Лабораторная работа №1

Тема: Работа с Docker.

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

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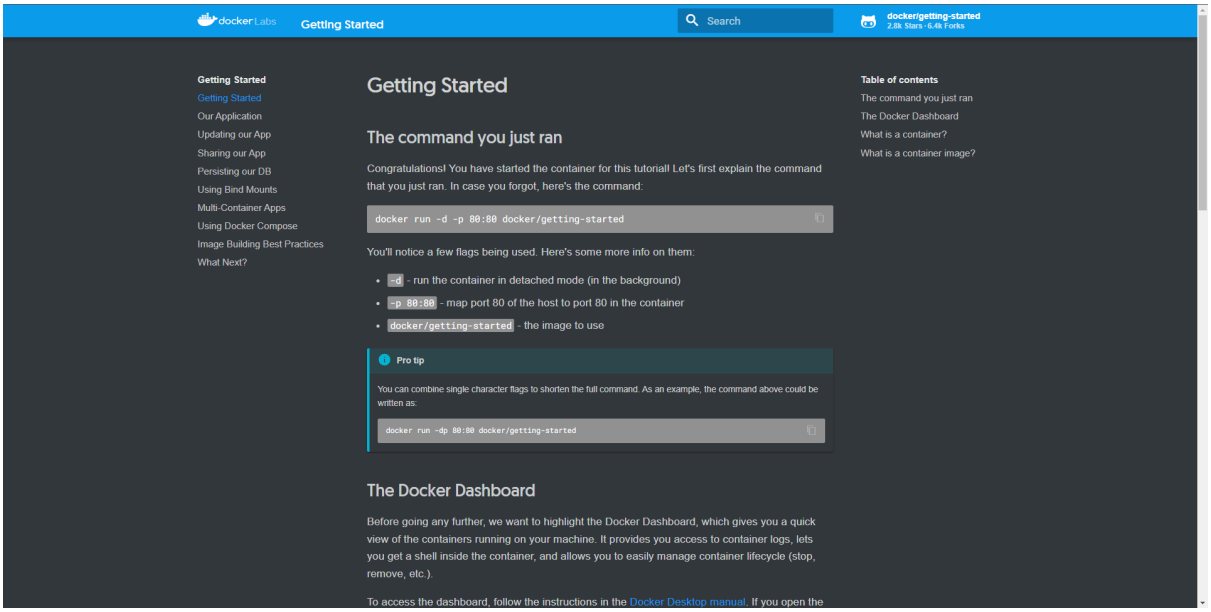
Группа: 253503

```
C:\Users\PC>docker run -d -p 80:80 docker/getting-started
Unable to find image 'docker/getting-started:latest' locally
latest: Pulling from docker/getting-started
c158987b0551: Pull complete
1e35f6679fab: Pull complete
cb9626c74200: Pull complete
b6334b6ace34: Pull complete
f1d1c9928c82: Pull complete
9b6f639ec6ea: Pull complete
ee68d3549ec8: Pull complete
33e0cbbb4673: Pull complete
4f7e34c2de10: Pull complete
Digest: sha256:d79336f4812b6547a53e735480dde67f8f8f7071b414fbd9297609ffb989abc1
Status: Downloaded newer image for docker/getting-started:latest
69850b72dbd0164d6c21acf8a1f094b2a9ddc8aa0dd6376e191aace1d3888d15
```



```
PS C:\Users\PC\docker_project> mkdir docker_project

    Directory: C:\Users\PC\docker_project

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d----            3/8/2024   11:12                docker_project

PS C:\Users\PC\docker_project> cd ..
PS C:\Users\PC> mkdir docker_project

    Directory: C:\Users\PC

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d----            3/8/2024   11:12                docker_project

PS C:\Users\PC> cd docker_project
PS C:\Users\PC\docker_project> python -m venv .venv
PS C:\Users\PC\docker_project> .venv\Scripts\activate
(.venv) PS C:\Users\PC\docker_project> mkdir geometric_lib_app

    Directory: C:\Users\PC\docker_project

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d----            3/8/2024   11:19                geometric_lib_app

(.venv) PS C:\Users\PC\docker_project> cd geometric_lib_app
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> git clone https://github.com/smartiqaorg/geometric_lib
Cloning into 'geometric_lib'...
remote: Enumerating objects: 35, done.
remote: Total 35 (delta 0), reused 0 (delta 0), pack-reused 35
Receiving objects: 100% (35/35), 4.60 KiB | 672.00 KiB/s, done.
Resolving deltas: 100% (6/6), done.
```

```
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker build C:\Users\PC\docker_project\geometric_lib_app\geometric_lib -t test:latest
[+] Building 3.2s (9/9) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 163B
 => [internal] load metadata for docker.io/library/python:latest
 => [auth] library/python:pull token for registry-1.docker.io
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load build context
 => => transferring context: 2.54kB
 => CACHED [1/3] FROM docker.io/library/python:latest@sha256:e83d1f4d0c735c7a54fc9dae3cca8c58473e3b3de08fcb7ba3d342ee75cfc09d
 => => resolve docker.io/library/python:latest@sha256:e83d1f4d0c735c7a54fc9dae3cca8c58473e3b3de08fcb7ba3d342ee75cfc09d
 => [2/3] COPY . /app
 => [3/3] WORKDIR /app
 => exporting to image
 => => exporting layers
 => => writing image sha256:7df9c07ac1967f5f6dca1dc42c1874f3a0b22e352888e4da3eb85b0b2df352a8
 => => naming to docker.io/library/test:latest

View build details: docker-desktop://dashboard/build/default/default/b2f0wlhe9imzgud22idwpqq6q

What's Next?
  View a summary of image vulnerabilities and recommendations → docker scout quickview
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker images
REPOSITORY   TAG       IMAGE ID       CREATED          SIZE
