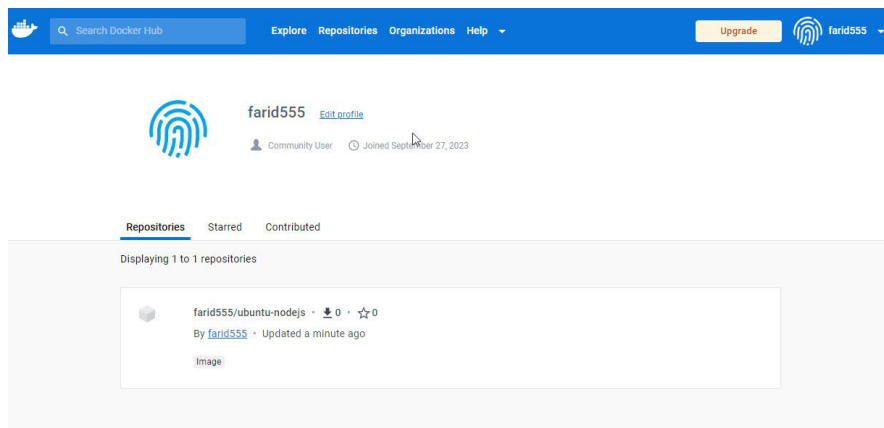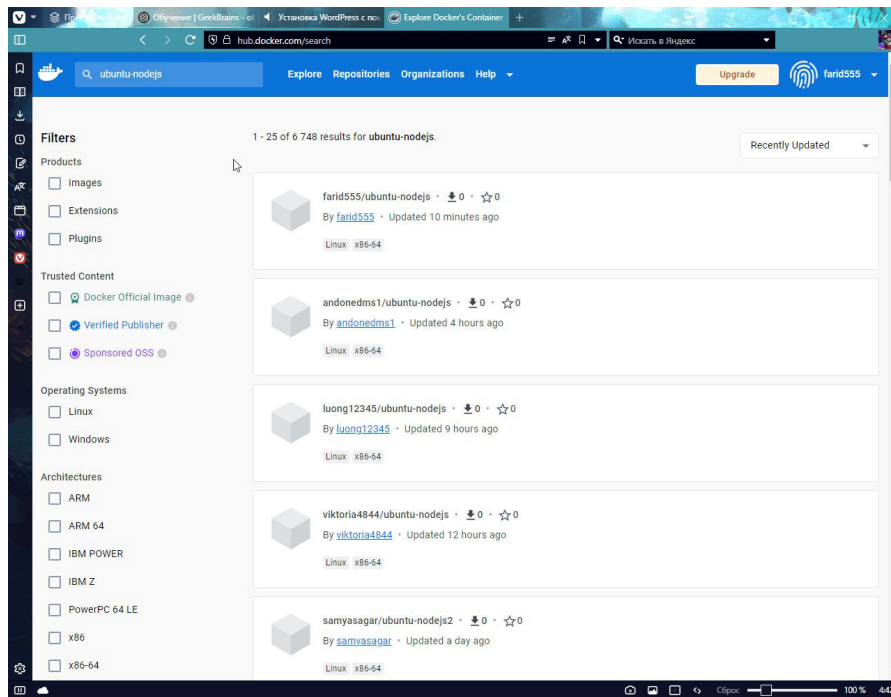# Урок 7. Запуск веб-приложения из контейнеров

