

# Домашнее задание (модуль 23)

## 23.5 Практическая работа

### Цели практической работы

- Использовать полученные знания о способах виртуализации.
- Познакомиться с облачным окружением.

### Задание 1

#### Что нужно сделать

1. Заведите trial-аккаунт в Google Cloud.
2. Создайте виртуальную машину (compute instance) при помощи консольной утилиты.
3. Установите на ней веб-сервер nginx и опубликуйте при помощи него статическую страницу.
4. Удалите виртуальную машину.

#### Что оценивается

Инстанс успешно создан и заработал, вы можете подсоединиться к нему по ssh, Nginx работает.

#### Как отправить задание на проверку

Пришлите через форму ниже скриншоты, на которых видны использованные вами команды консольной утилиты и действия внутри виртуалки. Кроме этого, пришлите скриншот, на котором виден браузер и страница, которая отдаётся настроенным вами Nginx.

### Ответ:

Подготовим окружение для запуска gcloud:

```
vgusev@vgusev:~$ cat /srv/gcloud/Dockerfile
# syntax=docker/dockerfile:1

FROM ubuntu:22.04
ARG BUILD_DATE
ARG version
LABEL org.label-schema.build-date=$BUILD_DATE
LABEL maintainer="vgusev2007@yandex.ru"
LABEL description="There is gcloud latest version for a skillbox homework"
LABEL version=$version
RUN apt-get update && apt-get install curl -y
RUN echo "deb [signed-by=/usr/share/keyrings/cloud.google.asc] http://packages.cloud.google.com/apt cloud-sdk main" | tee -a /etc/apt/sources.li
st.d/google-cloud-sdk.list && curl https://packages.cloud.google.com/apt/doc/apt-key.gpg | tee /usr/share/keyrings/cloud.google.asc && apt-get u
pdate -y && apt-get install google-cloud-sdk -y
CMD ["sleep", "infinity"]
vgusev@vgusev:~$ cat /srv/gcloud/docker-compose.yml
version: '3.8'
services:
  gcloud:
    image: vgusev:gcloud-v448.0.0
    build: .
    restart: unless-stopped
```

```
@vgusev:/srv/gcloud$ docker build --build-arg version=0.0.1 --build-arg BUILD_DATE=$(date -u +'%Y-%m-%dT%H:%M:%SZ') -t vgusev:gcloud:v448.0.0 .
```

	docker:default
[+] Building 36.7s (7/8)	
=> [internal] load build definition from Dockerfile	0.0s
=> => transferring dockerfile: 706B	0.0s
=> [internal] load .dockerignore	0.0s
=> => transferring context: 2B	0.0s
=> resolve image config for docker.io/docker/dockerfile:1	0.7s
=> CACHED docker-image://docker.io/docker/dockerfile:1sha256:ac85f380a63b13dfcefa89046420e1781752bab202122f8f50032edf31be0021	0.0s
=> [internal] load metadata for docker.io/library/ubuntu:22.04	0.4s
=> CACHED [1/3] FROM docker.io/library/ubuntu:22.04@sha256:aabed3296a3d45cedelc866a24476c4d7e093aa806263c27ddaadbce3c1054	0.0s
=> [2/3] RUN apt-get update && apt-get install curl -y	12.9s
=> [3/3] RUN echo "deb [signed-by=/usr/share/keyrings/cloud.google.asc] http://packages.cloud.google.com/apt cloud-sdk main"   tee -a /	22.5s
=> => # debconf: delaying package configuration, since apt-utils is not installed	
=> => # Fetched 154 MB in 14s (10.7 MB/s)	
=> => # Selecting previously unselected package google-cloud-sdk.	
=> => # (Reading database ... 4981 files and directories currently installed.)	
=> => # Preparing to unpack ../google-cloud-sdk_448.0.0-0_all.deb ...	
=> => # Unpacking google-cloud-sdk (448.0.0-0) ...	

```
vgusev@vgusev:~$ docker images
```

