

ЭТАПЫ РЕШЕНИЯ

1. Подготовим каталог файлов для дальнейшего выполнения работы.

```
(user@kali)-[~/../SkillFactory_репо/Вводный курс/docker/Practice_work]
$ tree
.
├── apache
│   ├── Dockerfile
│   └── index.php
├── mail
│   └── Dockerfile
├── mysql
│   └── Dockerfile
├── nginx
│   ├── Dockerfile
│   └── index.html
└── Практическая работа (Описание).pdf
```

2. Веб-сервер «Apache».

2.1. Создадим страницу для отображения информации при открытии сайта.

```
<!doctype html>
<html>
<body style="background-color:rgb(49, 214, 220);"><center>
<head>
<title>Docker Project</title>
</head>
<body>
<p>Welcome to my Web Server APACHE!<p>
<p>Today's Date and Time is: <span id='date-time'></span><p>
<script>
var dateAndTime = new Date();
document.getElementById('date-time').innerHTML=dateAndTime.toLocaleString();
</script>
</body>
</html>
```

2.2. Создадим Dockerfile для нашего сервера

```
FROM php:7.4-apache
RUN apt update
RUN apt install -y apache2
RUN apt install -y apache2-utils
RUN apt clean
COPY ./index.php /var/www/html
EXPOSE 80
CMD ["apache2ctl", "-D", "FOREGROUND"]
```

2.3. Создадим образ нашего контейнера и запустим его

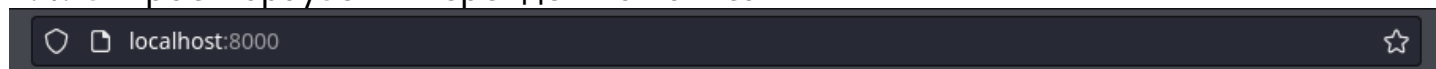
```
(user@kali)-[~/Вводный курс/docker/Practice_work/apache]
$ docker build -t ilyukhin/apache .
[+] Building 5.1s (11/11) FINISHED                                docker:desktop-linux
=> [internal] load build definition from Dockerfile                0.2s
=> => transferring dockerfile: 228B                               0.0s
=> [internal] load metadata for docker.io/library/php:7.4-apache  2.7s
=> [internal] load .dockerignore                                  0.2s
=> => transferring context: 2B                                     0.0s
=> [1/6] FROM docker.io/library/php:7.4-apache@sha256:c9d7e608f73832673479770d66aacc 0.0s
=> [internal] load build context                                  0.1s
=> => transferring context: 31B                                    0.0s
=> CACHED [2/6] RUN apt update                                    0.0s
=> CACHED [3/6] RUN apt install -y apache2                       0.0s
=> CACHED [4/6] RUN apt install -y apache2-utils                 0.0s
=> CACHED [5/6] RUN apt clean                                     0.0s
=> CACHED [6/6] COPY ./index.php /var/www/html                   0.0s
=> exporting to image                                             0.1s
=> => exporting layers                                             0.0s
=> => writing image sha256:cd7cbf3ec742e6335b7d0f12ae2a44a8756fc1da790d2a86f90f58b3d 0.0s
=> => naming to docker.io/ilyukhin/apache                        0.1s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/tm1lqh3l53h3f03618by12e6o

Reduce build time with Docker Build Cloud: https://docs.docker.com/go/docker-build-cloud

(user@kali)-[~/Вводный курс/docker/Practice_work/apache]
$ docker run --name ws-apache -p 8000:80 ilyukhin/apache
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'ServerName' directive globally to suppress this message
[Thu Feb 29 07:43:27.957513 2024] [mpm_prefork:notice] [pid 8] AH00163: Apache/2.4.56 (Debian) PHP/7.4.33 configured -- resuming normal operations
[Thu Feb 29 07:43:27.957694 2024] [core:notice] [pid 8] AH00094: Command line: '/usr/sbin/apache2 -D FOREGROUND'
172.17.0.1 - - [29/Feb/2024:07:43:49 +0000] "GET / HTTP/1.1" 200 572 "-" "Mozilla/5.0 (X11; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/115.0"
```

2.4. Откроем браузер и перейдём на наш сайт



Welcome to my Web Server APACHE!

