

Предмет	Управление и автоматизация БД
Курс	4
Семестр	1
Работа	Практическое занятие № 7
Группа	494
Фамилия	Зубкова
Имя	Валерия
Отчество	Геннадьевна

Отчёт

Запуск docker deamon

```
zubkova494:~# service docker status
* status: started
zubkova494:~# docker pull hello-world
Using default tag: latest
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:faa03e786c97f07ef34423fccceec2398ec8a5759259f94d99078f264e9d7af
Status: Downloaded newer image for hello-world:latest
docker.io/library/hello-world:latest
zubkova494:~#
```

Загрузка образа hello-world

```
zubkova494:~# service docker status
* status: started
zubkova494:~# docker pull hello-world
Using default tag: latest
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:faa03e786c97f07ef34423fccceec2398ec8a5759259f94d99078f264e9d7af
Status: Downloaded newer image for hello-world:latest
docker.io/library/hello-world:latest
zubkova494:~# docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
hello-world   latest    feb5d9fea6a5   14 months ago  13.3kB
zubkova494:~#
```

Запуск контейнера hello-world

```
zubkova494:~# docker run -ti hello-world

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/

zubkova494:~#
```

Вывод списка контейнеров

```
zubkova494:~# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
b21cc18b97fd	hello-world	"/hello"	About a minute ago	Exited (0) About a minute ago	

```
      sweet_ganguly
zubkova494:~#
```

Загрузка образа alpine

```
zubkova494:~# docker pull alpine:latest
latest: Pulling from library/alpine
c158987b0551: Pull complete
Digest: sha256:8914eb54f968791faf6a8638949e480fef81e697984fba772b3976835194c6d4
Status: Downloaded newer image for alpine:latest
docker.io/library/alpine:latest
zubkova494:~#
```

Запуск образа alpine с запуском в ней консоли

```
zubkova494:~# docker run -ti --name virtual_alpine alpine /bin/sh
/ # _
```

Загрузка редактора nano внутри запущенного контейнера

```
zubkova494:~# docker run -ti --name virtual_alpine alpine /bin/sh
/ # apk add --no-cache nano
fetch https://dl-cdn.alpinelinux.org/alpine/v3.17/main/x86_64/APKINDEX.tar.gz
fetch https://dl-cdn.alpinelinux.org/alpine/v3.17/community/x86_64/APKINDEX.tar.gz
(1/3) Installing ncurses-terminfo-base (6.3_p20221119-r0)
(2/3) Installing ncurses-libs (6.3_p20221119-r0)
(3/3) Installing nano (7.0-r0)
Executing busybox-1.35.0-r29.trigger
OK: 8 MiB in 18 packages
/ #
```

Создание файла test через nano

```
/ # nano test.txt_
```

Заполнение файла test

```
GNU nano 7.0 test.txt
hello world_
```

Выход из контейнера

```
/ # exit
zubkova494:~#
```

Вывод всех контейнеров

```
zubkova494:~# docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS          NAMES
ba17099c798c   alpine        "/bin/sh"               2 minutes ago   Exited (0) 30 seconds ago           virtu
al_alpine
b21cc18b97fd   hello-world   "/hello"               5 minutes ago   Exited (0) 5 minutes ago           sweet
_ganguly
zubkova494:~#
```

Копирование файла из virtual_alpine в текущую ОС

```
zubkova494:~# docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS          NAMES
ba17099c798c   alpine        "/bin/sh"               2 minutes ago   Exited (0) 30 seconds ago           virtu
al_alpine
b21cc18b97fd   hello-world   "/hello"               5 minutes ago   Exited (0) 5 minutes ago           sweet
_ganguly
zubkova494:~# docker cp virtual_alpine:/test.txt hello.txt
zubkova494:~# cat hello.txt
hello world
zubkova494:~#
```

Создание внутри ОС файла и его копирование в virtual_alpine

```
zubkova494:~# echo "Welcome" > test2.txt
zubkova494:~# cat test2.txt
Welcome
zubkova494:~# docker cp test2.txt virtual_alpine:/test2.txt
zubkova494:~#
```

Запуск virtual_alpine и проверка копирования файла test2.txt

```
zubkova494:~# echo "Welcome" > test2.txt
zubkova494:~# cat test2.txt
Welcome
zubkova494:~# docker cp test2.txt virtual_alpine:/test2.txt
zubkova494:~# docker start -i virtual_alpine
/ # cat test2.txt
Welcome
/ #
```

Запуск virtual_alpine в интерактивном режиме и проверка процессов с уточнением пути для запуска редактора nano