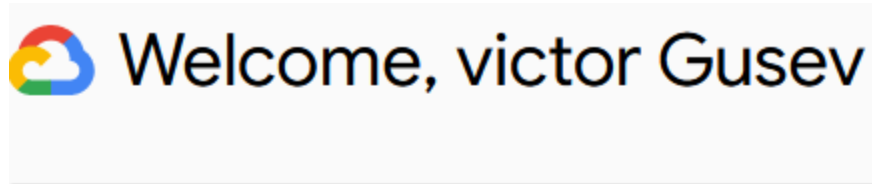
REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
vgusev	gcloud-v448.0.0	6fa5cbca311f	22 hours ago	1.01GB

```
version: '3.8'
services:
  gcloud:
    image: vgusev:gcloud-v448.0.0
    build: .
    restart: unless-stopped
```

```
docker exec -it gcloud-gcloud-1 bash
```

Заведите trial-аккаунт в Google Cloud:

Заведено



## You're in Free Trial



0 out of \$300 credits used

Expires January 2, 2024

[What happens when trial ends?](#)

[ACTIVATE FULL ACCOUNT](#)

You'r

Numl

[Add i](#)

[Set u](#)

[Revie](#)

Создайте виртуальную машину (compute instance) при помощи консольной утилиты.

```
root@4939f7a516ec:/# gcloud config set account vgusev2007
Updated property [core/account].
```

```
root@4939f7a516ec:/# gcloud init --console-only
Welcome! This command will take you through the configuration of gcloud.
```

Settings from your current configuration [default] are:

```
core:
  account: vgusev2007
  disable_usage_reporting: 'True'
```

Pick configuration to use:

- [1] Re-initialize this configuration [default] with new settings
- [2] Create a new configuration

Please enter your numeric choice: 1

Your current configuration has been set to: [default]

You can skip diagnostics next time by using the following flag:

```
gcloud init --skip-diagnostics
```

Network diagnostic detects and fixes local network connection issues.

Checking network connection...done.

Reachability Check passed.

Network diagnostic passed (1/1 checks passed).

You must log in to continue. Would you like to log in (Y/n)?

[default] y

Enter authorization code: [REDACTED]  
You are logged in as: [vgusev2007@gmail.com].

Pick cloud project to use:

- [1] static-lens-[REDACTED]
- [2] Enter a project ID
- [3] Create a new project

Please enter numeric choice or text value (must exactly match list item):

Enabling service [compute.googleapis.com] on project [static-lens-[REDACTED]]...  
Operation "operations/acf.p2-136031792724-614f1821-9f54-49d7-bb78-f7960f4b1293" finished successfully.  
Updated [https://www.googleapis.com/compute/v1/projects/static-lens-[REDACTED]].  
root@4939f7a516ec:/#

root@4939f7a516ec:/# gcloud compute instances create skillbox-homework --image-family ubuntu-2204-lts --image-project ubuntu-os-cloud

- [36] europe-central2-c
- [37] europe-north1-a
- [38] europe-north1-b
- [39] europe-north1-c
- [40] europe-southwest1-a
- [41] europe-southwest1-b
- [42] europe-southwest1-c
- [43] europe-west1-b
- [44] europe-west1-c
- [45] europe-west1-d
- [46] europe-west10-a
- [47] europe-west10-b
- [48] europe-west10-c
- [49] europe-west12-a
- [50] europe-west12-b

Did not print [68] options.  
Too many options [118]. Enter "list" at prompt to print choices fully.  
Please enter your numeric choice: 36

Created [https://www.googleapis.com/compute/v1/projects/static-lens-[REDACTED]/zones/europe-central2-c/instances/skillbox-homework].