Today's Date and Time is: 29.02.2024, 10:43:50

3. Веб-сервер «Nginx».

2.1. Создадим страницу для отображения информации при открытии сайта.

```
<!doctype html>
<html>
  <body style="background-color:rgb(49, 214, 220);"><center>
    <head>
      <title>Docker Project</title>
    </head>
    <body>
      <p>Welcome to my Web Server NGINX!<p>
      <p>Today's Date and Time is: <span id='date-time'></span><p>
      <script>
        var dateAndTime = new Date();
        document.getElementById('date-time').innerHTML=dateAndTime.toLocaleString();
      </script>
    </body>
  </html>
```

3.2. Создадим Dockerfile для нашего сервера

```
FROM nginx:1.10.1-alpine
COPY index.html /usr/share/nginx/html
EXPOSE 80
CMD ["nginx", "-g", "daemon off;"]
```

3.3. Создадим образ нашего контейнера и запустим его

```
(user@kali)-[~/Вводный курс/docker/Practice_work/nginx]
$ docker build -t ilyukhin/nginx .
[+] Building 4.3s (7/7) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 147B
=> [internal] load metadata for docker.io/library/nginx:1.10.1-alpine
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load build context
=> => transferring context: 32B
=> [1/2] FROM docker.io/library/nginx:1.10.1-alpine@sha256:dabdd182f12e2a7d372338dfd0cde303ef042a6ba01cc829ef464982f9c9e2c
=> CACHED [2/2] COPY index.html /usr/share/nginx/html
=> exporting to image
=> => exporting layers
=> => writing image sha256:5c563f45a622f58ea8caebcdac0e2cc4332cc02cedcb33c29f0593c1f871ce2c
=> => naming to docker.io/ilyukhin/nginx

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/01v2t70q8lnzwz1nhtnawro5n

Reduce build time with Docker Build Cloud: https://docs.docker.com/go/docker-build-cloud

(user@kali)-[~/Вводный курс/docker/Practice_work/nginx]
$ docker run --name ws-nginx -p 8080:80 ilyukhin/nginx
```

3.4. Откроем браузер и перейдём на наш сайт

localhost:8080

Welcome to my Web Server NGINX!

Today's Date and Time is: 29.02.2024, 11:10:28

4. База данных «MySQL».

4.1. Создадим Dockerfile для нашего сервиса

```
FROM mysql:5.7
ENV MYSQL_ROOT_PASSWORD=root
EXPOSE 3306
CMD ["mysqld", "--user", "mysql"]
```

4.2. Создадим образ нашего контейнера и запустим его

```
(user@kali)-[~/Вводный курс/docker/Practice_work/mysql]
$ docker build -t ilyukhin/mysql .
[+] Building 4.1s (5/5) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 127B
=> [internal] load metadata for docker.io/library/mysql:5.7
=> [internal] load .dockerignore
=> => transferring context: 2B
=> CACHED [1/1] FROM docker.io/library/mysql:5.7@sha256:4bc6bc963e6d8443453676cae56536f4b8156d78bae03c0145cbe47c2aad73bb
=> exporting to image
=> => exporting layers
=> => writing image sha256:7af8653ac636796766b277896ce73543d9a6acc4a740df44dff9477ea5cc6cb
=> => naming to docker.io/ilyukhin/mysql

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/m27xlf8j0cxbglfc4dy7nbtib

Reduce build time with Docker Build Cloud: https://docs.docker.com/go/docker-build-cloud

(user@kali)-[~/Вводный курс/docker/Practice_work/mysql]
$ docker run --name db-mysql -p 3306:3306 ilyukhin/mysql

different directory.
2024-02-29T08:30:29.613024Z 0 [Note] Event Scheduler: Loaded 0 events
2024-02-29T08:30:29.613483Z 0 [Note] mysqld: ready for connections.
Version: '5.7.44' socket: '/var/run/mysqld/mysqld.sock' port: 3306 MySQL Community Server (GPL)
```