test         latest    7df9c07ac196   6 seconds ago    1.02GB
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker run -e SCRIPT_ARG1=3 7df9c07ac196
Площадь для радиуса 3.0: 28.274333882308138
Периметр для радиуса 3.0: 18.84955592153876
```

```
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker ps -a
CONTAINER ID   IMAGE         COMMAND                  CREATED              STATUS                          PORTS     NAMES
82bbee546502   test:latest   "python circle.py ---…"   About a minute ago   Exited (1) About a minute ago             reverent_moore
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker ps -s
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES     SIZE
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker info
```

```
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker logs 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
Площадь для радиуса 3.0: 28.274333882308138
Периметр для радиуса 3.0: 18.84955592153876
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker logs --tail 1 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
Периметр для радиуса 3.0: 18.84955592153876
```

```
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker logs -f 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
Площадь для радиуса 3.0: 28.274333882308138
Периметр для радиуса 3.0: 18.84955592153876
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker logs -t 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
2024-03-08T09:16:12.282101483Z Площадь для радиуса 3.0: 28.274333882308138
2024-03-08T09:16:12.282133665Z Периметр для радиуса 3.0: 18.84955592153876
```

```
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker stop 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker start 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker pause 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
Error response from daemon: container 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50 is not running
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker unpause 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
Error response from daemon: Container 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50 is not paused
```

```
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker container rm 0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
0a4d2cfd18bf8027094c7c8aa3359ca8891219baa452dfdc4a151d893b6d7e50
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker image rm 7df9c07ac1967f5f6dca1dc42c1874f3a0b22e352888e4da3eb85b0b2df352a8
Untagged: test:latest
Deleted: sha256:7df9c07ac1967f5f6dca1dc42c1874f3a0b22e352888e4da3eb85b0b2df352a8
```

```
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker start 52767e084eebe1815956ebe85f283b02c8bd4ef37feff2fabef3c271b2e8b78c
52767e084eebe1815956ebe85f283b02c8bd4ef37feff2fabef3c271b2e8b78c
(.venv) PS C:\Users\PC\docker_project\geometric_lib_app> docker container inspect 52767e084eebe1815956ebe85f283b02c8bd4ef37feff2fabef3c271b2e8b78c
[
    {
        "Id": "52767e084eebe1815956ebe85f283b02c8bd4ef37feff2fabef3c271b2e8b78c",
        "Created": "2024-03-08T09:29:25.527938455Z",
        "Path": "python",
        "Args": [
            "circle.py",
            "--arg1",
            "$SCRIPT_ARG1"
        ],
```