```
zubkova494:~# docker start -i virtual_alpine
/ # ps
PID   USER      TIME  COMMAND
    1   root         0:00 /bin/sh
    7   root         0:00 ps
/ # which nano
/usr/bin/nano
/ #
```

Запуск nano внутри запущенного контейнера virtual_alpine

```
zubkova494:~# docker exec -ti virtual_alpine /usr/bin/nano
```

```
GNU nano 7.0      New Buffer
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location ^U Undo
^X Exit ^R Read File ^_ Replace ^U Paste ^J Justify ^_ Go To Line ^E Redo

```
GNU nano 7.0
read escape sequence
zubkova494:~# docker exec -ti virtual_alpine ps
PID    USER      TIME  COMMAND
   1   root         0:00  /bin/sh
  16   root         0:00  /usr/bin/nano
  27   root         0:00  /usr/bin/nano
  33   root         0:00  ps
zubkova494:~# _
```

Создание папки test, где внутри с помощью редактора nano создаем файл Dockerfile

```
GNU nano 7.0 Dockerfile Modified
FROM alpine

RUN apk add --no-cache nano openssh-server

RUN ssh-keygen -A
RUN echo "root:password" | chpasswd
RUN echo "AllowUsers root" >> /etc/ssh/sshd_config
RUN echo "PermitRootLogin yes" >> /etc/ssh/sshd_config

EXPOSE 22

CMD ["/usr/sbin/sshd", "-D"]

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location   ^U Undo
^X Exit      ^R Read File  ^_ Replace    ^U Paste      ^J Justify    ^_ Go To Line ^E Redo
```

Сборка образа на основе Dockerfile с помощью команды представленной ниже

```
zubkova494:~/test# docker build -t new_image .
```

```
(3/6) Installing nano (7.0-r0)
(4/6) Installing openssh-keygen (9.1_p1-r1)
(5/6) Installing openssh-server-common (9.1_p1-r1)
(6/6) Installing openssh-server (9.1_p1-r1)
Executing busybox-1.35.0-r29.trigger
OK: 10 MiB in 21 packages
Removing intermediate container 6e176776097d
--> d11fa1286b08
Step 3/8 : RUN ssh-keygen -A
--> Running in 5c182f150848
ssh-keygen: generating new host keys: RSA ECDSA ED25519
Removing intermediate container 5c182f150848
--> 0f539caf92be
Step 4/8 : RUN echo "root:password" | chpasswd
--> Running in 455c7f3ef42d
chpasswd: password for 'root' changed
Removing intermediate container 455c7f3ef42d
--> 50275d40bfad
Step 5/8 : RUN echo "AllowUsers root" >> /etc/ssh/sshd_config
--> Running in 5811d1f32509
Removing intermediate container 5811d1f32509
--> 33c55c9921fb
Step 6/8 : RUN echo "PermitRootLogin yes" >> /etc/ssh/sshd_config
--> Running in 804eee7cb36e
Removing intermediate container 804eee7cb36e
--> 28a133b809c6
Step 7/8 : EXPOSE 22
--> Running in 6eb0272cd595
Removing intermediate container 6eb0272cd595
--> 40a1bf86de61
Step 8/8 : CMD ["/usr/sbin/sshd", "-D"]
--> Running in 01a559414074
Removing intermediate container 01a559414074
--> 65960b760ed4
Successfully built 65960b760ed4
Successfully tagged new_image:latest
zubkova494:~/test# _
```

Вывод списка образов

```
zubkova494:~/test# docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
new_image     latest   65960b760ed4   40 seconds ago 9.5MB
alpine        latest   49176f190c7e   2 weeks ago   7.05MB
hello-world   latest   feb5d9fea6a5   14 months ago 13.3kB
zubkova494:~/test#
```

Запуск созданного образа в фоновом интерактивном режиме и вывод списка контейнеров

```
zubkova494:~/test# docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
new_image     latest   65960b760ed4   40 seconds ago 9.5MB
alpine        latest   49176f190c7e   2 weeks ago   7.05MB
hello-world   latest   feb5d9fea6a5   14 months ago 13.3kB
zubkova494:~/test# docker run -d -t -p 2222:22 new_image
37eb091656bcf53dbd4916eee0f990ee767473c5286ec6c2334d1cd29a106f68
zubkova494:~/test# docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS
37eb091656bc   new_image     "/usr/sbin/sshd -D"     10 seconds ago Up 9 seconds   0.0.0.0:2222->22/tcp, :::2222->22/tcp
ba17099c798c   alpine        "/bin/sh"               About an hour ago Up 23 minutes
virtual_alpine
zubkova494:~/test# _
```