**Задание**

1) Установить в виртуальную машину или VDS Docker, настроить набор контейнеров через docker compose по [инструкции](#).
Часть с настройкой certbot и HTTPS опустить, если у вас нет настоящего домена и белого IP.

```
PS C:\Users\fred1> ssh fred1@192.168.1.68
fred1@192.168.1.68's password:
Last login: Wed Sep 27 01:48:22 2023 from 192.168.1.66
fred1@fred1VirtualBox:~$ sudo apt update
[sudo] пароль для fred1:
Сущ:1 http://archive.ubuntu.com/ubuntu InRelease
Сущ:2 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Сущ:3 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Сущ:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Игн:5 http://packages.linuxmint.com victoria InRelease
Сущ:6 http://packages.linuxmint.com victoria Release
Чтение списков пакетов… Готово
Построение дерева зависимостей… Готово
Чтение информации о состоянии… Готово
Может быть обновлён 191 пакет. Запустите «apt list --upgradable» для показа.
fred1@fred1VirtualBox:~$ sudo apt install apt-transport-https ca-certificates curl software-properties-common
Чтение списков пакетов… Готово
Построение дерева зависимостей… Готово
Чтение информации о состоянии… Готово
Уже установлен пакет ca-certificates самой новой версии (20230311ubuntu0.22.04.1).
Следующие НОВЫЕ пакеты будут установлены:
  apt-transport-https software-properties-common
Следующие пакеты будут обновлены:
  curl libcurl4
Обновлено 2 пакета, установлено 2 новых пакетов, для удаления отмечено 0 пакетов, и 189 пакетов не обновлено.
Необходимо скачать 496 kB архивов.
После данной операции объём занятого дискового пространства возрастёт на 185 kB.
Пол:1 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 apt-transport-https all 2.4.10 [1.510 B]
Пол:2 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 curl amd64 7.81.0-1ubuntu1.13 [194 kB]
Пол:3 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libcurl4 amd64 7.81.0-1ubuntu1.13 [290 kB]
Пол:4 http://packages.linuxmint.com victoria/upstream amd64 software-properties-common all 2.2.3 [9.856 B]
Получено 496 kB за 10c (47,5 kB/s)
Выбор ранее не выбранного пакета apt-transport-https.
(Чтение базы данных … на данный момент установлено 537248 файлов и каталогов.)
Подготовка к распаковке …/apt-transport-https_2.4.10_all.deb …
Распаковывается apt-transport-https (2.4.10) …
Подготовка к распаковке …/curl_7.81.0-1ubuntu1.13_amd64.deb …
Распаковывается curl (7.81.0-1ubuntu1.13) на замену (7.81.0-1ubuntu1.10) …
Подготовка к распаковке …/libcurl4_7.81.0-1ubuntu1.13_amd64.deb …
Распаковывается libcurl4:amd64 (7.81.0-1ubuntu1.13) на замену (7.81.0-1ubuntu1.10) …
Выбор ранее не выбранного пакета software-properties-common.
Подготовка к распаковке …/software-properties-common_2.2.3_all.deb …
Распаковывается software-properties-common (2.2.3) …
```

```
Настраивается пакет software-properties-common (2.2.3) …
Настраивается пакет libcurl4:amd64 (7.81.0-1ubuntu1.13) …
Настраивается пакет curl (7.81.0-1ubuntu1.13) …
Обрабатываются триггеры для man-db (2.10.2-1) …
Обрабатываются триггеры для libc-bin (2.35-0ubuntu3.1) …
fred1@fred1VirtualBox:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
OK
fred1@fred1VirtualBox:~$ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu bionic stable"
fred1@fred1VirtualBox:~$ sudo apt update
Сущ:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Игн:2 http://packages.linuxmint.com victoria InRelease
Сущ:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Пол:4 https://download.docker.com/linux/ubuntu bionic InRelease [64,4 kB]
Сущ:5 http://security.ubuntu.com/ubuntu jammy-security InRelease
Сущ:6 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Сущ:7 http://packages.linuxmint.com victoria Release
Пол:8 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages [39,0 kB]
Получено 103 kB за 2c (50,5 kB/s)
Чтение списков пакетов… Готово
Построение дерева зависимостей… Готово
Чтение информации о состоянии… Готово
Может быть обновлено 189 пакетов. Запустите «apt list --upgradable» для их показа.
W: https://download.docker.com/linux/ubuntu/dists/bionic/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see
the DEPRECATION section in apt-key(8) for details.
fred1@fred1VirtualBox:~$ apt-cache policy docker-ce
docker-ce:
  Установлен: (отсутствует)
  Кандидат:    5:24.0.2-1~ubuntu.18.04~bionic
  Таблица версий:
     5:24.0.2-1~ubuntu.18.04~bionic 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages
     5:24.0.1-1~ubuntu.18.04~bionic 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages
     5:24.0.0-1~ubuntu.18.04~bionic 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages
     5:23.0.6-1~ubuntu.18.04~bionic 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages
     5:23.0.5-1~ubuntu.18.04~bionic 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages
```

```
     18.06.0~ce~3-0~ubuntu 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages
     18.03.1~ce~3-0~ubuntu 500
        500 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages
fred1@fred1VirtualBox:~$ sudo apt install docker-ce
Чтение списков пакетов… Готово
Построение дерева зависимостей… Готово
Чтение информации о состоянии… Готово
Будут установлены следующие дополнительные пакеты:
  containerd.io docker-buildx-plugin docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libslirp0 pigz slirp4netns
Предлагаемые пакеты:
  aufs-tools cgroupfs-mount | cgroup-lite
Следующие НОВЫЕ пакеты будут установлены:
  containerd.io docker-buildx-plugin docker-ce docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libslirp0 pigz slirp4netns
Обновлено 0 пакетов, установлено 9 новых пакетов, для удаления отмечено 0 пакетов, и 189 пакетов не обновлено.
```

```
fred1@fred1VirtualBox:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
     Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
     Active: active (running) since Thu 2023-09-28 03:41:52 +04; 37s ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 9020 (dockerd)
      Tasks: 10
     Memory: 27.6M
        CPU: 1.353s
     CGroup: /system.slice/docker.service
             └─9020 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

сен 28 03:41:51 fred1VirtualBox systemd[1]: Starting Docker Application Container Engine...
сен 28 03:41:51 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:51.277742154+04:00" level=info msg="Starting up"
сен 28 03:41:51 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:51.284038968+04:00" level=info msg="detected 127.0.0.53 nameserver, a>
сен 28 03:41:51 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:51.602730134+04:00" level=info msg="Loading containers: start."
сен 28 03:41:52 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:52.534997582+04:00" level=info msg="Loading containers: done."
```

```
fred1@fred1VirtualBox: $ sudo systemctl status docker
● docker.service - Docker Application Container Engine
     Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
     Active: active (running) since Thu 2023-09-28 03:41:52 +04; 37s ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 9020 (dockerd)
