16",
        "Gateway": "172.17.0.1"
      }
    ]
  },
  "Internal": false,
  "Attachable": false,
  "Ingress": false,
  "ConfigFrom": {
    "Network": ""
  },
  "ConfigOnly": false,
  "Containers": {
    "3b9706dfc4e0ca2417a95bfa07305c4262397f4fe9df5d9cefd61590c0355527": {
      "Name": "UniversityDB",
      "EndpointID": "9cc690d39c81211b6f48057c88c9c43d3b4507c52680c9051e9049eded181236",
      "MacAddress": "02:42:ac:11:00:02",
      "IPv4Address": "172.17.0.2/16",
      "IPv6Address": ""
    },
    "b9b3d3e4496e533335b2fcea633538ca4aaf8c172a800f9e2611318c19d87736": {
      "Name": "test",
      "EndpointID": "df6c22d9b84fdcaff76ef90db2ae2d867f447ecc9ba33cccb2c2b5d16802ebb6",
      "MacAddress": "02:42:ac:11:00:03",
      "IPv4Address": "172.17.0.3/16",
      "IPv6Address": ""
    }
  },
  "Options": {
    "com.docker.network.bridge.default_bridge": "true",
    "com.docker.network.bridge.enable_icc": "true",
    "com.docker.network.bridge.enable_ip_masquerade": "true",
    "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
    "com.docker.network.bridge.name": "docker0",
    "com.docker.network.driver.mtu": "1500"
  },
  "Labels": {}
}

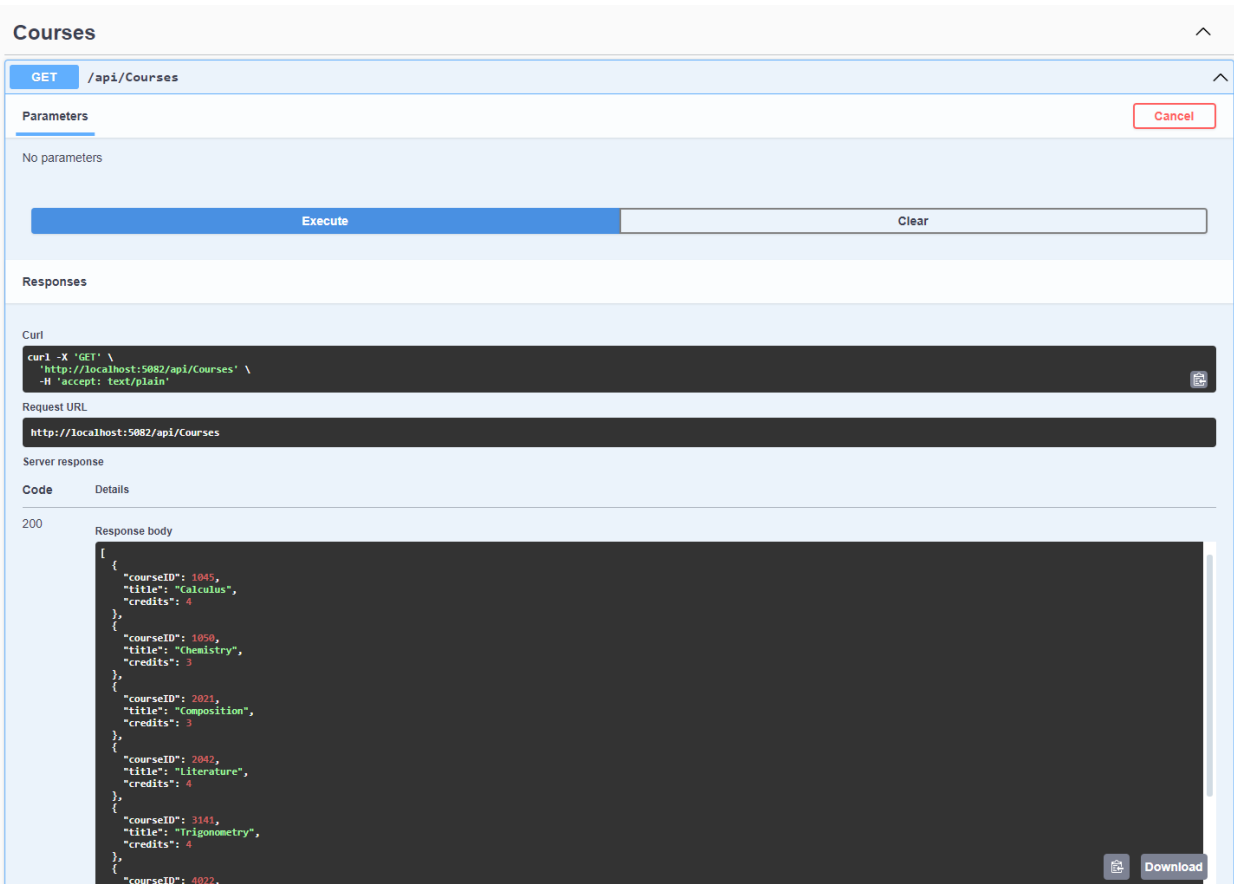
```

5 pav. Konteinerių adresai.