Dockerfile – Блокнот

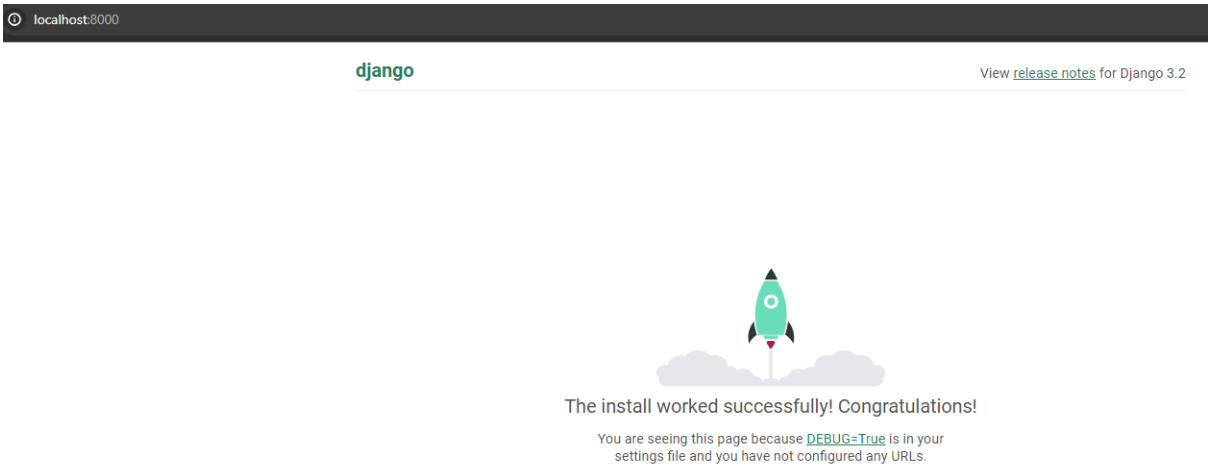
Файл Правка Формат Вид Справка

```
FROM python
COPY . /app
WORKDIR /app

ENV SCRIPT_ARG1=default_value
CMD ["python", "circle.py", "--arg1", "$SCRIPT_ARG1"]
```

```
PS C:\Users\PC> mkdir django_project


    Directory: C:\Users\PC

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d----           3/9/2024   12:02                django_project

PS C:\Users\PC> cd django_project
PS C:\Users\PC\django_project> python -m venv .venv
PS C:\Users\PC\django_project> .venv\Scripts\activate
(.venv) PS C:\Users\PC\django_project> pip install django
Collecting django
  Using cached Django-5.0.3-py3-none-any.whl.metadata (4.2 kB)
Collecting asgiref<4,>=3.7.0 (from django)
  Using cached asgiref-3.7.2-py3-none-any.whl.metadata (9.2 kB)
Collecting sqlparse>=0.3.1 (from django)
  Using cached sqlparse-0.4.4-py3-none-any.whl.metadata (4.0 kB)
Collecting tzdata (from django)
  Using cached tzdata-2024.1-py2.py3-none-any.whl.metadata (1.4 kB)
Using cached Django-5.0.3-py3-none-any.whl (8.2 MB)
Using cached asgiref-3.7.2-py3-none-any.whl (24 kB)
Using cached sqlparse-0.4.4-py3-none-any.whl (41 kB)
Using cached tzdata-2024.1-py2.py3-none-any.whl (345 kB)
Installing collected packages: tzdata, sqlparse, asgiref, django
Successfully installed asgiref-3.7.2 django-5.0.3 sqlparse-0.4.4 tzdata-2024.1
(.venv) PS C:\Users\PC\django_project> pip install mysqlclient
Collecting mysqlclient
  Using cached mysqlclient-2.2.4-cp312-cp312-win_amd64.whl.metadata (4.6 kB)
Using cached mysqlclient-2.2.4-cp312-cp312-win_amd64.whl (203 kB)
Installing collected packages: mysqlclient
Successfully installed mysqlclient-2.2.4
(.venv) PS C:\Users\PC\django_project> django-admin startproject mysite
(.venv) PS C:\Users\PC\django_project> cd mysite
```

```
PS C:\Users\PC\django_project> docker-compose build
[+] Building 0.7s (10/10) FINISHED
 => [django internal] load build definition from Dockerfile
 => => transferring dockerfile: 155B
 => [django internal] load metadata for docker.io/library/python:latest
 => [django internal] load .dockerignore
 => => transferring context: 2B
 => [django 1/5] FROM docker.io/library/python:latest@sha256:e83d1f4d0c735c7a54fc9dae3cca8c58473e3b3de08fcb7ba3d342ee75cfc09d
 => => resolve docker.io/library/python:latest@sha256:e83d1f4d0c735c7a54fc9dae3cca8c58473e3b3de08fcb7ba3d342ee75cfc09d
 => [django internal] load build context
 => => transferring context: 349B
 => CACHED [django 2/5] WORKDIR /app