      Tasks: 10
     Memory: 27.6M
        CPU: 1.353s
     CGroup: /system.slice/docker.service
             └─9020 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

сен 28 03:41:51 fred1VirtualBox systemd[1]: Starting Docker Application Container Engine...
сен 28 03:41:51 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:51.277742154+04:00" level=info msg="Starting up"
сен 28 03:41:51 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:51.284038968+04:00" level=info msg="detected 127.0.0.53 nameserver, a
сен 28 03:41:51 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:51.602730134+04:00" level=info msg="Loading containers: start."
сен 28 03:41:52 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:52.534997582+04:00" level=info msg="Loading containers: done."
сен 28 03:41:52 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:52.696686713+04:00" level=info msg="Docker daemon" commit=659604f gra
сен 28 03:41:52 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:52.698865572+04:00" level=info msg="Daemon has completed initializati
сен 28 03:41:52 fred1VirtualBox dockerd[9020]: time="2023-09-28T03:41:52.807994226+04:00" level=info msg="API listen on /run/docker.sock"
сен 28 03:41:52 fred1VirtualBox systemd[1]: Started Docker Application Container Engine.
lines 1-21/21 (END)
[1]+  Остановлен              sudo systemctl status docker
fred1@fred1VirtualBox: $ sudo usermod -aG docker ${USER}
fred1@fred1VirtualBox: $ exit
выход
Есть остановленные задания.
fred1@fred1VirtualBox: $ exit
выход
less: malloc.c:2617: sysmalloc: Assertion `(old_top == initial_top (av) && old_size == 0) || ((unsigned long) (old_size) >= MINSIZE && prev_
inuse (old_top) && ((unsigned long) old_end & (pagesize - 1)) == 0)' failed.
Connection to 192.168.1.68 closed.
PS C:\Users\fred1> ssh fred1@192.168.1.68
fred1@192.168.1.68's password:
Last login: Thu Sep 28 02:33:52 2023 from 192.168.1.64
fred1@fred1VirtualBox: $ su - ${USER}
Пароль:
su: Сбой при проверке подлинности
fred1@fred1VirtualBox: $ su - ${USER}
Пароль:
fred1@fred1VirtualBox: $ id -nG
fred1 adm cdrom sudo dip plugdev lpadmin sambashare docker
fred1@fred1VirtualBox: $ docker

Usage:  docker [OPTIONS] COMMAND

A self-sufficient runtime for containers
```

```
fred1@fred1VirtualBox: $ docker docker-subcommand --help

Usage:  docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Common Commands:
  run         Create and run a new container from an image
  exec        Execute a command in a running container
  ps          List containers
  build       Build an image from a Dockerfile
```

```
or more help on how to use Docker, head to https://docs.docker.com/go/guides/
fred1@fred1VirtualBox: $ docker info
Client: Docker Engine - Community
 Version:    24.0.2
 Context:    default
 Debug Mode: false
 Plugins:
```

```
fred1@fred1VirtualBox: $ docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
719385e32844: Pull complete
Digest: sha256:4f53e2564790c8e7856ec08e384732aa38dc43c52f02952483e3f003afbf23db
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
 $ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
 https://hub.docker.com/

For more examples and ideas, visit:
 https://docs.docker.com/get-started/

fred1@fred1VirtualBox: $
```

```
fred1@fred1VirtualBox: $ docker search ubuntu
NAME                          DESCRIPTION                              STARS    OFFICIAL   AUTOMATED
ubuntu                        Ubuntu is a Debian-based Linux operating sys…   16441   [OK]
websphere-liberty             WebSphere Liberty multi-architecture images …   297     [OK]
open-liberty                  Open Liberty multi-architecture images based…   62      [OK]
neurodebian                   NeuroDebian provides neuroscience research s…   104     [OK]
ubuntu-debootstrap            DEPRECATED; use "ubuntu" instead               52      [OK]
ubuntu-upstart                DEPRECATED, as is Upstart (find other proces…  115     [OK]
ubuntu/nginx                  Nginx, a high-performance reverse proxy & we…  100
ubuntu/squid                  Squid is a caching proxy for the Web. Long-t…  67
ubuntu/cortex                 Cortex provides storage for Prometheus. Long…  4
ubuntu/apache2                Apache, a secure & extensible open-source HT…  60
ubuntu/kafka                  Apache Kafka, a distributed event streaming …  35
ubuntu/mysql                  MySQL open source fast, stable, multi-thread…  53
ubuntu/bind9                  BIND 9 is a very flexible, full-featured DNS…  62
ubuntu/prometheus             Prometheus is a systems and service monitori…  51
ubuntu/zookeeper              ZooKeeper maintains configuration informatio…  12
ubuntu/postgres               PostgreSQL is an open source object-relation…  31
ubuntu/redis                  Redis, an open source key-value store. Long-…  19
ubuntu/grafana                Grafana, a feature rich metrics dashboard & …  9
ubuntu/memcached              Memcached, in-memory keyvalue store for smal…  5
ubuntu/dotnet-aspnet          Chiselled Ubuntu runtime image for ASP.NET …   11
ubuntu/dotnet-deps            Chiselled Ubuntu for self-contained .NET & A…  11
ubuntu/prometheus-alertmanager Alertmanager handles client alerts from Prom…  9
ubuntu/dotnet-runtime         Chiselled Ubuntu runtime image for .NET apps…  10
ubuntu/cassandra              Cassandra, an open source NoSQL distributed …  2
ubuntu/telegraf               Telegraf collects, processes, aggregates & w…  4
fred1@fred1VirtualBox: $ docker pull ubuntu
Using default tag: latest
latest: Pulling from library/ubuntu
445a6a12be2b: Pull complete
Digest: sha256:aabed3296a3d45cede1dc866a24476c4d7e093aa806263c27ddaadbdce3c1054
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
fred1@fred1VirtualBox: $ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
ubuntu        latest    c6b84b685f35   6 weeks ago    77.8MB
hello-world   latest    9c7a54a9a43c   4 months ago   13.3kB
fred1@fred1VirtualBox: $
```

```
docker.io/library/ubuntu:latest
fred1@fred1VirtualBox: $ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
ubuntu        latest    c6b84b685f35   6 weeks ago    77.8MB
hello-world   latest    9c7a54a9a43c   4 months ago   13.3kB
fred1@fred1VirtualBox: $ docker run -it ubuntu
root@f031ff32416a:/# apt update
Get:1 http://archive.ubuntu.com/ubuntu jammy InRelease [270 kB]
Get:2 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [109 kB]
Get:5 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [1137 kB]
Get:6 http://archive.ubuntu.com/ubuntu jammy/restricted amd64 Packages [164 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [266 kB]
Get:8 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 Packages [44.0 kB]
Get:9 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [998 kB]
Get:10 http://archive.ubuntu.com/ubuntu jammy/main amd64 Packages [1792 kB]
Get:11 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [1014 kB]
Get:12 http://archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [17.5 MB]
Get:13 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1264 kB]