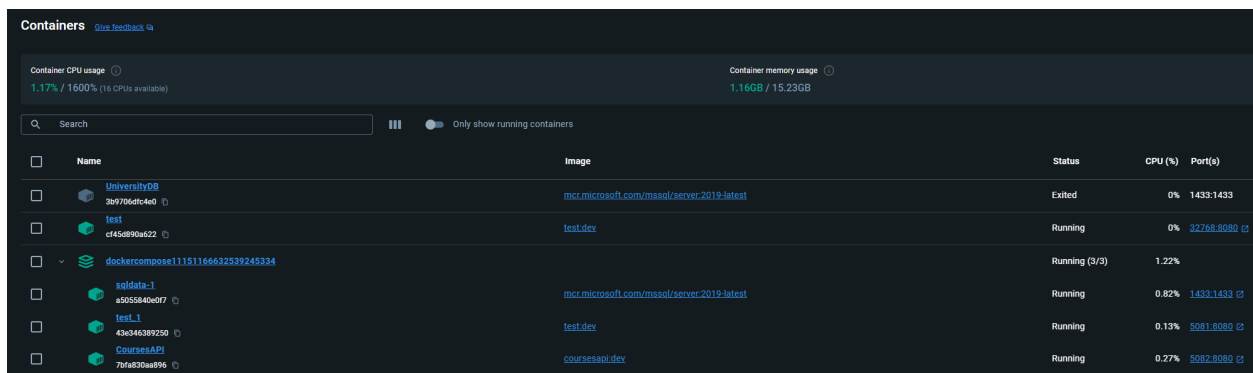
## 2 Antra dalis



6 pav. Sėkminga užklausa į Studentų API (Port=5081).



7 pav. Sėkminga užklausa į Kursų API (Port=5082).



8 pav. Vaizdas Docker Desktop.

```

1  version: '3.4'
2
3  services:
4    test:
5      environment:
6        - ASPNETCORE_ENVIRONMENT=Development
7        - ASPNETCORE_HTTP_PORTS=8080
8        - ConnectionStrings__testContext=Server=sqldata;Database=StudentDB;User Id=sa;Password=My!P@ssw0rd1;Trusted_Connection = False; Encrypt=False
9      ports:
10       - "5081:8080"
11
12    coursesapi:
13      environment:
14        - ASPNETCORE_ENVIRONMENT=Development
15        - ASPNETCORE_HTTP_PORTS=8080
16        - ConnectionStrings__CoursesApiContext=Server=sqldata;Database=CoursesDB;User Id=sa;Password=My!P@ssw0rd1;Trusted_Connection = False; Encrypt=False
17      ports:
18       - "5082:8080"
19
20    sqldata:
21      environment:
22        - SA_PASSWORD=My!P@ssw0rd1
23        - ACCEPT_EULA=Y
24      ports:
25       - "1433:1433"
26      volumes:
27       - lab2-sqldata:/var/opt/mssql
28
29  volumes:
30    lab2-sqldata:
31      external: false
32

```

9 pav. Vaizdas Docker Compose faile.