 => CACHED [django 3/5] COPY mysite/requirements.txt /app/
 => CACHED [django 4/5] RUN pip install -r requirements.txt
 => CACHED [django 5/5] COPY mysite /app/
 => [django] exporting to image
 => => exporting layers
 => => writing image sha256:4dbfec31fd8da7288196a6188 0c2aba2ddad1d036a37e6edb251587f4f1f035c
 => => naming to docker.io/library/django_project-django
PS C:\Users\PC\django_project> docker-compose up
[+] Running 11/11
 ⠿ db 10 layers [⠿⠿⠿⠿⠿⠿⠿⠿⠿⠿]      0B/0B      Pulled
   ⠿ 9a5c778f631f Pull complete
   ⠿ 9e77c3a95bf2 Pull complete
   ⠿ 8b279a2086e0 Pull complete
   ⠿ c8bfbcde7882 Pull complete
   ⠿ d35b074b68ec Pull complete
   ⠿ beea5014e6af Pull complete
   ⠿ dc3791a61558 Pull complete
   ⠿ 52f9323b9f0e Pull complete
   ⠿ 7f7391eab49b Pull complete
   ⠿ 8d2f04b287ee Pull complete
[+] Running 3/3
 ⠿ Network django_project_default     Created
 ⠿ Container django_project-db-1      Created
 ⠿ Container django_project-django-1  Created
Attaching to db-1, django-1
db-1       | 2024-03-09 12:13:14+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.3.0-1.el8 started.
db-1       | 2024-03-09 12:13:14+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
db-1       | 2024-03-09 12:13:14+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 8.3.0-1.el8 started.
db-1       | 2024-03-09 12:13:14+00:00 [Note] [Entrypoint]: Initializing database files
db-1       | 2024-03-09T12:13:14.779269Z 0 [System] [MY-015017] [Server] MySQL Server Initialization - start.
db-1       | 2024-03-09T12:13:14.782479Z 0 [System] [MY-013169] [Server] /usr/sbin/mysqld (mysqld 8.3.0) initializing of server in progress as process 80
db-1       | 2024-03-09T12:13:14.794050Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
db-1       | 2024-03-09T12:13:15.482236Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
db-1       | 2024-03-09T12:13:17.821459Z 6 [Warning] [MY-010453] [Server] root@localhost is created with an empty password ! Please consider switching off the --initialize-insecure option.
db-1       | 2024-03-09T12:13:22.718284Z 0 [System] [MY-015018] [Server] MySQL Server Initialization - end.
db-1       | 2024-03-09 12:13:22+00:00 [Note] [Entrypoint]: Database files initialized
db-1       | 2024-03-09 12:13:22+00:00 [Note] [Entrypoint]: Starting temporary server
db-1       | 2024-03-09T12:13:22.842468Z 0 [System] [MY-015015] [Server] MySQL Server - start.
db-1       | 2024-03-09T12:13:23.095457Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 8.3.0) starting as process 124