Get:14 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [1158 kB]
Get:15 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1284 kB]
Get:16 http://archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 Packages [49.9 kB]
Get:17 http://archive.ubuntu.com/ubuntu jammy-backports/main amd64 Packages [50.4 kB]
Get:18 http://archive.ubuntu.com/ubuntu jammy-backports/universe amd64 Packages [28.1 kB]
Fetched 27.3 MB in 9s (3010 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
4 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@f031ff32416a:/# apt install nodejs
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  ca-certificates javascript-common libbrotli1 libc-ares2 libicu70 libjs-highlight.js libnghttp2-14 libnode72 libuv1 nodejs-doc openssl
Suggested packages:
  apache2 | lighttpd | httpd npm
The following NEW packages will be installed:
  ca-certificates javascript-common libbrotli1 libc-ares2 libicu70 libjs-highlight.js libnghttp2-14 libnode72 libuv1 nodejs nodejs-doc
  openssl
```

```
Processing triggers for ca-certificates (20230311ubuntu0.22.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
root@f031ff32416a:/# node -v
v12.22.9
root@f031ff32416a:/# exit
exit
fred1@fred1VirtualBox: $ docker ps
CONTAINER ID   IMAGE     COMMAND    CREATED    STATUS    PORTS    NAMES
fred1@fred1VirtualBox: $ docker ps -a
CONTAINER ID   IMAGE         COMMAND       CREATED          STATUS                    PORTS    NAMES
f031ff32416a   ubuntu        "/bin/bash"   7 minutes ago    Exited (0) 32 seconds ago          romantic_keldysh
23368a121ca2   hello-world   "/hello"      15 minutes ago   Exited (0) 15 minutes ago          mystifying_galois
fred1@fred1VirtualBox: $ docker start aabed3296a
Error response from daemon: No such container: aabed3296a
Error: failed to start containers: aabed3296a
fred1@fred1VirtualBox: $ docker start f031ff32416a
f031ff32416a
fred1@fred1VirtualBox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND       CREATED         STATUS         PORTS    NAMES
f031ff32416a   ubuntu    "/bin/bash"   8 minutes ago   Up 9 seconds            romantic_keldysh
fred1@fred1VirtualBox: $
```

```
fred1@fred1VirtualBox: $ docker ps
CONTAINER ID    IMAGE      COMMAND        CREATED       STATUS      PORTS       NAMES
fred1@fred1VirtualBox: $ docker ps -a
CONTAINER ID    IMAGE       COMMAND          CREATED          STATUS                 PORTS       NAMES
f031ff32416a    ubuntu      "/bin/bash"      7 minutes ago    Exited (0) 32 seconds ago          romantic_keldysh
23368a121ca2    hello-world "/hello"         15 minutes ago   Exited (0) 15 minutes ago          mystifying_galois
fred1@fred1VirtualBox: $ docker start aabed3296a
Error response from daemon: No such container: aabed3296a
Error: failed to start containers: aabed3296a
fred1@fred1VirtualBox: $ docker start f031ff32416a
f031ff32416a
fred1@fred1VirtualBox:~$ docker ps
CONTAINER ID    IMAGE      COMMAND         CREATED          STATUS          PORTS      NAMES
f031ff32416a    ubuntu     "/bin/bash"     8 minutes ago    Up 9 seconds               romantic_keldysh
fred1@fred1VirtualBox: $ docker stop romantic_keldysh
romantic_keldysh
fred1@fred1VirtualBox: $ docker ps
CONTAINER ID    IMAGE      COMMAND         CREATED     STATUS      PORTS      NAMES
fred1@fred1VirtualBox: $ docker rm mystifying_galois
mystifying_galois
fred1@fred1VirtualBox: $
```

```
fred1@fred1VirtualBox: $ docker ps
CONTAINER ID    IMAGE      COMMAND        CREATED      STATUS     PORTS     NAMES
fred1@fred1VirtualBox: $ docker ps -a
CONTAINER ID    IMAGE       COMMAND          CREATED          STATUS                 PORTS      NAMES
f031ff32416a    ubuntu      "/bin/bash"      7 minutes ago    Exited (0) 32 seconds ago         romantic_keldysh
23368a121ca2    hello-world "/hello"         15 minutes ago   Exited (0) 15 minutes ago         mystifying_galois
fred1@fred1VirtualBox: $ docker start aabed3296a
Error response from daemon: No such container: aabed3296a
Error: failed to start containers: aabed3296a
fred1@fred1VirtualBox: $ docker start f031ff32416a
f031ff32416a
fred1@fred1VirtualBox:~$ docker ps
CONTAINER ID    IMAGE      COMMAND         CREATED          STATUS          PORTS      NAMES
f031ff32416a    ubuntu     "/bin/bash"     8 minutes ago    Up 9 seconds               romantic_keldysh
fred1@fred1VirtualBox: $ docker stop romantic_keldysh
romantic_keldysh
fred1@fred1VirtualBox: $ docker ps
CONTAINER ID    IMAGE      COMMAND         CREATED     STATUS     PORTS     NAMES
fred1@fred1VirtualBox: $ docker rm mystifying_galois
mystifying_galois
fred1@fred1VirtualBox: $ docker commit -m "first commit" -a "farid555" f031ff32416a farid555/ubuntu-nodejs
sha256:2b94b3efaaa13b3ffe9caed1f3a74a9113147 9a1c26e394f5bc3c/c41a455dfd
fred1@fred1VirtualBox: $ docker images
REPOSITORY            TAG       IMAGE ID       CREATED        SIZE
farid555/ubuntu-nodejs latest   2b94b3efaaa1   38 seconds ago 206MB
ubuntu                latest    c6b84b685f35   6 weeks ago    77.8MB
hello-world           latest    9c7a54a9a43c   4 months ago   13.3kB
fred1@fred1VirtualBox: $
```

```
fred1@fred1VirtualBox: $ docker commit -m "first commit" -a "farid555" f031ff32416a farid555/ubuntu-nodejs
sha256:2b94b3efaaa13b3ff 9caed1f3a74a9113147 9a1c26e394f5bc3c7c41a455dfd
fred1@fred1VirtualBox: $ docker images
REPOSITORY            TAG       IMAGE ID       CREATED        SIZE
farid555/ubuntu-nodejs latest   2b94b3efaaa1   38 seconds ago 206MB
ubuntu                latest    c6b84b685f35   6 weeks ago    77.8MB
hello-world           latest    9c7a54a9a43c   4 months ago   13.3kB
fred1@fred1VirtualBox: $ docker login -u docker-registry-username
Password:
Error response from daemon: Get "https://registry-1.docker.io/v2/": unauthorized: incorrect username or password
fred1@fred1VirtualBox: $ docker login -u farid555
Password:
WARNING! Your password will be stored unencrypted in /home/fred1/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
fred1@fred1VirtualBox: $
```

```
fred1@fred1VirtualBox: $ docker images
REPOSITORY            TAG       IMAGE ID       CREATED        SIZE
farid555/ubuntu-nodejs latest   2b94b3efaaa1   38 seconds ago 206MB
ubuntu                latest    c6b84b685f35   6 weeks ago    77.8MB
hello-world           latest    9c7a54a9a43c   4 months ago   13.3kB
fred1@fred1VirtualBox: $ docker login -u docker-registry-username
Password:
Error response from daemon: Get "https://registry-1.docker.io/v2/": unauthorized: incorrect username or password
fred1@fred1VirtualBox: $ docker login -u farid555
Password:
WARNING! Your password will be stored unencrypted in /home/fred1/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
fred1@fred1VirtualBox: $ docker push farid555/ubuntu-nodejs
Using default tag: latest
The push refers to repository [docker.io/farid555/ubuntu-nodejs]
2237fca49803: Pushed
dc0585a4b8b7: Mounted from library/ubuntu
latest: digest: sha256:76cf60a71158564d1ca3dff0984dba7133f97b17a646f8f3bf1b760730614add size: 741
fred1@fred1VirtualBox: $
```