NAME	ZONE	MACHINE_TYPE	PREEMPTIBLE	INTERNAL_IP	EXTERNAL_IP	STATUS
skillbox-homework	europe-central2-c	n1-standard-1		10.186.0.2	[REDACTED]	RUNNING

## Входим по ssh через cloud shell:

root@4939f7a516ec:/# gcloud compute ssh skillbox-homework  
No zone specified. Using zone [europe-central2-c] for instance: [skillbox-homework].  
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1014-gcp x86\_64)

\* Documentation: <https://help.ubuntu.com>  
\* Management: <https://landscape.canonical.com>  
\* Support: <https://ubuntu.com/advantage>

System information as of Tue Oct 3 05:05:53 UTC 2023

System load:	0.0	Processes:	100
Usage of /:	19.4% of 9.51GB	Users logged in:	1
Memory usage:	7%	IPv4 address for ens4:	10.186.0.2
Swap usage:	0%		

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.  
See <https://ubuntu.com/esm> or run: `sudo pro status`

The list of available updates is more than a week old.  
To check for new updates run: `sudo apt update`

Last login: Tue Oct 3 05:05:54 2023 from [REDACTED]  
root@skillbox-homework:~#

Настраиваем firewall:

Network Security

Secure Web Proxy

Cloud Armor

Cloud Armor policies

Adaptive Protection

Managed Protection

Cloud IDS

IDS Dashboard

IDS Endpoints

IDS Threats

Cloud Firewall

Firewall policies

Threats

Firewall endpoints ...

Create a firewall rule

None

Protocols and ports

Allow all

Specified protocols and ports

TCP

Ports

80

E.g. 20, 50-60

UDP

Ports

E.g. all

Other

Protocols

Separate multiple protocols by commas, e.g. ah, sctp

DISABLE RULE

CREATE

CANCEL

EQUIVALENT COMMAND LINE

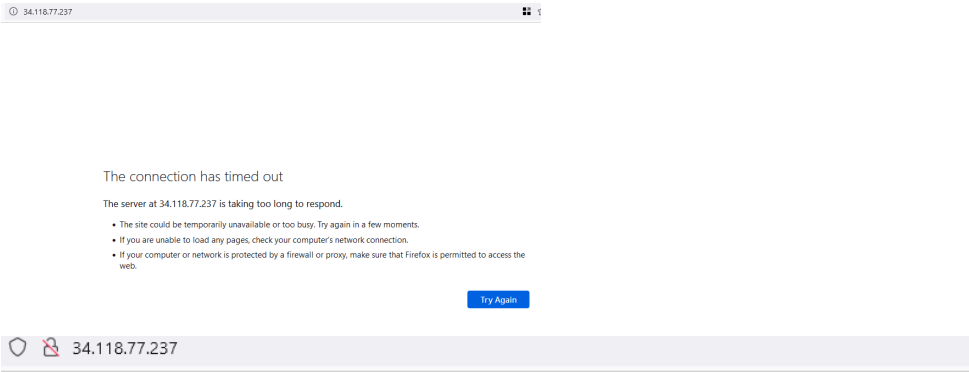
Ставим nginx

```
root@skillbox-homework:~# apt install nginx -y
```

Правим текст:

```
root@skillbox-homework:~# vi /var/www/html/index.nginx-debian.html
```

Обновляем страницу:



Welcome to nginx!

Welcome to skillbox homework

23! My name is Viktor! He-he!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](#). Commercial support is available at [nginx.com](#).

Thank you for using nginx.

