

Лабораторная работа №2

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Тема: Работа с Docker.

Цель: Познакомиться с возможностями и получить практические навыки работы с Docker.

Задание:

1. Подготовьте рабочее окружение в соответствии с типом вашей операционной системы
 - Установите Docker
 - Выполните базовую настройку

```
anastasiaunix@LAPTOP-ELBM9100:~$ docker --version
Docker version 25.0.3, build 4debf41
```

2. Изучите простейшие консольные команды и возможности Docker Desktop (см. лекцию), создать собственный контейнер docker/getting-started, открыть в браузере и изучить tutorial

```
anastasiaunix@LAPTOP-ELBM9100:~$ docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
ubuntu              latest             ca2b0f26964c       2 weeks ago        77.9MB
docker/getting-started latest             3e4394f6b72f       14 months ago      47MB
yandex/clickhouse-server latest             c739327b5607       2 years ago        826MB

anastasiaunix@LAPTOP-ELBM9100:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED             STATUS              PORTS          NAMES
anastasiaunix@LAPTOP-ELBM9100:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED             STATUS              PORTS          NAMES
d97e2c24fbe6   ubuntu   "/bin/bash"             3 days ago         Exited (137) 18 hours ago           peaceful_darwin
```

```
anastasiaunix@LAPTOP-ELBM9100:~$ docker run -d --rm --name get_started -p 80:80 docker/getting-started
8532187821cbeb17911663707c863c64f3a8f01ec462aeba0e88c1860d97c216
anastasiaunix@LAPTOP-ELBM9100:~$ docker ps -q
8532187821cb
anastasiaunix@LAPTOP-ELBM9100:~$ docker history docker/getting-started
IMAGE          CREATED          CREATED BY                                      SIZE      COMMENT
3e4394f6b72f   14 months ago   COPY /app/site /usr/share/nginx/html # build... 4.5MB     buildkit.dockerfile.v0
<missing>      14 months ago   COPY /app.zip /usr/share/nginx/html/assets/a... 1.75MB     buildkit.dockerfile.v0
<missing>      15 months ago   /bin/sh -c set -x                               29.2MB
<missing>      15 months ago   /bin/sh -c #(nop) ENV NJS_VERSION=0.7.9         0B
<missing>      15 months ago   /bin/sh -c #(nop) CMD ["nginx" "-g" "daemon... 0B
<missing>      15 months ago   /bin/sh -c #(nop) STOPSIGNAL SIGQUIT            0B
<missing>      15 months ago   /bin/sh -c #(nop) EXPOSE 80                     0B
<missing>      15 months ago   /bin/sh -c #(nop) ENTRYPOINT ["/docker-entr... 0B
<missing>      15 months ago   /bin/sh -c #(nop) COPY file:e57eef017a414ca7... 4.62kB
<missing>      15 months ago   /bin/sh -c #(nop) COPY file:abbcfb84dc17ee44... 1.27kB
<missing>      15 months ago   /bin/sh -c #(nop) COPY file:5c18272734349488... 2.12kB
<missing>      15 months ago   /bin/sh -c #(nop) COPY file:7b307b62e82255f0... 1.62kB
<missing>      15 months ago   /bin/sh -c set -x                               4.45MB
<missing>      15 months ago   /bin/sh -c #(nop) ENV PKG_RELEASE=1             0B
<missing>      15 months ago   /bin/sh -c #(nop) ENV NGINX_VERSION=1.23.3      0B
<missing>      15 months ago   /bin/sh -c #(nop) LABEL maintainer=NGINX Do... 0B
<missing>      15 months ago   /bin/sh -c #(nop) CMD ["/bin/sh"]               0B
<missing>      15 months ago   /bin/sh -c #(nop) ADD file:587cae71969871d3c... 7.05MB
```

```
anastasiaunix@LAPTOP-ELBM9100:~$ docker stop get_started
get_started
anastasiaunix@LAPTOP-ELBM9100:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED             STATUS              PORTS          NAMES
d97e2c24fbe6   ubuntu   "/bin/bash"             3 days ago         Exited (137) 18 hours ago           peaceful_darwin
```