1) sudo apt update
2) sudo apt install apt-transport-https ca-certificates curl software-properties-common
3) curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
4) sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu bionic stable"
5) sudo apt update
6) apt-cache policy docker-ce
7) sudo apt install docker-ce
8) sudo systemctl status docker

9) sudo usermod -aG docker ${USER}
10) su - ${USER}
11) id -nG

docker [option] [command] [arguments]

12) docker

docker docker-subcommand --help

13)  docker info

14) docker run hello-world

15) docker search ubuntu

16) docker pull ubuntu

17) docker images

18) docker run -it ubuntu

19) root@d9b100f2f636:/# apt update

20) root@d9b100f2f636:/#apt install nodejs

21) root@d9b100f2f636:/# node -v

## Управление контейнерами Docker

22) docker ps
23) docker ps -a

<mark>d9b100f2f636</mark>_<mark>ubuntu</mark>_"/bin/bash"_About an hour ago_Exited (0)_8 minutes ago_<mark>sharp_volhard</mark>

<mark>01c950718166</mark>_<mark>hello-world</mark>_"/hello"_About an hour ago_Exited (0)_About an hour ago_<mark>festive_williams</mark>

24) docker ps -l

| CONTAINER ID | IMAGE | COMMAND | CREATED | STATUS | PORTS |
|---|---|---|---|---|---|
| d9b100f2f636 | ubuntu | "/bin/bash" | About an hour ago | Exited (0) | 10 minutes ago |
| NAMES | | | | | |
| sharp_volhard | | | | | |

25) docker start d9b100f2f636
26) docker stop sharp_volhard
27)  docker rm festive_williams

## Сохранение изменений в контейнере в образ Docker

28)   docker commit -m "first commit" -a "farid555" d9b100f2f636  farid555/ubuntu-nodejs
29)   docker images

