

## Практическая работа №2

**Тема:** «Основы работы с технологиями контейнеризации и ботами Telegram»

**Цель работы:** Создание сервера с постоянно работающим Telegram ботом.

**Ход работы:**

1. Подключение к сервер-шлюзу по ssh, от сервера-шлюза к основному рабочему серверу. Создание собственного рабочего каталога с использованием номера зачетной книжки (220803143). Проверка работы python3.10. Создание «окружения» python env, а также установка необходимых пакетов.

```
vika-@DESKTOP-FP6MJE7 MINGW64 ~
$ ssh student@193.124.118.93
The authenticity of host '193.124.118.93 (193.124.118.93)' can't be established.
ED25519 key fingerprint is SHA256:9YfF0RJO43svji7MPRCbpG4Jp3k2f7vmDEavUEQwYQ.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '193.124.118.93' (ED25519) to the list of known hosts
.
student@193.124.118.93's password:
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.2.0-1015-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.
Last login: Tue Feb 18 13:42:36 2025 from 87.117.61.68
student@ruvds-x7106:~$ ssh student@10.8.0.5
student@10.8.0.5's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-131-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

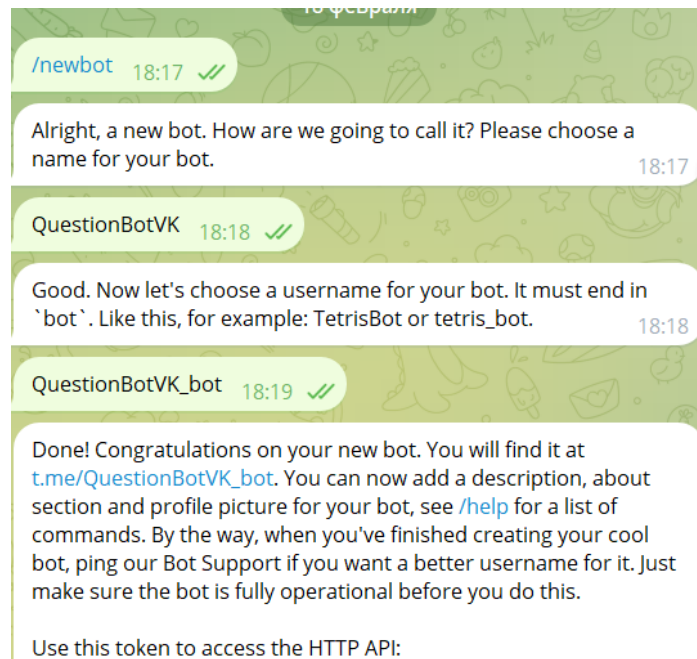
0 updates can be applied immediately.

12 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

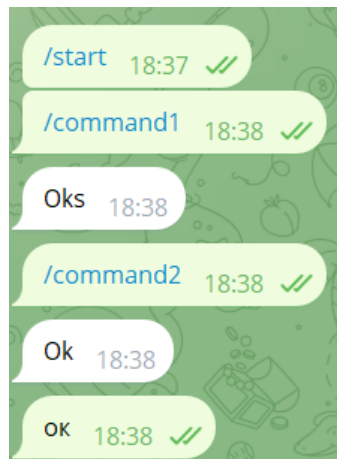
New release '22.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Tue Feb 18 17:02:33 2025 from 10.8.0.1
student@user-IPMSB-H61:~$ mkdir 220803143 && cd 220803143
student@user-IPMSB-H61:~/220803143$ python3.10
Python 3.10.16 (main, Dec  4 2024, 08:53:37) [GCC 9.4.0] on linux
Type "help", "copyright", "credits" or "license()" for more information.
>>> exit()
student@user-IPMSB-H61:~/220803143$ python3.10 -m venv env
student@user-IPMSB-H61:~/220803143$ source env/bin/activate
(env) student@user-IPMSB-H61:~/220803143$ pip install telepot==12.7
```

2. Создание собственной учетной записи. Запуск программы и проверка работы бота через telegram.



```
(env) student@user-IPMSB-H61:~/220803143$ nano bot.py
(env) student@user-IPMSB-H61:~/220803143$ python bot.py
I am listening ...
Got command: /start
From : 831509104
Got command: /command1
From : 831509104
Got command: /command2
From : 831509104
Got command: ok
From : 831509104
```