Удалить VM:

VM instances

CREATE INSTANCEIMPORT VMREFRESH

INSTANCESOBSERVABILITYINSTANCE SCHEDULES

VM instances

Filter Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input type="checkbox"/>	✓	skillbox-homework	europe-central2-c			10.186.0.2 (nic0)	34.118.77.237 (nic0)	SSH ▾

```
root@4939f7a516ec:/# gcloud compute instances delete skillbox-homework
No zone specified. Using zone [europe-central2-c] for instance: [skillbox-homework].
The following instances will be deleted. Any attached disks configured to be auto-deleted will be deleted unless they are attached to any other
instances or the `--keep-disks` flag is given and specifies them for keeping. Deleting a disk is irreversible and any data on the disk will be
lost.
- [skillbox-homework] in [europe-central2-c]

Do you want to continue (Y/n)?

Deleted [https://www.googleapis.com/compute/v1/projects/static-lens-400903/zones/europe-central2-c/instances/skillbox-homework].
```

VM instances

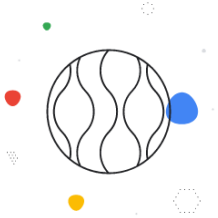
CREATE INSTANCEIMPORT VMREFRESH

INSTANCESOBSERVABILITYINSTANCE SCHEDULES

VM instances

Filter Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
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VM Instances

Compute Engine lets you use virtual machines that run on Google's infrastructure. Create micro-VMs or larger instances running Debian, Windows, or other standard images. Create your first VM instance, import it using a migration service, or try the quickstart to build a sample app.

CREATE INSTANCETAKE THE QUICKSTART

Задание выполнено

## Задание 2 (повышенной сложности)

### Что нужно сделать

- 1. Создайте виртуальную машину и managed mysql — инстанс.
- 2. Подсоединитесь при помощи консольной утилиты mysql к созданной базе данных из созданной виртуальной машины.
- 3. Создайте базу, таблицу и запишите в неё несколько любых записей.

### Что оценивается

Инстанс и база успешно созданы и работают, вы можете подключиться к базе и работать с ней из виртуальной машины.

### Ответ – создаем инстанс и базу:

Name \*  
skillbox-homework

MANAGE TAGS AND LABELS

Region \*  
eu-central-2 (Warsaw)  
Region is permanent

Zone \*  
eu-central-2-c  
Zone is permanent

Monthly estimate  
\$9.18  
That's about \$0.07 hourly  
Pay for what you use: no upfront costs and per second billing

Item	Monthly estimate
2 vCPU + 1 GB memory	\$7.88
10 GB balanced persistent disk	\$1.30
Total	\$9.18

[Compute Engine pricing](#)  
[LEARN](#)

Machine configuration

Try the new H3 machine series, optimized for HPC

TRY NOW

General purpose

Compute optimized **NEW**

Memory optimized

GPUs

Machine types for common workloads, optimized for cost and flexibility

Series	Description	vCPUs	Memory	Platform
C3	Consistently high performance	4 - 176	8 - 1,408 GB	Intel Sapphire Rapids
C3D	<b>PREVIEW</b> Consistently high performance	4 - 360	8 - 2,880 GB	AMD Genoa
<b>E2</b>	Low cost, day-to-day computing	0.25 - 32	1 - 128 GB	Based on availability
N2	Balanced price & performance	2 - 128	2 - 864 GB	Intel Cascade and Ice Lake
N2D	Balanced price & performance	2 - 224	2 - 896 GB	AMD EPYC
T2A	Scale-out workloads	1 - 48	4 - 192 GB	Ampere Alpha Arm
T2D	Scale-out workloads	1 - 60	4 - 240 GB	AMD EPYC Milan

CREATE

CANCEL

EQUIVALENT CODE

Boot disk ?

Name

skillbox-homework

Type

New balanced persistent disk

Size

10 GB

License type ?

