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Практическая работа № 3

Тема: «RabbitMQ»

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1. Установка DOCKER на UBUNTU

```
lemp001@u20-17:~$ sudo apt update
[sudo] password for lemp001:
Hit:1 http://ru.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 http://deb.anydesk.com all InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:6 https://download.docker.com/linux/ubuntu focal InRelease
Hit:7 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:8 https://dbeaver.io/debs/dbeaver-ce  InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
60 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

```
lemp001@u20-17:~$ sudo apt install apt-transport-https ca-certificates curl sof
tware-properties-common
Reading package lists... Done
Building dependency tree
Reading state information... Done
ca-certificates is already the newest version (20211016~20.04.1).
curl is already the newest version (7.68.0-1ubuntu2.13).
software-properties-common is already the newest version (0.99.9.8).
apt-transport-https is already the newest version (2.0.9).
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libfwupdplugin1
  libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 60 not upgraded.
```

2. Добавление каталогов докера

```
lemp001@u20-17:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sud
o apt-key add -
OK
```

3. Репозиторий для добавления образов

```
lemp001@u20-17:~$ sudo add-apt-repository "deb [arch=amd64] https://download.do
cker.com/linux/ubuntu focal stable"
Hit:1 http://ru.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 https://download.docker.com/linux/ubuntu focal InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:6 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:7 http://deb.anydesk.com all InRelease
Hit:8 https://dbeaver.io/debs/dbeaver-ce  InRelease
Reading package lists... Done
```

4. Индексация изменений

```
lemp001@u20-17:~$ sudo apt update
Hit:1 http://deb.anydesk.com all InRelease
Hit:2 https://download.docker.com/linux/ubuntu focal InRelease
Hit:3 https://dl.google.com/linux/chrome/deb stable InRelease
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:5 https://dbeaver.io/debs/dbeaver-ce  InRelease
Hit:6 http://ru.archive.ubuntu.com/ubuntu focal InRelease
Hit:7 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:8 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease
Fetched 114 kB in 33s (3 466 B/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
60 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

5. Установка докера

```
lemp001@u20-17:~$ sudo apt install docker-ce
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi libfwupdplugin1
  libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them.
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite
The following packages will be upgraded:
  docker-ce
1 upgraded, 0 newly installed, 0 to remove and 59 not upgraded.
Need to get 20,4 MB of archives.
After this operation, 12,4 MB disk space will be freed.
Get:1 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce amd6
4 5:20.10.18~3-0~ubuntu-focal [20,4 MB]
Fetched 20,4 MB in 1s (16,1 MB/s)
(Reading database ... 224717 files and directories currently installed.)
Preparing to unpack .../docker-ce_5%3a20.10.18~3-0~ubuntu-focal_amd64.deb ...
Unpacking docker-ce (5:20.10.18~3-0~ubuntu-focal) over (5:20.10.17~3-0~ubuntu-fo
cal) ...
Setting up docker-ce (5:20.10.18~3-0~ubuntu-focal) ...
Processing triggers for systemd (245.4-4ubuntu3.17) ...
```

6. Проверка докера

```
lemp001@u20-17:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
     Loaded: loaded (/lib/systemd/system/docker.service; enabled; vendor preset>
     Active: active (running) since Tue 2022-09-27 09:26:38 MSK; 38s ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 2729975 (dockerd)
      Tasks: 8
     Memory: 22.5M
     CGroup: /system.slice/docker.service
             └─2729975 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/c>

сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.437576600+03>
сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.437860805+03>
сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.437959907+03>
сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.438205811+03>
сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.538235926+03>
сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.574302044+03>
сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.612516499+03>
сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.613269612+03>
сен 27 09:26:38 u20-17 systemd[1]: Started Docker Application Container Engine.
сен 27 09:26:38 u20-17 dockerd[2729975]: time="2022-09-27T09:26:38.679116241+03>
lines 1-21/21 (END)
```

7. Скачивание docker compose

```
lemp001@u20-17:~$ sudo curl -L "https://github.com/docker/compose/releases/down
load/1.25.0/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-co
mpose
[sudo] password for lemp001:
  % 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 16.2M  100 16.2M    0     0  19.2M      0 --:--:-- --:--:-- --:--:-- 62.0M
```

8. Открытие общего доступа

```
lemp001@u20-17:~$ sudo chmod +x /usr/local/bin/docker-compose
lemp001@u20-17:~$ docker-compose --version
docker-compose version 1.25.0, build 0a186604
```