3. Настройка работы собственной python-программы в виде docker-контейнера с автозапуском после старта ОС.

```
student@user-IPMSB-H61:~/220803143$ nano requirements.txt
student@user-IPMSB-H61:~/220803143$ nano Dockerfile
```

```

student@user-IPMSB-H61:~/220803143$ docker build -t 220803143 .
[+] Building 11.7s (13/13) FINISHED                                docker:default
=> [internal] load build definition from Dockerfile                0.7s
=> => transferring dockerfile: 295B                               0.0s
=> [internal] load metadata for docker.io/library/python:3.10-slim 4.2s
=> [internal] load metadata for docker.io/library/python:3.10     4.5s
=> [internal] load .dockerignore                                  0.7s
=> => transferring context: 2B                                     0.0s
=> [builder 1/3] FROM docker.io/library/python:3.10@sha256:76f22e4ce53774c1f5eb0ba145edb57b908e7aa32 0.0s
=> [internal] load build context                                  0.7s
=> => transferring context: 529B                                   0.0s
=> [stage-1 1/4] FROM docker.io/library/python:3.10-slim@sha256:66aad90b231f011cb80e1966e03526a7175f 0.0s
=> CACHED [stage-1 2/4] WORKDIR /code                             0.0s
=> CACHED [builder 2/3] COPY requirements.txt .                    0.0s
=> CACHED [builder 3/3] RUN pip install --user -r requirements.txt 0.0s
=> CACHED [stage-1 3/4] COPY --from=builder /root/.local /root/.local 0.0s
=> [stage-1 4/4] COPY ./bot.py .                                  1.8s
=> exporting to image                                             1.2s
=> => exporting layers                                           0.7s
=> => writing image sha256:bbcd349798b9e4856d37c6f946763e2d33e0c8c233d1019da5f5be860b88e458d 0.1s
=> => naming to docker.io/library/220803143                     0.1s
student@user-IPMSB-H61:~/220803143$ docker run -d --restart=always 220803143
fe10e067a1d81d1b52114e94476a342993b995d706911b212ae4ef1c1da7e48d
student@user-IPMSB-H61:~/220803143$ docker ps -a
CONTAINER ID   IMAGE                COMMAND                  CREATED          STATUS
fe10e067a1d8   220803143            "python -u ./bot.py"    About a minute ago   Up About a m

```

```

student@user-IPMSB-H61:~/220803143$ docker logs fe10e067a1d81d1b52114e94476a342993b995d706911b212ae4ef1c1da7e48d
I am listening ...
Got command: /command1
From : 831509104

```

#### 4. Сохранение docker image в виде архива.

```

student@user-IPMSB-H61:~/220803143$ ls -l ~/220803143/docker_image_220803143.tar
-rw----- 1 student student 144783872 фев 18 19:37 /home/student/220803143/docker_image_220803143.tar
student@user-IPMSB-H61:~/220803143$ exit
logout
Connection to 10.8.0.5 closed.
student@ruvds-x7i06:~$ scp student@10.8.0.5:/home/student/220803143/docker_image_220803143.tar .
student@10.8.0.5's password:
docker_image_220803143.tar                                100% 138MB 2.0MB/s 01:08
student@ruvds-x7i06:~$ exit
logout
Connection to 193.124.118.93 closed.

vika-@DESKTOP-FP6MJE7 MINGW64 ~
$ scp student@193.124.118.93:/home/student/220803143/docker_image_220803143.tar .
student@193.124.118.93's password:
scp: /home/student/220803143/docker_image_220803143.tar: No such file or directory

vika-@DESKTOP-FP6MJE7 MINGW64 ~
$ scp student@193.124.118.93:/home/student/docker_image_220803143.tar .
student@193.124.118.93's password:
docker_image_220803143.tar                                100% 138MB 3.2MB/s 00:43

```

**Вывод:** в ходе работы было успешно создано рабочее окружение для Telegram бота, настроено его функционирование в виде Docker-контейнера с автозапуском. Также был выполнен процесс сохранения Docker-образа в файл, что позволяет легко переносить и восстанавливать среду выполнения бота.