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker start peaceful_darwin
peaceful_darwin
anastasiaunix@LAPTOP-ELBM9100:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS   NAMES
d97e2c24fbe6   ubuntu   "/bin/bash"             3 days ago    Up 3 seconds   -       peaceful_darwin
anastasiaunix@LAPTOP-ELBM9100:~$ docker stop peaceful_darwin
peaceful_darwin
anastasiaunix@LAPTOP-ELBM9100:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS   NAMES

```

3. Создайте docker image, который запускает скрипт с использованием функций из https://github.com/smartigaorg/geometric_lib.
 - a. Данные необходимые для работы скрипта передайте любым удобным способом (например: конфиг файл через docker volume, переменные окружения, перенаправление ввода). Изучите простейшие консольные команды для работы с docker(см. лекцию). Зарегистрируйтесь на DockerHub и выберите необходимые для проекта образы
 - b. Создать Dockerfile для реализации сборки собственных Docker образов
 - c. Использовать его для создания контейнера. Протестировать использование контейнера

```

Dockerfile x  input.txt
1  FROM python:3.11
2
3  WORKDIR /app
4
5  COPY circle.py /app
6  COPY square.py /app
7  COPY main.py /app
8  COPY input.txt /app
9
10 ENTRYPOINT ["python", "main.py"]

```

```

(.venv) PS C:\Users\naaan\source\Python\YandexMusic> docker build -t square:1 .
[+] Building 13.2s (10/10) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile                0.2s
=> => transferring dockerfile: 176B                               0.0s
=> [internal] load metadata for docker.io/library/python:3.12.2   3.3s
=> [internal] load .dockerignore                                   0.1s
=> => transferring context: 2B                                       0.0s
=> [internal] load build context                                   0.1s
=> => transferring context: 915B                                       0.0s
=> [1/5] FROM docker.io/library/python:3.12.2@sha256:336461f63f4eb1100e178d 8.7s
=> => resolve docker.io/library/python:3.12.2@sha256:336461f63f4eb1100e178d 0.0s
=> => sha256:ae29c48b74297d47dd4a2477690bc534163f76ff154d16 7.11kB / 7.11kB 0.0s
=> => sha256:097431623722383300c03bb41fd162d32346bf6a02a053263f 244B / 244B 0.3s
=> => sha256:336461f63f4eb1100e178d5acbfea3d1a5b2a53dea88aa 2.14kB / 2.14kB 0.0s
=> => sha256:91b4916e08589d8890d85c61c296482d26925dc65f03b5 2.01kB / 2.01kB 0.0s

```

```
(.venv) PS C:\Users\naaan\source\Python\YandexMusic> docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
square	1	2fcf4a1526fa	8 seconds ago	1.02GB
ubuntu	latest	ca2b0f26964c	2 weeks ago	77.9MB
docker/getting-started	latest	3e4394f6b72f	14 months ago	47MB
yandex/clickhouse-server	latest	c739327b5607	2 years ago	826MB

```
(.venv) PS C:\Users\naaan\source\Python\YandexMusic> docker volume create sq_vol
sq_vol
(.venv) PS C:\Users\naaan\source\Python\YandexMusic> docker run --rm -v sq_vol:/app square:1 >> output.txt
```

The screenshot shows a Docker container window with tabs for 'Dockerfile', 'output.txt', and 'input.txt'. The 'output.txt' tab is active, displaying the following text:

```
1 Area of square is: 2601
2 Perimeter of square is: 204
3 Area of circle is: 8171.282491987052
4 Perimeter of circle is: 320.4424506661589
5
```