```

```
db-1      |
db-1      | 2024-03-09T12:13:29.145720Z 0 [System] [MY-015015] [Server] MySQL Server - start.
db-1      | 2024-03-09T12:13:29.382059Z 0 [System] [MY-010116] [Server] /usr/sbin/mysqld (mysqld 8.3.0) starting as process 1
db-1      | 2024-03-09T12:13:29.391745Z 1 [System] [MY-013576] [InnoDB] InnoDB initialization has started.
db-1      | 2024-03-09T12:13:29.576274Z 1 [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
db-1      | 2024-03-09T12:13:29.898947Z 0 [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
db-1      | 2024-03-09T12:13:29.899025Z 0 [System] [MY-013602] [Server] Channel mysql_main configured to support TLS. Encrypted conn
db-1      | 2024-03-09T12:13:29.903463Z 0 [Warning] [MY-011810] [Server] Insecure configuration for --pid-file: Location '/var/run/m
db-1      | 2024-03-09T12:13:29.928646Z 0 [System] [MY-011323] [Server] X Plugin ready for connections. Bind-address: '::' port: 330
db-1      | 2024-03-09T12:13:29.928825Z 0 [System] [MY-010931] [Server] /usr/sbin/mysqld: ready for connections. Version: '8.3.0'  s
django-1  | Operations to perform:
django-1  |   Apply all migrations: admin, auth, contenttypes, sessions
django-1  | Running migrations:
django-1  |   Applying contenttypes.0001_initial... OK
django-1  |   Applying auth.0001_initial... OK
django-1  |   Applying admin.0001_initial... OK
django-1  |   Applying admin.0002_logentry_remove_auto_add... OK
django-1  |   Applying admin.0003_logentry_add_action_flag_choices... OK
django-1  |   Applying contenttypes.0002_remove_content_type_name... OK
django-1  |   Applying auth.0002_alter_permission_name_max_length... OK
django-1  |   Applying auth.0003_alter_user_email_max_length... OK
django-1  |   Applying auth.0004_alter_user_username_opts... OK
django-1  |   Applying auth.0005_alter_user_last_login_null... OK
django-1  |   Applying auth.0006_require_contenttypes_0002... OK
django-1  |   Applying auth.0007_alter_validators_add_error_messages... OK
django-1  |   Applying auth.0008_alter_user_username_max_length... OK
django-1  |   Applying auth.0009_alter_user_last_name_max_length... OK
django-1  |   Applying auth.0010_alter_group_name_max_length... OK
django-1  |   Applying auth.0011_update_proxy_permissions... OK
django-1  |   Applying auth.0012_alter_user_first_name_max_length... OK
django-1  |   Applying sessions.0001_initial... OK
django-1  | Watching for file changes with StatReloader
```