## Отправка контейнеров Docker в репозиторий Docker

30)   docker login -u farid555
31)   docker push farid555/ubuntu-nodejs

# Установка Docker Compose

```
fred1@fred1VirtualBox:~$ systemctl status docker
● docker.service - Docker Application Container Engine
     Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset: enabled)
     Active: active (running) since Thu 2023-09-28 16:06:49 +04; 6min ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 1011 (dockerd)
      Tasks: 10
     Memory: 100.6M
        CPU: 3.988s
     CGroup: /system.slice/docker.service
             └─1011 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

сен 28 16:06:43 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:43.907715547+04:00" level=info msg="Starting up"
сен 28 16:06:43 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:43.924593063+04:00" level=info msg="detected 127.0.0.53 nameserver, a>
сен 28 16:06:44 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:44.625519101+04:00" level=info msg="[graphdriver] using prior storage>
сен 28 16:06:44 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:44.682757708+04:00" level=info msg="Loading containers: start."
сен 28 16:06:48 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:48.268019490+04:00" level=info msg="Default bridge (docker0) is assig>
сен 28 16:06:48 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:48.656051372+04:00" level=info msg="Loading containers: done."
сен 28 16:06:49 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:49.421078597+04:00" level=info msg="Docker daemon" commit=659004f gra>
сен 28 16:06:49 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:49.426391102+04:00" level=info msg="Daemon has completed initializati>
сен 28 16:06:49 fred1VirtualBox dockerd[1011]: time="2023-09-28T16:06:49.751967444+04:00" level=info msg="API listen on /run/docker.sock"
сен 28 16:06:49 fred1VirtualBox systemd[1]: Started Docker Application Container Engine.

[1]+  Остановлен          systemctl status docker
fred1@fred1VirtualBox:~$ sudo curl -L https://github.com/docker/compose/releases/download/1.21.2/docker-compose-`uname -s`-`uname -m` -o /us
r/local/bin/docker-compose
[sudo] пароль для fred1:
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100 10.3M  100 10.3M    0     0   610k      0  0:00:17  0:00:17 --:--:-- 1503k
fred1@fred1VirtualBox:~$ sudo chmod +x /usr/local/bin/docker-compose
fred1@fred1VirtualBox:~$ docker-compose --version
docker-compose version 1.21.2, build a133471
fred1@fred1VirtualBox:~$
```

```
fred1@fred1VirtualBox:~$ fred1@fred1VirtualBox:~$
fred1@fred1VirtualBox:~$ pwd
/home/fred1
fred1@fred1VirtualBox:~$ ls

fred1@fred1VirtualBox:~$ mkdir hello-world
fred1@fred1VirtualBox:~$ cd hello-world
fred1@fred1VirtualBox:~/hello-world$ nano docker-compose.yml
fred1@fred1VirtualBox:~/hello-world$
fred1@fred1VirtualBox:~/hello-world$ docker images
REPOSITORY             TAG       IMAGE ID       CREATED        SIZE
farid555/ubuntu-nodejs latest    2b94b3efaaa1   12 hours ago   206MB
ubuntu                 latest    c6b84b685f35   6 weeks ago    77.8MB
hello-world            latest    9c7a54a9a43c   4 months ago   13.3kB
fred1@fred1VirtualBox:~/hello-world$ docker-compose up
ERROR:
        Can't find a suitable configuration file in this directory or any
        parent. Are you in the right directory?

        Supported filenames: docker-compose.yml, docker-compose.yaml

fred1@fred1VirtualBox:~/hello-world$ nano docker-compose.yml
fred1@fred1VirtualBox:~/hello-world$ fred1@fred1VirtualBox:~/hello-world$ nano docker-compose.yml
fred1@fred1VirtualBox:~/hello-world$ nano docker-compose.yml
fred1@fred1VirtualBox:~/hello-world$ fred1@fred1VirtualBox:~/hello-world$ sudo nano docker-compose.yml
fred1@fred1VirtualBox:~/hello-world$ docker-compose up
Creating hello-world_my-test_1 ... done
Attaching to hello-world_my-test_1
my-test_1  |
my-test_1  | Hello from Docker!
my-test_1  | This message shows that your installation appears to be working correctly.
my-test_1  |
my-test_1  | To generate this message, Docker took the following steps:
my-test_1  |  1. The Docker client contacted the Docker daemon.
my-test_1  |  2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
my-test_1  |     (amd64)
my-test_1  |  3. The Docker daemon created a new container from that image which runs the
my-test_1  |     executable that produces the output you are currently reading.
my-test_1  |  4. The Docker daemon streamed that output to the Docker client, which sent it
my-test_1  |     to your terminal.
my-test_1  |
my-test_1  | To try something more ambitious, you can run an Ubuntu container with:
my-test_1  |  $ docker run -it ubuntu bash
my-test_1  |
my-test_1  | Share images, automate workflows, and more with a free Docker ID:
my-test_1  |  https://hub.docker.com/
my-test_1  |
my-test_1  | For more examples and ideas, visit:
```

```
GNU nano 6.2
my-test:
    image: hello-world
```

```
fred1@fred1VirtualBox:~/hello-world$ docker images
REPOSITORY             TAG       IMAGE ID       CREATED        SIZE
farid555/ubuntu-nodejs latest    2b94b3efaaa1   12 hours ago   206MB
ubuntu                 latest    c6b84b685f35   6 weeks ago    77.8MB
hello-world            latest    9c7a54a9a43c   4 months ago   13.3kB
fred1@fred1VirtualBox:~/hello-world$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
fred1@fred1VirtualBox:~/hello-world$ docker ps -a
CONTAINER ID   IMAGE         COMMAND       CREATED             STATUS                     PORTS     NAMES
81a1d14f3145   hello-world   "/hello"      About a minute ago  Exited (0) About a minute ago        hello-world_my-test_1
f031ff32416a   ubuntu        "/bin/bash"   12 hours ago        Exited (137) 12 hours ago            romantic_keldysh
fred1@fred1VirtualBox:~/hello-world$
```

1) systemctl status docker

2) sudo curl -L https://github.com/docker/compose/releases/download/1.21.2/docker-compose-`uname -s`-`uname -m` -o /usr/local/bin/docker-compose

3) sudo chmod +x /usr/local/bin/docker-compose

4) docker-compose –version

## Запуск контейнера с помощью Docker Compose

5) pwd

6) ls

7) mkdir hello-world

8) cd hello-world

9) sudo nano docker-compose.yml

10)
my-test:

  image: hello-world

11) docker images

12) docker-compose up

Creating hello-world_my-test_1 ... done

Attaching to hello-world_my-test_1

my-test_1 |

my-test_1 | Hello from Docker!

my-test_1 | This message shows that your installation appears to be working correctly.

my-test_1 |

13) docker ps

14) docker ps -a

fred1@fred1VirtualBox:~/hello-world$ docker ps -a

| CONTAINER ID | IMAGE | COMMAND | CREATED | STATUS | PORTS | NAMES |
|---|---|---|---|---|---|---|
| 81a1d14f3145 | hello-world | "/hello" | About a minute ago | Exited (0) About a minute ago | | hello-world_my-test_1 |
| f031ff32416a | ubuntu | "/bin/bash" | 12 hours ago | Exited (137) 12 hours ago | | romantic_keldysh |