Способ с помощью переменных среды

```
(.venv) PS C:\Users\naaan\source\Python\YandexMusic> docker build -t square:2 .
```

```
(.venv) PS C:\Users\naaan\source\Python\YandexMusic> docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
square	2	8c832e4ce6f9	4 seconds ago	1.01GB
square	1	61f247f2b9c6	17 minutes ago	1.01GB
ubuntu	latest	ca2b0f26964c	2 weeks ago	77.9MB
docker/getting-started	latest	3e4394f6b72f	14 months ago	47MB
yandex/clickhouse-server	latest	c739327b5607	2 years ago	826MB

```
(.venv) PS C:\Users\naaan\source\Python\YandexMusic> docker run --rm square:2
Area of square is: 2601
Perimeter of square is: 204
Area of circle is: 8171.282491987052
Perimeter of circle is: 320.4424506661589
```

4. Скачать любой доступный проект с GitHub с произвольным стеком технологий или использовать свой, ранее разработанный. Создать для него необходимый контейнер, используя Docker Compose для управления многоконтейнерными приложениями. Запустить проект в контейнере. (Примеры Images: https://hub.docker.com/_/phpmyadmin, https://hub.docker.com/_/mysql, https://hub.docker.com/_/postgres)

```

ADME.md  docker-compose.yml x
version: "3.7"

services:
  wordpress:
    image: wordpress:6.0.0-php8.0
    restart: always
    ports:
      - "3000:80"
    volumes:
      - ./dist/wp:/var/www/html
    networks:
      - wordpress-network
    links:
      - db
    environment:
      WORDPRESS_DB_HOST: db
      WORDPRESS_DB_USER: wp_db_user
      WORDPRESS_DB_PASSWORD: wp_db_pass
      WORDPRESS_DB_NAME: wp_db
      WORDPRESS_DEBUG: 1

  db:
    image: mysql:5.7
    platform: linux/amd64
    restart: always
    environment:
      MYSQL_DATABASE: wp_db
      MYSQL_USER: wp_db_user
      MYSQL_PASSWORD: wp_db_pass
      MYSQL_ROOT_PASSWORD: 1234
    networks:
      - wordpress-network
    volumes:
      - ./dist/host/.db:/var/lib/mysql

networks:
  wordpress-network:

```

```

PS C:\Users\naaan\source\ForDocker\just-enough-series\courses\docker+docker-compose\examples\WordPress> docker-compose up -d
[+] Running 2/3
 - Network wordpress_wordpress-network Created 1.6s
 ✓ Container wordpress-db-1 Started 1.0s
 ✓ Container wordpress-wordpress-1 Started 1.4s