Dockerfile – Блокнот

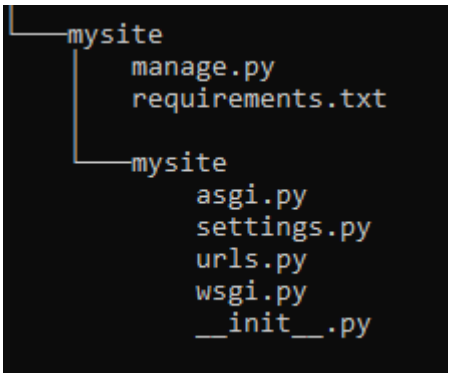
Файл Правка Формат Вид Справка

```
FROM python

WORKDIR /app

COPY mysite/requirements.txt /app/

RUN pip install -r requirements.txt

COPY mysite /app/
```

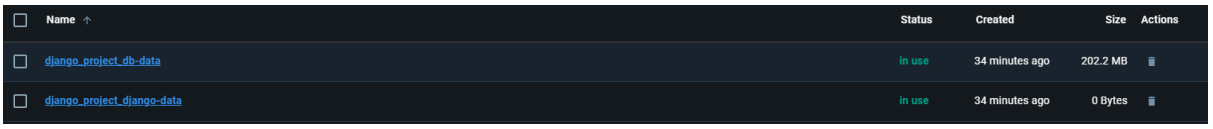
docker-compose.yml – Блокнот

Файл Правка Формат Вид Справка

```
version: '3'

services:
  db:
    image: mysql:latest
    environment:
      MYSQL_DATABASE: mydatabase
      MYSQL_USER: myuser
      MYSQL_PASSWORD: mypassword
      MYSQL_ROOT_PASSWORD: myrootpassword

  django:
    build: .
    command: sh -c "sleep 30 && python manage.py migrate && python manage.py runserver 0.0.
    ports:
      - "8000:8000"
    depends_on:
      - db
```




```
# Database
# https://docs.djangoproject.com/en/5.0/ref/settings/#databases

DATABASES = {
    'default': {
        'ENGINE': 'django.db.backends.mysql',
        'NAME': 'mydatabase',
        'USER': 'myuser',
        'PASSWORD': 'mypassword',
        'HOST': 'db',
        'PORT': '3306',
    }
}
```



Name	Status	Created	Size	Actions
django_project_db-data	in use	34 minutes ago	202.2 MB	
django_project_django-data	in use	34 minutes ago	0 Bytes	

docker-compose.yml – Блокнот

Файл Правка Формат Вид Справка

```
version: '3'

services:
  db:
    image: mysql:latest
    environment:
      MYSQL_DATABASE: mydatabase
      MYSQL_USER: myuser
      MYSQL_PASSWORD: mypassword
      MYSQL_ROOT_PASSWORD: myrootpassword
    volumes:
       - db-data:/var/lib/mysql
    networks:
       - backend


  django:
    build: .
    command: sh -c "sleep 30 && python manage.py migrate && python manage.py runserver 0.0.0.0:8000"
    volumes:
      - django-data:/app/data
    ports:
      - "8000:8000"
    depends_on:
      - db
    networks:
       - backend

networks:
  backend:
volumes:
  db-data:
  django-data:
```

```
PS C:\Users\PC\django_project> docker network ls
NETWORK ID     NAME                      DRIVER    SCOPE
711ab224b0b5   bridge                    bridge    local
ffa19331d1c9   django_project_backend     bridge    local
7e32b047c527   django_project_default     bridge    local
2730e73b9872   host                      host      local
47f5bd19c1aa   none                      null      local
```

```
PS C:\Users\PC\django_project> docker volume ls
DRIVER    VOLUME NAME
local     django_project_db-data
local     django_project_django-data
```

```
PS C:\Users\PC\django_project> docker tag mysql:latest wisheed/test:latest
PS C:\Users\PC\django_project> docker tag django_project-django:latest wisheed/test:latest
PS C:\Users\PC\django_project> docker push wisheed/test:latest
The push refers to repository [docker.io/wisheed/test]
44a2d44bb537: Pushed
247b4e51a3d5: Pushed
0542a5bde8cf: Pushed
185a9865ccd5: Pushed
3dd1a7b3caf3: Pushed
349b0b22a493: Pushed
a07a24a37470: Pushed
84f540ade319: Pushed
9fe4e8a1862c: Pushed
909275a3eaaa: Pushed
f3f47b3309ca: Pushed
1a5fc1184c48: Pushed
latest: digest: sha256:0c76aa575ccf226c9408fac7d9a6cd713413688625d5af706f03b8ce2b97d0dd size: 2841
```

wisheed/test

Updated about 1 hour ago

This repository does not have a description

Tags

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
latest		Image	---	an hour ago