4.3. Подключимся к базе данных с нашего хоста

```
user@kali: ~/Desktop/SkillFactory_репо/Вводный курс/doc... × user@kali: ~/Desktop/SkillFactory_репо/Вводный курс/doc... ×
└─$ docker exec -it db-mysql bash
bash-4.2# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 6
Server version: 5.7.44 MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> |
```

5. Сервис почты «Postfix»

5.1. Создадим Dockerfile для нашего сервиса

```
FROM ubuntu:latest

RUN apt update && \
    apt upgrade -y && \
    apt install -y postfix

RUN mkdir /config && \
    mv /etc/postfix/main.cf /config/main.cf && \
    mv /etc/postfix/master.cf /config/master.cf && \
    ln -s /config/main.cf /etc/postfix/main.cf && \
    ln -s /config/master.cf /etc/postfix/master.cf

CMD ["postfix", "start-fg"]
```

5.2. Создадим образ нашего контейнера и запустим его

```
(user@kali)~[~/Вводный курс/docker/Practice_work/mail]
└─$ docker build -t ilyukhin/postfix .
[+] Building 5.5s (7/7) FINISHED                                docker:desktop-linux
=> [internal] load build definition from Dockerfile             0.2s
=> => transferring dockerfile: 388B                             0.0s
=> [internal] load metadata for docker.io/library/ubuntu:latest 3.1s
=> [internal] load .dockerignore                                0.2s
=> => transferring context: 2B                                    0.0s
=> [1/3] FROM docker.io/library/ubuntu:latest@sha256:f9d633ff6640178c2d0525017 0.0s
=> CACHED [2/3] RUN apt update && apt upgrade -y && apt install -y pos 0.0s
=> CACHED [3/3] RUN mkdir /config && mv /etc/postfix/main.cf /config/main. 0.0s
=> exporting to image                                           0.1s
=> => exporting layers                                           0.0s
=> => writing image sha256:25db8e0427a2bd863244c7feeb2c7b791c37e84bebc439f88a0 0.0s
=> => naming to docker.io/ilyukhin/postfix                       0.1s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/tapw79sh0993xaiuyh9y1nv1o
Reduce build time with Docker Build Cloud: https://docs.docker.com/go/docker-build-cloud

(user@kali)~[~/Вводный курс/docker/Practice_work/mail]
└─$ docker run --name mail-postfix -p 25:25 ilyukhin/postfix
```

5.3. Перейдём в сервис. Установим и создадим директорию, куда будет прилетать почта

```
(user@kali)-[~/.../Вводный курс/docker/Practice_work/mail]
$ docker exec -it mail-postfix bash
root@8bc74af0dbe5:/# pwd
/
root@8bc74af0dbe5:/# cd root
root@8bc74af0dbe5:~# mkdir Maildir
root@8bc74af0dbe5:~# postconf -e 'home_mailbox = Maildir/'
root@8bc74af0dbe5:~# |
```

5.4. Отправим письмо с помощью Telnet

```
(user@kali)-[~/.../Вводный курс/docker/Practice_work/mail]
$ telnet localhost 25
Trying ::1...
Connected to localhost.
Escape character is '^]'.
220 localhost ESMTP Postfix (Ubuntu)
helo localhost
250 localhost
mail from: user@kali
250 2.1.0 Ok
rcpt to: root@localhost
250 2.1.5 Ok
data
354 End data with <CR><LF>.<CR><LF>
This is test message
.
250 2.0.0 Ok: queued as E055D283285
quit
221 2.0.0 Bye
Connection closed by foreign host.
```

5.5. Проверим получение письма

```
$ docker exec -it mail-postfix bash
root@8bc74af0dbe5:/# cd root
root@8bc74af0dbe5:~# ls
Maildir
root@8bc74af0dbe5:~# cd Maildir
root@8bc74af0dbe5:~/Maildir# cd new
root@8bc74af0dbe5:~/Maildir/new# cat 1709197157.V77I283289M484233.8bc74af0dbe5
Return-Path: <user@kali>
X-Original-To: root@localhost
Delivered-To: root@localhost
Received: from localhost (unknown [172.17.0.1])
        by localhost (Postfix) with SMTP id E055D283285
        for <root@localhost>; Thu, 29 Feb 2024 08:58:44 +0000 (UTC)

This is test message
```