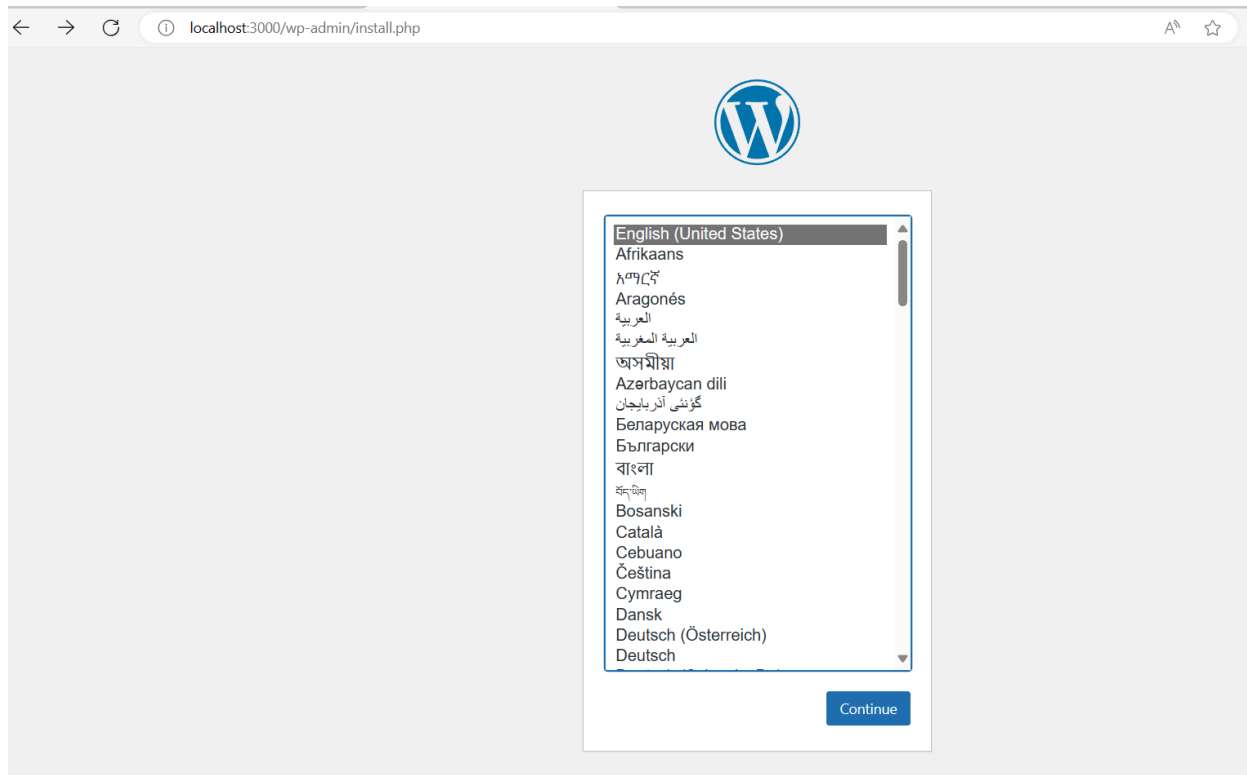
```

```

PS C:\Users\naaan\source\ForDocker\just-enough-series\courses\docker+docker-compose\examples\WordPress> docker-compose ps

```

NAME	IMAGE	COMMAND	SERVICE	CREATED	STATUS	PORTS
wordpress-db-1	mysql:5.7	"docker-entrypoint.s..."	db	18 minutes ago	Up 18 minutes	3306/tcp, 33060/tcp
wordpress-wordpress-1	wordpress:6.0.0-php8.0	"docker-entrypoint.s..."	wordpress	18 minutes ago	Up 18 minutes	0.0.0.0:3000->80/tcp

This screenshot shows the second step of the WordPress installation process. The browser address bar indicates the URL is localhost:3000/wp-admin/install.php?step=1. The page features the WordPress logo at the top center. Below the logo is a 'Welcome' section with a message about the five-minute installation process. This is followed by an 'Information needed' section. It contains several form fields: 'Site Title', 'Username', 'Password', and 'Your Email'. The 'Password' field is filled with a strong password and has a 'Hide' button next to it. Below the password field, there is an 'Important' note. At the bottom, there is a 'Search engine visibility' section with a checkbox to 'Discourage search engines from indexing this site'.

5. Настроить сети и тома для обеспечения связи между контейнерами и сохранения данных (исходные данные, логин, пароль и т.д.)

```
PS C:\Users\naaan\source\ForDocker\just-enough-series\courses\docker+docker-compose\examples\WordPress> docker network ls
```


NETWORK ID	NAME	DRIVER	SCOPE
edad6d27ff86	bridge	bridge	local
4c5763a82052	host	host	local
b154725bf310	none	null	local
9eaa3cc62eb1	wordpress_wordpress-network	bridge	local

```
PS C:\Users\naaan\source\ForDocker\just-enough-series\courses\docker+docker-compose\examples\WordPress> docker volume ls
```

DRIVER	VOLUME NAME
local	7181f121dd1dc055695af0339f02b076a36cc42cec86532f05226e3f8caed0e5
local	d8aac7d9f188f4819b48faf86413615ba4b533c8bd7a4fb13229457637431493

6. Разместите результат в созданный репозиторий в DockerHub