See all

```
PS C:\Users\PC> docker network ls
NETWORK ID     NAME                      DRIVER    SCOPE
561fccdce6a1   bridge                    bridge    local
ffa19331d1c9   django_project_backend    bridge    local
7e32b047c527   django_project_default    bridge    local
2730e73b9872   host                      host      local
47f5bd19c1aa   none                      null      local
PS C:\Users\PC> docker network inspect django_project_backend
[
    {
        "Name": "django_project_backend",
        "Id": "ffa19331d1c9606bf1029474ed3bd1cc4720e2f82ce3c9f1ffec4967f64bb0c0",
        "Created": "2024-03-09T14:21:55.525017364Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.22.0.0/16",
                    "Gateway": "172.22.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {},
        "Labels": {
            "com.docker.compose.network": "backend",
            "com.docker.compose.project": "django_project",
            "com.docker.compose.version": "2.24.6"
        }
    }
]
```

```
PS C:\Users\PC> docker network create testBridge
37c38bc084a0bb8fa987e457ee06af3d900828faf321b5efb3a1422812fbdc0f
PS C:\Users\PC> docker run -it -d  --network=testBridge httpd
Unable to find image 'httpd:latest' locally
latest: Pulling from library/httpd
e1caac4eb9d2: Pull complete
87b0fe460fd9: Pull complete
4f4fb700ef54: Pull complete
9cebd3e3b523: Pull complete
e9304da947c5: Pull complete
b60d4b66b268: Pull complete
Digest: sha256:104f07de17ee186c8f37b9f561e04fbfe4cf080d78c6e5f3802fd08fd118c3da
Status: Downloaded newer image for httpd:latest
44d9987a3836affc6d9535e3760336d98def61f09c6254f53e330c9ebfaefc46
PS C:\Users\PC> docker network inspect testBridge
[
    {
        "Name": "testBridge",
        "Id": "37c38bc084a0bb8fa987e457ee06af3d900828faf321b5efb3a1422812fbdc0f",
        "Created": "2024-03-10T15:01:23.93855777Z",
        "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": {
            "44d9987a3836affc6d9535e3760336d98def61f09c6254f53e330c9ebfaefc46": {
                "Name": "nostalgic_bhabha",
                "EndpointID": "08ba4782a52bd5b7d202e19dd130f32a6c0289b195baa6fc1ec2c156d0f42ecb"
                "MacAddress": "02:42:ac:12:00:02",
                "IPv4Address": "172.18.0.2/16",
                "IPv6Address": ""
            }
        },
        "Options": {},
        "Labels": {}
    }
]
PS C:\Users\PC> docker network disconnect testBridge nostalgic_bhabha
```

```
PS C:\Users\PC\django_project> docker network create --driver bridge new_bridge
59c05b0f68485b22fb00de083193a9cf35d337a133b1258475457950fd1a47d3
```

```
PS C:\Users\PC\django_project> docker run -it -d --name=Container1 --network=new_bridge alpine ash
Unable to find image 'alpine:latest' locally
latest: Pulling from library/alpine
4abcf2066143: Pull complete
Digest: sha256:c5b1261d6d3e43071626931fc004f70149baeba2c8ec672bd4f27761f8e1ad6b
Status: Downloaded newer image for alpine:latest
322c44007853bf470910a9e5cdca7a9600e903bf960748c51d68b4a4b89d79d3
PS C:\Users\PC\django_project> docker run -it -d --name=Container2 --network=new_bridge alpine ash
488ddcbd90fde944f4651ff3e1a722a1d6a4fdd7d315124616d37df6858728cf
PS C:\Users\PC\django_project> docker run -it -d --name=Container3 --network=new_bridge alpine ash
e4370c25414fe3e6627fe690cf65f22ffd276bdd8b33aefd4e676fd95b3362b3
```

```
PS C:\Users\PC\django_project> docker network inspect new_bridge
[
    {
        "Name": "new_bridge",
        "Id": "59c05b0f68485b22fb00de083193a9cf35d337a133b1258475457950fd1a47d3",
        "Created": "2024-03-10T15:22:05.867095373Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.22.0.0/16",
                    "Gateway": "172.22.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {
            "322c44007853bf470910a9e5cdca7a9600e903bf960748c51d68b4a4b89d79d3": {
                "Name": "Container1",
                "EndpointID": "fe73b0d1ef6de0f95af780568b548543a48f012fc71cecc01e157dbad067c7c4",
                "MacAddress": "02:42:ac:16:00:02",
                "IPv4Address": "172.22.0.2/16",
                "IPv6Address": ""
            },
            "488ddcbd90fde944f4651ff3e1a722a1d6a4fdd7d315124616d37df6858728cf": {