9. Проверка наличия сборок

```
lemp001@u20-17:~$ sudo curl -L "https://github.com/docker/compose/releases/downl
oad/1.25.0/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-comp
ose
[sudo] password for lemp001:
  % 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 16.2M  100 16.2M    0     0  19.2M      0 --:--:-- --:--:-- --:--:-- 62.0M
lemp001@u20-17:~$ sudo chmod +x /usr/local/bin/docker-compose
lemp001@u20-17:~$ docker-compose --version
docker-compose version 1.25.0, build 0a186604
lemp001@u20-17:~$ docker-compose ps
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
```

10. Установка RabbitMQ

```
lemp001@u20-17:~$ sudo docker pull rabbitmq:3.6.14-management
[sudo] password for lemp001:
3.6.14-management: Pulling from library/rabbitmq
Digest: sha256:8f4d1feacc3f160a8e426dd33c57b7147c8e863d6283e917e3ce5f790830cca3
Status: Image is up to date for rabbitmq:3.6.14-management
docker.io/library/rabbitmq:3.6.14-management
```

11. Запуск контейнера

```
lemp001@u20-17:~$ sudo docker volume create rabbitmq_data
rabbitmq_data
lemp001@u20-17:~$ sudo docker run -d --hostname rabbitmq --log-driver=journald -
-name rabbitmq -p 5672:5672 -p 15672:15672 -p 15674:15674 -p 25672:25672 -p 6161
3:61613 -v rabbitmq_data:/var/lib/rabbitmq rabbitmq:3.6.14-management
docker: Error response from daemon: Conflict. The container name "/rabbitmq" is
already in use by container "79ebab5f1256c0679d634778ef027720600e320a1888e24797d
f6ca89a82749d". You have to remove (or rename) that container to be able to reus
e that name.
See 'docker run --help'.
```

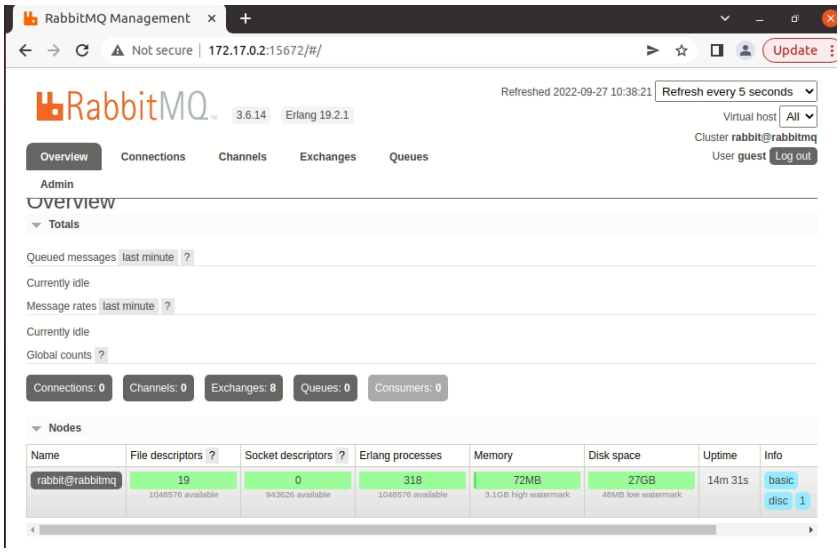
12. Удаление контейнеров

```
lemp001@u20-17:~$ sudo docker ps -a
CONTAINER ID   IMAGE                                COMMAND                  C
REATED        STATUS                          PORTS     NAMES
79ebab5f1256   rabbitmq:3.6.14-management            "docker-entrypoint.s…"   3
 months ago   Exited (0) 48 minutes ago               rabbitmq
90f41de2ebfa   marcelmittelstaedt/hive_base:latest   "/startup.sh"            3
 months ago   Exited (137) 48 minutes ago             hive_base_container
lemp001@u20-17:~$ sudo docker stot 79ebab5f1256
docker: 'stot' is not a docker command.
See 'docker --help'
lemp001@u20-17:~$ sudo docker stop 79ebab5f1256
79ebab5f1256
lemp001@u20-17:~$ sudo docker rm 79ebab5f1256
79ebab5f1256
lemp001@u20-17:~$ sudo docker ps -a
CONTAINER ID   IMAGE                                COMMAND         CREATED
```

13. IP – адрес контейнера

```
lemp001@u20-17:~$ sudo docker container inspect rabbitmq
[
    {
        "Id": "d44d6e4ac920fe8573fd8dfa96aa7ea74d35fceb78d24f4752e1b4a94bef0e23
"
                    "EndpointID": "e3c26bd89159dc2b025b3a1c426a2490ce141ca3689e
5bb42b73a361b3f055d3",
                    "Gateway": "172.17.0.1",
                    "IPAddress": "172.17.0.2",
                    "IPPrefixLen": 16,
                    "IPv6Gateway": "",
                    "GlobalIPv6Address": "",
                    "GlobalIPv6PrefixLen": 0,
                    "MacAddress": "02:42:ac:11:00:02",
                    "DriverOpts": null
```