```
anastasiaunix@LAPTOP-ELBM9100:~$ docker tag wordpress:6.0.0-php8.0 anastasianikolaichik/lab2docker:wordpress
anastasiaunix@LAPTOP-ELBM9100:~$ docker push anastasianikolaichik/lab2docker:wordpress
The push refers to repository [docker.io/anastasianikolaichik/lab2docker]
b6fe8536510b: Mounted from library/wordpress
4f4a34d7fe70: Mounted from library/wordpress
95e4af30fc77: Mounted from library/wordpress
b76c56e2f544: Mounted from library/wordpress
774d09bdc888: Mounted from library/wordpress
2723e9c08080: Mounted from library/wordpress
65d512eb6ce2: Mounted from library/wordpress
8697fd7c0c31: Mounted from library/wordpress
bf60623bf108: Mounted from library/wordpress
3af0fe1198ea: Mounted from library/wordpress
854b4a4d056f: Mounted from library/wordpress
1b80c75f5b15: Mounted from library/wordpress
f7a3eb5e3180: Mounted from library/wordpress
0cb956e94ed9: Mounted from library/wordpress
e9f3f7ef11ab: Mounted from library/wordpress
3f2692954abe: Mounted from library/wordpress
6a2768aa6892: Mounted from library/wordpress
49269d9adf35: Mounted from library/wordpress
6fd16b261e9c: Mounted from library/wordpress
cefd3a3a1738: Mounted from library/wordpress
08249ce7456a: Mounted from library/wordpress
wordpress: digest: sha256:6428490f087d89dabc3b9eebc371e0a73419bbc857a6e145e4f816f8e5994982 size: 4710
anastasiaunix@LAPTOP-ELBM9100:~$ docker tag mysql:5.7 anastasianikolaichik/lab2docker:mysql
anastasiaunix@LAPTOP-ELBM9100:~$ docker push anastasianikolaichik/lab2docker:mysql
The push refers to repository [docker.io/anastasianikolaichik/lab2docker]
441e16cac4fe: Mounted from library/mysql
73cb62467b8f: Mounted from library/mysql
337ec6bae222: Mounted from library/mysql
532b66f4569d: Mounted from library/mysql
0d9e9a9ce9e4: Mounted from library/mysql
4555572a6bb2: Mounted from library/mysql
8527ccd6bd85: Mounted from library/mysql
d76a5f910f6b: Mounted from library/mysql
8b2952eb02aa: Mounted from library/mysql
7ff7abf4911b: Mounted from library/mysql
cfff044e1862d: Mounted from library/mysql
mysql: digest: sha256:4b6c4935195233bc10b617df3cc725a9ddd5a7f10351a7bf573bea0b5ded7649 size: 2618
```

 **dockerhub**

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anastasianikolaichik/lab2docker

Updated less than a minute ago

This repository does not have a description 

Tags

This repository contains 2 tag(s).

Tag	OS	Type	Pulled	Pushed
 mysql		Image	---	a few seconds ago
 wordpress		Image	---	a minute ago

[See all](#)

7. Выполните следующие действия с целью изучить особенности сетевого взаимодействия:
 - Получить информацию о всех сетях, работающих на текущем хосте и подробности о каждом типе сети

```
anastasiaunix@LAPTOP-ELBM9100:~$ docker network ls
NETWORK ID          NAME       DRIVER  SCOPE
b95639914046        back_net   bridge  local
ce6b7ffcee06        bridge     bridge  local
4c5763a82052        host       host    local
b154725bf310        none       null    local
anastasiaunix@LAPTOP-ELBM9100:~$ docker inspect back_net
[
  {
    "Name": "back_net",
    "Id": "b956399140461da013dfcfc7b8f05816fc11b99a4
974",
    "Created": "2024-03-16T15:01:17.0322621Z",
    "Scope": "local",
    "Driver": "bridge",
    "EnableIPv6": false,
    "IPAM": {
      "Driver": "default",
      "Options": {},
      "Config": [
        {
          "Subnet": "172.18.0.0/16",
          "Gateway": "172.18.0.1"
        }
      ]
    },
    "Internal": false,
    "Attachable": false,
    "Ingress": false,
    "ConfigFrom": {
      "Network": ""
    },
    "ConfigOnly": false,
    "Containers": {},
    "Options": {},
    "Labels": {}
  }
]
```