                "Name": "Container2",
                "EndpointID": "2ad48848bedf28cc5da60ea6eba3c6d9a341c965dff02baa1b18499f0cd9cfa9",
                "MacAddress": "02:42:ac:16:00:03",
                "IPv4Address": "172.22.0.3/16",
                "IPv6Address": ""
            },
            "e4370c25414fe3e6627fe690cf65f22ffd276bdd8b33aefd4e676fd95b3362b3": {
                "Name": "Container3",
                "EndpointID": "08836fddc590d9c27f7742cf58fdc91096ca38730c1d8a597f94a5e53b0ffcf9",
                "MacAddress": "02:42:ac:16:00:04",
                "IPv4Address": "172.22.0.4/16",
                "IPv6Address": ""
            }
        },
        "Options": {},
        "Labels": {}
    }
]
```

```
PS C:\Users\PC\django_project> docker container attach Container1
/ # ping -c 2 Container1
PING Container1 (172.22.0.2): 56 data bytes
64 bytes from 172.22.0.2: seq=0 ttl=64 time=0.036 ms
64 bytes from 172.22.0.2: seq=1 ttl=64 time=0.101 ms

--- Container1 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 0.036/0.068/0.101 ms
/ # ping -c 2 Container2
PING Container2 (172.22.0.3): 56 data bytes
64 bytes from 172.22.0.3: seq=0 ttl=64 time=0.086 ms
64 bytes from 172.22.0.3: seq=1 ttl=64 time=0.132 ms

--- Container2 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 0.086/0.109/0.132 ms
```

```
PS C:\Users\PC> docker swarm init
Swarm initialized: current node (hn4wi8og62kbruatkc2oae7p4) is now a manager.

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

    docker swarm join --token SWMTKN-1-0uoghg94dym13rz9bbx5fr8jm208ykxrp80agfg383u7lcjusn-9lune1rdst220vxfnfykcbbfg 192.168.65.3:2377

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

PS C:\Users\PC> docker network create --driver overlay new_overlay
vanyiunur60pbcs24718nzlf9
PS C:\Users\PC> docker network ls
NETWORK ID     NAME              DRIVER    SCOPE
561fccdce6a1   bridge            bridge    local
909ef0653573   docker_gwbridge   bridge    local
2730e73b9872   host              host      local
uu54nu3xjcol   ingress           overlay   swarm
vanyiunur60p   new_overlay       overlay   swarm
47f5bd19c1aa   none              null      local
```

```
PS C:\Users\PC> docker network inspect new_overlay
[
    {
        "Name": "new_overlay",
        "Id": "vanyiunur60pbcs24718nzlf9",
        "Created": "2024-03-10T16:11:49.826337869Z",
        "Scope": "swarm",
        "Driver": "overlay",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "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
    }
]
```

```
PS C:\Users\PC> docker network create --driver overlay new_overlay2
4yq1mf0qfaqyzzc6vr7lagc1a
PS C:\Users\PC> docker network ls
NETWORK ID     NAME              DRIVER    SCOPE
561fccdce6a1   bridge            bridge    local
909ef0653573   docker_gwbridge   bridge    local
2730e73b9872   host              host      local
uu54nu3xjcol   ingress           overlay   swarm
vanyiunur60p   new_overlay       overlay   swarm
4yq1mf0qfaqy   new_overlay2      overlay   swarm
47f5bd19c1aa   none              null      local
PS C:\Users\PC> docker network inspect new_overlay2
[
    {
        "Name": "new_overlay2",
        "Id": "4yq1mf0qfaqyzzc6vr7lagc1a",
        "Created": "2024-03-10T16:14:03.49224244Z",
        "Scope": "swarm",
        "Driver": "overlay",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "10.0.2.0/24",
                    "Gateway": "10.0.2.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": null,
        "Options": {
            "com.docker.network.driver.overlay.vxlanid_list": "4098"
        },
        "Labels": null
    }
]
PS C:\Users\PC> docker network rm new_overlay2
new_overlay2
PS C:\Users\PC> docker network ls
NETWORK ID     NAME              DRIVER    SCOPE
561fccdce6a1   bridge            bridge    local
909ef0653573   docker_gwbridge   bridge    local
2730e73b9872   host              host      local
uu54nu3xjcol   ingress           overlay   swarm
vanyiunur60p   new_overlay       overlay   swarm
47f5bd19c1aa   none              null      local
```

```
PS C:\Users\PC> docker network create --driver host new_host
Error response from daemon: only one instance of "host" network is allowed
```