<p style="text-align: center"><u>Удаление образа (необязательно)</u></p>

15) docker rm 81a1d14

16) docker rmi hello-world

Untagged: hello-world:latest
Untagged: hello-world@sha256:4f53e2564790c8e7856ec08e384732aa38dc43c52f02952483e3f003afbf23db
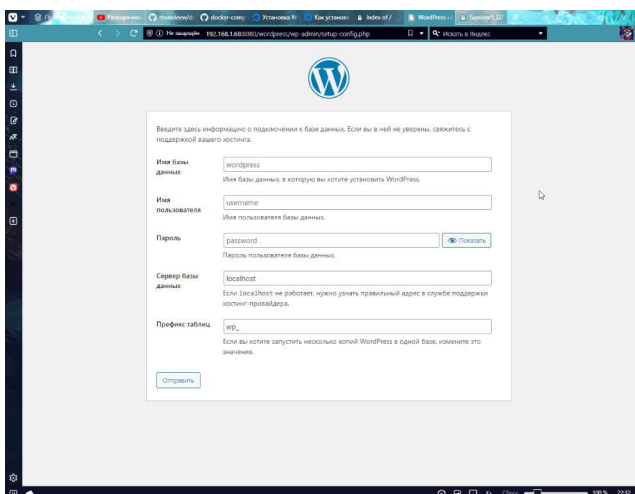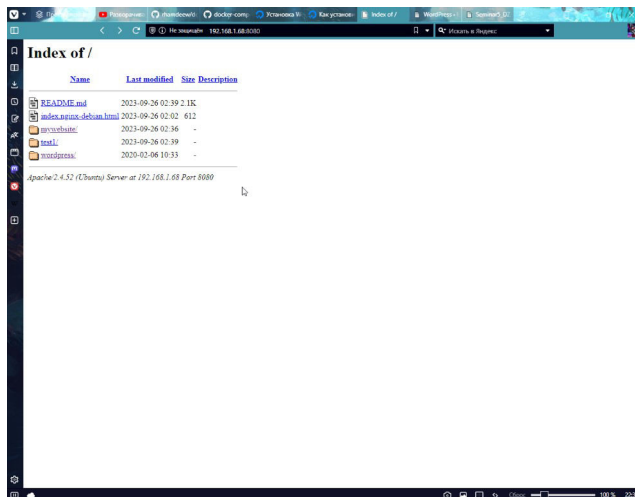Deleted: sha256:9c7a54a9a43cca047013b82af109fe963fde787f63f9e016fdc3384500c2823d
Deleted: sha256:01bb4fce3eb1b56b05adf99504dafd31907a5aadac736e36b27595c8b92f07f1

17) docker ps -a

| CONTAINER ID | IMAGE | COMMAND | CREATED | STATUS | PORTS | NAMES |
|---|---|---|---|---|---|---|
| f031ff32416a | ubuntu | "/bin/bash" | 13 hours ago | Exited (137) 12 hours ago | | romantic_keldysh |

немного wordpress -а , открыл страницу в windows-e

```
fred1@fred1VirtualBox:         $ pwd
/home/fred1/hello-world
fred1@fred1VirtualBox:         $ cd ../../
fred1@fred1VirtualBox:    $ ls

fred1@fred1VirtualBox:    $ cd fred1
fred1@fred1VirtualBox:    $ ls

fred1@fred1VirtualBox:    $ mkdir wordpress && cd wordpress
fred1@fred1VirtualBox:         $ ls
fred1@fred1VirtualBox:         $ pwd
/home/fred1/wordpress
fred1@fred1VirtualBox:         $ mkdir nginx-conf
fred1@fred1VirtualBox:         $ sudo nano nginx-conf/nginx.conf
[sudo] пароль для fred1:
fred1@fred1VirtualBox:         $ sudo nano nginx-conf/nginx.conf
[sudo] пароль для fred1:
fred1@fred1VirtualBox:         $ fred1@fred1VirtualBox:         $
fred1@fred1VirtualBox:         $ nano .env
fred1@fred1VirtualBox:         $ nano .env
fred1@fred1VirtualBox:         $ ls

fred1@fred1VirtualBox:         $ nano .env
fred1@fred1VirtualBox:         $ sudo nano .env
fred1@fred1VirtualBox:         $ ls -a
      .env
fred1@fred1VirtualBox:         $ git init
подсказка: Using 'master' as the name for the initial branch. This default branch name
подсказка: is subject to change. To configure the initial branch name to use in all
подсказка: of your new repositories, which will suppress this warning, call:
подсказка:
подсказка:      git config --global init.defaultBranch <name>
подсказка:
подсказка: Names commonly chosen instead of 'master' are 'main', 'trunk' and
подсказка: 'development'. The just-created branch can be renamed via this command:
подсказка:
подсказка:      git branch -m <name>
Инициализирован пустой репозиторий Git в /home/fred1/wordpress/.git/
fred1@fred1VirtualBox:         $ nano .gitignore
fred1@fred1VirtualBox:         $ fred1@fred1VirtualBox:         $
fred1@fred1VirtualBox:         $ nano .dockerignore
fred1@fred1VirtualBox:         $ nano .dockerignore
fred1@fred1VirtualBox:         $ nano docker-compose.yml
fred1@fred1VirtualBox:         $ nano docker-compose.yml
fred1@fred1VirtualBox:         $ fred1@fred1VirtualBox:         $
fred1@fred1VirtualBox:         $
```

```
  GNU nano 6.2                          docker-compose.yml
version: '3'

services:
  db:
    image: mysql:8.0
    container_name: db
    restart: unless-stopped
    env_file: .env
    environment:
      - MYSQL_DATABASE=wordpress
    volumes:
      - dbdata:/var/lib/mysql
    command: '--default-authentication-plugin=mysql_native_password'
    networks:
      - app-network

  wordpress:
    depends_on:
      - db
    image: wordpress:5.1.1-fpm-alpine
    container_name: wordpress
    restart: unless-stopped
    env_file: .env
    environment:
      - WORDPRESS_DB_HOST=db:3306
      - WORDPRESS_DB_USER=$MYSQL_USER
      - WORDPRESS_DB_PASSWORD=$MYSQL_PASSWORD
      - WORDPRESS_DB_NAME=wordpress
    volumes:
      - wordpress:/var/www/html
    networks:
      - app-network

  webserver:
    depends_on:
      - wordpress
    image: nginx:1.15.12-alpine
    container_name: webserver
    restart: unless-stopped
    ports:
      - "443:443"
    volumes:
      - wordpress:/var/www/html
      - ./nginx-conf:/etc/nginx/conf.d
                              [ Прочитано 67 строк ]
^G Справка    ^O Записать    ^W Поиск     ^K Вырезать    ^T Выполнить   ^_ Позиция    ^U Отмена     ^А Установить  ^] На скобку
^X Выход      ^R ЧитФайл     ^\ Замена    ^U Вставить    ^J Выровнять   ^G К строке   ^U Повтор     ^P Копировать  ^Е Обр. поиск
```

```
fred1@fred1VirtualBox:         $ fred1@fred1VirtualBox:         $
fred1@fred1VirtualBox:         $ docker-compose up -d
Creating network "wordpress_app-network" with driver "bridge"
Creating network "wordpress_default" with the default driver
Creating volume "wordpress_certbot-etc" with default driver
Creating volume "wordpress_wordpress" with default driver
Creating volume "wordpress_dbdata" with default driver
Pulling db (mysql:8.0)...
8.0: Pulling from library/mysql
5262579e8e45: Extracting [=====================================>    ]  41.75MB/44.96MB
741b767e25b7: Download complete
06e0c37837cf: Download complete
c6f5d3670db7: Download complete
d5c567b29c3e: Download complete
323a74fdf36b: Download complete
130e11b8eb71: Downloading [=================================>         ]  44.55MB/58.51MB
e92f1f2dd77c: Download complete
43c0f03962c9: Download complete
```

```
fred1@fred1VirtualBox:         $ docker-compose ps
   Name          Command              State              Ports
-------------------------------------------------------------------------------
certbot     certbot certonly --webroot ...   Exit 1
db          docker-entrypoint.sh --def ...   Up       3306/tcp, 33060/tcp
webserver   nginx -g daemon off;             Up       0.0.0.0:443->443/tcp,:::443->443/tcp, 80/tcp
wordpress   docker-entrypoint.sh php-fpm     Up       9000/tcp
fred1@fred1VirtualBox:         $
```