### 3 Trečia dalis

Containers [Give feedback](#)

Container CPU usage 2.02% / 1600% (16 CPUs available) Container memory usage 1.46GB / 15.23GB

Search ☰ ☑ Only show running containers

<input type="checkbox"/>	Name	Image	Status	CPU (%)	Port(s)
<input type="checkbox"/>	UniversityDB 3b970bdc4e0 <a href="#">🔗</a>	mcr.microsoft.com/mssql/server:2019-latest	Exited (128)	0%	1433:1433
<input type="checkbox"/>	ApiGateway 044b1d7e193f <a href="#">🔗</a>	apigateway.dev	Running	0%	32769:8080 <a href="#">🔗</a>
<input type="checkbox"/>	dockercompose93803246036688006566		Running (4/4)	2.02%	
<input type="checkbox"/>	sqldata-1 9774b09319df <a href="#">🔗</a>	mcr.microsoft.com/mssql/server:2019-latest	Running	1.4%	1433:1433 <a href="#">🔗</a>
<input type="checkbox"/>	CoursesAPL1 4bc2961c2a72 <a href="#">🔗</a>	coursesapi.dev	Running	0.1%	5082:8080 <a href="#">🔗</a>
<input type="checkbox"/>	test1 d9598cb3cd75 <a href="#">🔗</a>	test.dev	Running	0.12%	5081:8080 <a href="#">🔗</a>
<input type="checkbox"/>	ApiGateway_1 5e902867b814 <a href="#">🔗</a>	apigateway.dev	Running	0.4%	5080:8080 <a href="#">🔗</a>

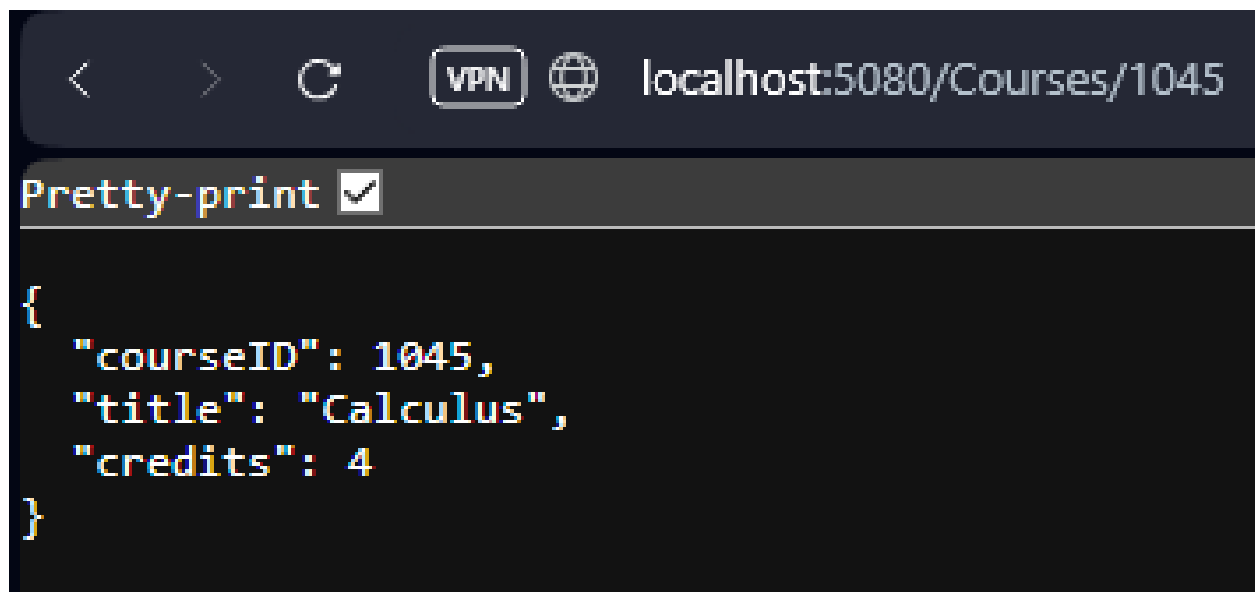
10 pav. Vaizdas Docker Desktop.