```

anastasiaunix@LAPTOP-ELBM9100:~$ docker inspect bridge
[
  {
    "Name": "bridge",
    "Id": "ce6b7ffcee067c5ca53a53cba5900fa23256820b9fcd71610482824
99d",
    "Created": "2024-03-16T14:16:33.801390018Z",
    "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": {},
    "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": {}
  }
]

```

- Создать свою собственную сеть bridge, проверить, создана ли она, запустить Docker-контейнер в созданной сети, вывести о ней всю информацию(включая IP-адрес контейнера), отключить сеть от контейнера

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker network ls
NETWORK ID        NAME          DRIVER  SCOPE
b95639914046     back_net     bridge  local
ce6b7ffcee06     bridge      bridge  local
4c5763a82052     host        host    local
b154725bf310     none        null    local
anastasiaunix@LAPTOP-ELBM9100:~$ docker network create net_bridge
ae08b218c1e4d14b2359d5f299923094ff9304618c19eb60a6ec16250b073595
anastasiaunix@LAPTOP-ELBM9100:~$ docker network ls
NETWORK ID        NAME          DRIVER  SCOPE
b95639914046     back_net     bridge  local
ce6b7ffcee06     bridge      bridge  local
4c5763a82052     host        host    local
ae08b218c1e4     net_bridge   bridge  local
b154725bf310     none        null    local

```

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
f9924d72b49d  ubuntu   "/bin/bash"   About a minute ago   Up About a minute   brigl
anastasiaunix@LAPTOP-ELBM9100:~$ docker inspect f9924d72b49d

```

```

Gateway : 172.20.0.1 ,
"IPAddress": "172.20.0.2",

```

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker network inspect net_bridge
[

```

```

"Containers": {
  "f9924d72b49d7151e63ed8a7acfa7758b55dcb30263903403fe2b0f0797ce653":
    {
      "Name": "brig1",
      "EndpointID": "36fa0ca295ab26edbd2522be8d0fda7a7c74604b60a72600",
      "MacAddress": "02:42:ac:14:00:02",
      "IPv4Address": "172.20.0.2/16",
      "IPv6Address": ""
    }
}
anastasiaunix@LAPTOP-ELBM9100:~$ docker network disconnect oneMORE cont_1
anastasiaunix@LAPTOP-ELBM9100:~$ docker network disconnect oneMORE cont_1
Error response from daemon: container c867cd8004142ad90dbf6e1e45bb652ada3818dbdf68fd0e8872911607170e1c is not connected to network oneMORE

```

- Создать еще одну сеть bridge, вывести о ней всю информацию, запустить в ней три контейнера, подключиться к любому из контейнеров и пропинговать два других из оболочки контейнера, убедиться, что между контейнерами происходит общение по IP-адресу