2)Запустить два контейнера, связанные одной сетью (используя документацию).
Первый контейнер БД (например, образ mariadb:10.8), второй контейнер — phpmyadmin.
Получить доступ к БД в первом контейнере через второй контейнер (веб-интерфейс
phpmyadmin).
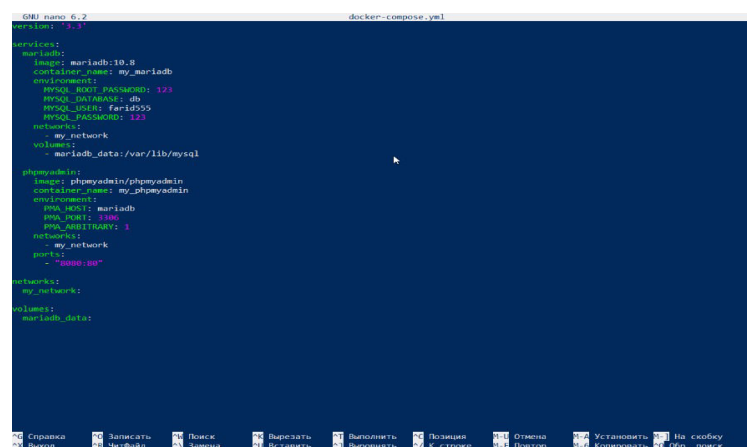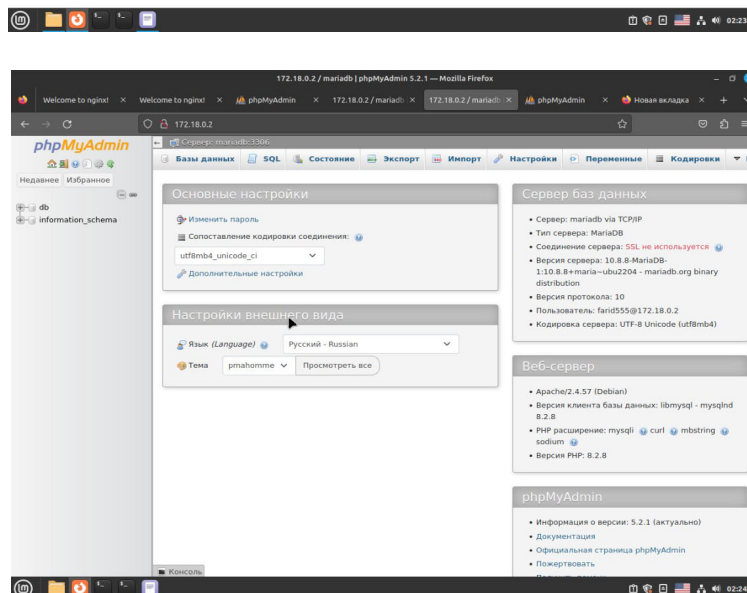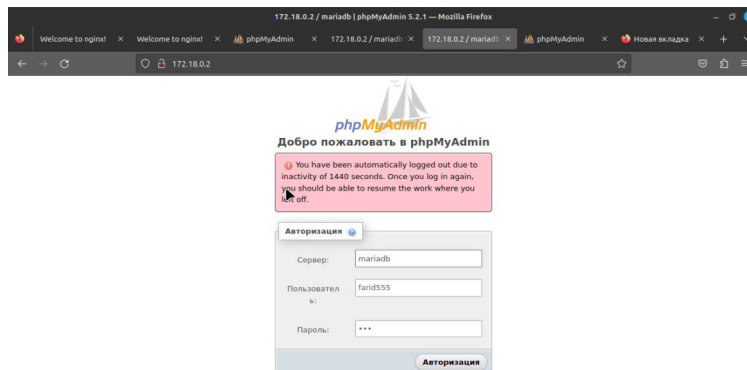
1) mkdir my_db_project
2) cd my_db_project
2) nano docker-compose.yml
3) docker-compose up -d
4) sudo systemctl restart docker
5) sudo systemctl status docker
6) sudo docker-compose up -d
7) sudo docker ps -a

**Результат**

Текст команд, которые применялись при выполнении задания.

При наличии: часть конфигурационных файлов, которые решают задачу.

Скриншоты результата запуска контейнеров (веб-интерфейс).

Присылаем в формате текстового документа: задание и команды для решения (без вывода).

Формат — PDF (один файл на все задания).

Спасибо , всего хорошего !)