Free

Image

Ubuntu 22.04 LTS

CHANGE

VM instances

CREATE INSTANCE

IMPORT VM

REFRESH

INSTANCES

OBSERVABILITY

INSTANCE SCHEDULES

VM instances


Filter

Enter property name or value

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP
	<a href="#">skillbox-homework</a>	eu-central-2-c				


## Summary

Cloud SQL Edition ?	Enterprise
Region	europe-central2 (Warsaw)
DB Version	MySQL 8.0
vCPUs	1 vCPU
Memory	628.74 MB
Data Cache	Disabled
Storage	10 GB
Connections	Private IP
	Public IP
Backup	Automated
Availability	Single zone
Point-in-time recovery	Enabled
Network throughput (MB/s) ?	125 of 125
Disk throughput (MB/s) ?	Read: 1.2 of 125.0
	Write: 1.2 of 107.8
IOPS ?	Read: 7.5 of 1,000
	Write: 15 of 10,000

 SQL

[← Create an instance](#)

### Choose your database engine

 MySQL  
Versions: 8.0, 5.7, 5.6  
[Choose MySQL](#)

Want more context on the Cloud SQL database engines? [Learn more](#)

## Подключение к базе из виртуальной машины и создание базы:

```
root@skillbox-homework:~# mysql -h 34.116.248.168 -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 17735
Server version: 8.0.31-google (Google)
```

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> CREATE DATABASE skillbox_homework;
Query OK, 1 row affected (0.10 sec)
```

## Создадим таблицу:

```
mysql> use skillbox_homework;
Database changed
mysql> CREATE TABLE skillbox(
  -> user_id INT NOT NULL AUTO_INCREMENT,
  -> user_name VARCHAR(100) NOT NULL,
  -> join_date DATE,
  -> PRIMARY KEY ( user_id )
  -> );
Query OK, 0 rows affected (0.15 sec)
```

## Заполним таблицу несколькими записями:

```
mysql> INSERT INTO skillbox
  -> (user_name, join_date)
  -> VALUES
  -> ("gusevvs", '2023-05-16');
Query OK, 1 row affected (0.02 sec)
```

```
mysql> INSERT INTO skillbox
  -> (user_name, join_date)
  -> VALUES
  -> ("alice", NOW());
Query OK, 1 row affected, 1 warning (0.00 sec)
```



Проверим, что всё отображается в облаке:

All instances > skillbox-homework-mysql

✔ skillbox-homework-mysql

MySQL 8.0

+

 CREATE DATABASE

Name ↑	Collation	Character set	Type	
information_schema	utf8mb3_general_ci	utf8mb3	System	⋮
mysql	utf8mb3_general_ci	utf8mb3	System	⋮
performance_schema	utf8mb4_0900_ai_ci	utf8mb4	System	⋮
skillbox_homework	utf8mb4_0900_ai_ci	utf8mb4	User	⋮
sys	utf8mb4_0900_ai_ci	utf8mb4	System	⋮

Да. Отлично! Всё есть.

### Задание 3

#### Что нужно сделать

Ранее мы запустили докер-контейнер с busybox. А теперь запустите в вашей виртуальной машине docker-контейнер с ubuntu.

Выполните в нём любую команду.

#### Что оценивается

Контейнер запустился и работает, вы можете к нему подключиться и выполнить действия.

#### Как отправить задание на проверку

Пришлите через форму ниже скриншоты, где видны все ваши действия.

```
vgusev@vgusev:~$ docker run --name skillbox_sample -d --rm ubuntu:22.04 sleep infinity
98b85776be983d59220f96914f23976cb87292fa8ec0fe6bbf52e4df4c8a8578
vgusev@vgusev:~$ docker ps
```

CONTAINER ID	IMAGE	NAMES	COMMAND	CREATED	STATUS	PORTS
98b85776be98	ubuntu:22.04	skillbox_sample	"sleep infinity"	9 seconds ago	Up 8 seconds	

```
vgusev@vgusev:~$ docker exec -it skillbox_sample bash
root@98b85776be98:/# uptime
 04:54:06 up 2 days, 23:45,  0 users,  load average: 0.00, 0.00, 0.00
root@98b85776be98:/# echo "Hello! My name is Viktor and I'm student of skillbox platform!"
Hello! My name is Viktor and I'm student of skillbox platform!
root@98b85776be98:/# █
[default] 0:docker*
```