```

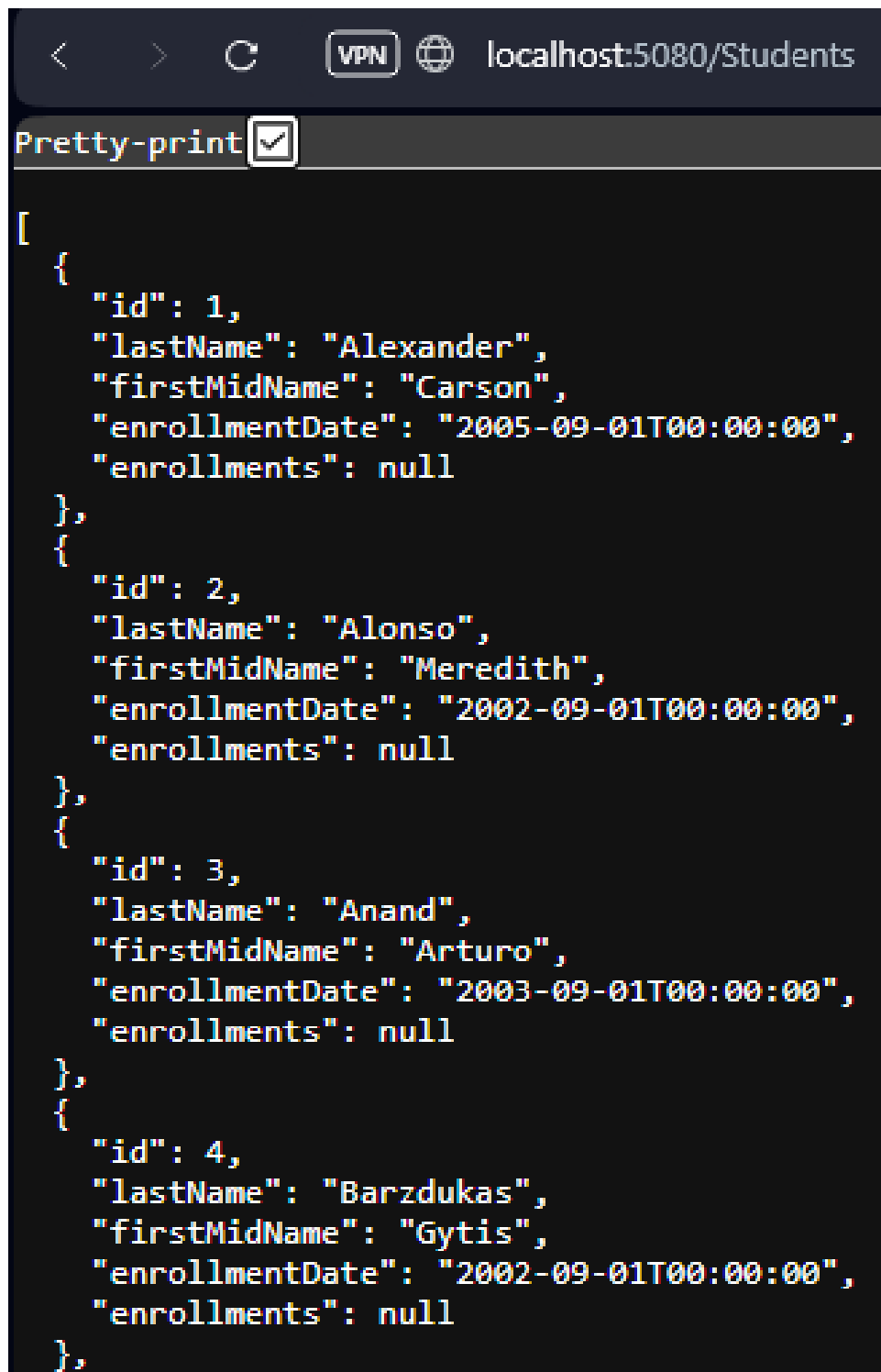
1   version: '3.4'
2
3   services:
4     test:
5       image: ${DOCKER_REGISTRY-}test
6       build:
7         context: .
8         dockerfile: Lab2University/StudentsAPI/Dockerfile
9       depends_on:
10        - sqldata
11
12
13    coursesapi:
14      image: ${DOCKER_REGISTRY-}coursesapi
15      build:
16        context: .
17        dockerfile: Lab2University/CoursesAPI/Dockerfile
18      depends_on:
19        - sqldata
20
21    sqldata:
22      image: mcr.microsoft.com/mssql/server:2019-latest
23
24    apigateway:
25      image: ${DOCKER_REGISTRY-}apigateway
26      build:
27        context: .
28        dockerfile: Lab2University/ApiGateway/Dockerfile

```

11 pav. Docker Compose.



12 pav. Courses/id request.



```
[
  {
    "id": 1,
    "lastName": "Alexander",
    "firstMidName": "Carson",
    "enrollmentDate": "2005-09-01T00:00:00",
    "enrollments": null
  },
  {
    "id": 2,
    "lastName": "Alonso",
    "firstMidName": "Meredith",
    "enrollmentDate": "2002-09-01T00:00:00",
    "enrollments": null
  },
  {
    "id": 3,
    "lastName": "Anand",
    "firstMidName": "Arturo",
    "enrollmentDate": "2003-09-01T00:00:00",
    "enrollments": null
  },
  {
    "id": 4,
    "lastName": "Barzdukas",
    "firstMidName": "Gytis",
    "enrollmentDate": "2002-09-01T00:00:00",
    "enrollments": null
  }
],
```

13 pav. Students request.

## 4 Ketvirta dalis

Neatlikta