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker network create oneMORE
b90cb7bb5244ae7c9a7c8d10350e411c8e6e1a10ddc4028f97c4ecc2255d72e3
anastasiaunix@LAPTOP-ELBM9100:~$ docker network ls

```

NETWORK ID	NAME	DRIVER	SCOPE
b95639914046	back_net	bridge	local
ce6b7ffcee06	bridge	bridge	local
4c5763a82052	host	host	local
ae08b218c1e4	net_bridge	bridge	local
b154725bf310	none	null	local
b90cb7bb5244	oneMORE	bridge	local

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker run -d --rm --name cont_1 --net=oneM
ORE yandex/clickhouse-server
c867cd8004142ad90dbf6e1e45bb652ada3818dbdf68fd0e8872911607170e1c
anastasiaunix@LAPTOP-ELBM9100:~$ docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED
STATUS        PORTS                               NAMES
c867cd800414   yandex/clickhouse-server           "/entrypoint.sh"        6 seconds ago
Up 5 seconds   8123/tcp, 9000/tcp, 9009/tcp        cont_1
anastasiaunix@LAPTOP-ELBM9100:~$ docker run -d --rm --name cont_2 --net=oneM
ORE yandex/clickhouse-server
e89d53e6da0cf5fb1814186a68a42b3fc3e8bb6bef74b7b7a21db12db9d43285
anastasiaunix@LAPTOP-ELBM9100:~$ docker run -d --rm --name cont_3 --net=oneM
ORE yandex/clickhouse-server
e820ab973b0b24cb0a0ba87ab59a06a6dfd88864d34690226eeadf2f1e9c0db4
anastasiaunix@LAPTOP-ELBM9100:~$ docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED
STATUS        PORTS                               NAMES
e820ab973b0b   yandex/clickhouse-server           "/entrypoint.sh"        4 seconds ago
Up 3 seconds   8123/tcp, 9000/tcp, 9009/tcp        cont_3
e89d53e6da0c   yandex/clickhouse-server           "/entrypoint.sh"        11 seconds ago
Up 10 seconds  8123/tcp, 9000/tcp, 9009/tcp        cont_2
c867cd800414   yandex/clickhouse-server           "/entrypoint.sh"        33 seconds ago
Up 32 seconds  8123/tcp, 9000/tcp, 9009/tcp        cont_1
anastasiaunix@LAPTOP-ELBM9100:~$ docker exec -it cont_1 bash

```

```

root@c867cd800414:/# ping cont_2
PING cont_2 (172.21.0.3) 56(84) bytes of data.
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=1 ttl=64 time=2.69 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=2 ttl=64 time=0.094 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=3 ttl=64 time=0.081 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=4 ttl=64 time=0.115 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=5 ttl=64 time=0.130 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=6 ttl=64 time=0.119 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=7 ttl=64 time=0.102 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=8 ttl=64 time=0.125 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=9 ttl=64 time=0.089 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=10 ttl=64 time=0.102 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=11 ttl=64 time=0.087 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=12 ttl=64 time=0.070 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=13 ttl=64 time=0.259 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=14 ttl=64 time=0.064 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=15 ttl=64 time=0.102 ms
64 bytes from cont_2.oneMORE (172.21.0.3): icmp_seq=16 ttl=64 time=0.135 ms
^C

```

```

root@c867cd800414:/# ping cont_3
PING cont_3 (172.21.0.4) 56(84) bytes of data.
64 bytes from cont_3.oneMORE (172.21.0.4): icmp_seq=1 ttl=64 time=1.40 ms
64 bytes from cont_3.oneMORE (172.21.0.4): icmp_seq=2 ttl=64 time=0.095 ms
64 bytes from cont_3.oneMORE (172.21.0.4): icmp_seq=3 ttl=64 time=0.090 ms
64 bytes from cont_3.oneMORE (172.21.0.4): icmp_seq=4 ttl=64 time=0.248 ms
64 bytes from cont_3.oneMORE (172.21.0.4): icmp_seq=5 ttl=64 time=0.235 ms
64 bytes from cont_3.oneMORE (172.21.0.4): icmp_seq=6 ttl=64 time=0.124 ms
64 bytes from cont_3.oneMORE (172.21.0.4): icmp_seq=7 ttl=64 time=0.111 ms
^C

```

- Создать свою собственную сеть overlay, проверить, создана ли она, вывести о ней всю информацию

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker swarm init
Swarm initialized: current node (rwoqw0rz0r4sut83b0xtvvhx2r) is now a manager
.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-lyn6s1859wmr25nxyslwz0azc5p865jidmtyh
r8vnnrhj47gat-auo4k3m9tgs21j3r6n1ua0i2m 192.168.65.3:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and fo
llow the instructions.

anastasiaunix@LAPTOP-ELBM9100:~$ docker network create --driver overlay my_o
ver_1
qscgd645o97ocib79a944yb3y
anastasiaunix@LAPTOP-ELBM9100:~$ docker network ls
NETWORK ID          NAME                DRIVER              SCOPE
b95639914046        back_net            bridge              local
ce6b7ffcee06        bridge              bridge              local
f03e6b7a7f54        docker_gwbridge     bridge              local
4c5763a82052        host                host                local
ntfh9z665auu        ingress             overlay             swarm
qscgd645o97o        my_over_1           overlay             swarm
ae08b218c1e4        net_bridge          bridge              local
b154725bf310        none                null                local
b90cb7bb5244        oneMORE             bridge              local
anastasiaunix@LAPTOP-ELBM9100:~$ docker network inspect my_over_1
[
  {
    "Name": "my_over_1",
    "Id": "qscgd645o97ocib79a944yb3y",
    "Created": "2024-03-16T18:26:31.87402551Z",
    "Scope": "swarm",
    "Driver": "overlay",
    "EnableIPv6": false,
    "IPAM": {
      "Driver": "default",
      "Options": null,
      "Config": [
        {
          "Subnet": "10.0.1.0/24",
          "Subnet": "10.0.1.0/24",
          "Gateway": "10.0.1.1"
        }
      ]
    },
    "Internal": false,
    "Attachable": false,
    "Ingress": false,
    "ConfigFrom": {
      "Network": ""
    },
    "ConfigOnly": false,
    "Containers": null,
    "Options": {
      "com.docker.network.driver.overlay.vxlanid_list": "4097"
    },
    "Labels": null
  }
]

```

- Создать еще одну сеть overlay, проверить, создана ли она, вывести о ней всю информацию, удалить сеть

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker network create --driver overlay my_over_2
cztdf5ygemtcjaaopob7ilce7
anastasiaunix@LAPTOP-ELBM9100:~$ docker network ls
NETWORK ID          NAME                DRIVER             SCOPE
b95639914046        back_net            bridge             local
ce6b7ffcee06        bridge              bridge             local
f03e6b7a7f54        docker_gwbridge     bridge             local
4c5763a82052        host                host               local
ntfh9z665auu        ingress             overlay            swarm
qscgd645o97o        my_over_1           overlay            swarm
cztdf5ygemtc        my_over_2           overlay            swarm
ae08b218c1e4        net_bridge          bridge             local
b154725bf310        none                null               local
b90cb7bb5244        oneMORE             bridge             local
anastasiaunix@LAPTOP-ELBM9100:~$ docker network rm my_over_2
my_over_2
anastasiaunix@LAPTOP-ELBM9100:~$ docker network ls
NETWORK ID          NAME                DRIVER             SCOPE
b95639914046        back_net            bridge             local
ce6b7ffcee06        bridge              bridge             local
f03e6b7a7f54        docker_gwbridge     bridge             local
4c5763a82052        host                host               local
ntfh9z665auu        ingress             overlay            swarm
qscgd645o97o        my_over_1           overlay            swarm
ae08b218c1e4        net_bridge          bridge             local
b154725bf310        none                null               local
b90cb7bb5244        oneMORE             bridge             local

```

- Попробовать создать сеть host, сохранить результат в отчет.

```

anastasiaunix@LAPTOP-ELBM9100:~$ docker network create --driver host new_host
Error response from daemon: only one instance of "host" network is allowed

```

Сеть типа host обеспечивает контейнеру доступ к сетевым интерфейсам хоста, поэтому может существовать в единственном экземпляре.

При необходимости использования сети типа хост для какого-либо контейнера нам нужно использовать уже существующий.