14. RabbitMQ



ЗАПУСК ПРИМЕРА

1. Переходим в папку с примером

```
lemp001@u20-17:~/Downloads/Distributed_systems-main/d-zadanie/03-mq/examples$
```

2. Проверяем версию Python

```
lemp001@u20-17:~/Downloads/Distributed_systems-main/d-zadanie/03-mq/examples$ p
ython3 --version
Python 3.8.10
```

3. Устанавливаем pip3 и проверяем версию

```
lemp001@u20-17:~/Downloads/Distributed_systems-main/d-zadanie/03-mq/examples$
 pip3 --version
pip 20.0.2 from /usr/lib/python3/dist-packages/pip (python 3.8)
```

4. Запуск receiver.py

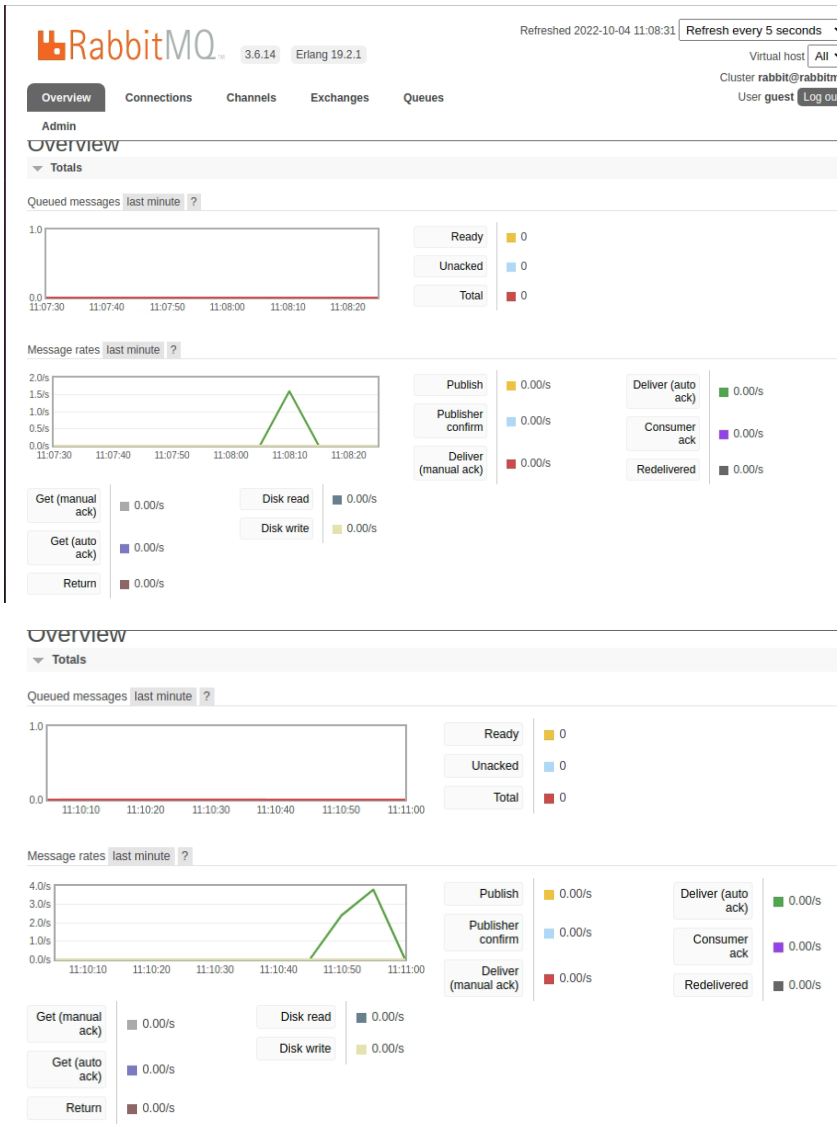
```
lemp001@u20-17:~/Downloads/Distributed_systems-main/d-zadanie/03-mq/examples/
rabbitmq/hello-world$ python3 recieve.py
started simple reciever
[producer] Waiting for messages.

[reciever] Received hello-word from channel <BlockingChannel impl=<Channel nu
mber=1 OPEN conn=<SelectConnection OPEN transport=<pika.adapters.utils.io_ser
vices_utils._AsyncPlaintextTransport object at 0x7f7af6f6c790> params=<Connec
tionParameters host=localhost port=5672 virtual_host=/ ssl=False>>>>, method
<Basic.Deliver(['consumer_tag=ctag1.5b126d43eca0489c8125c98753038752', 'deliv
ery_tag=1', 'exchange=', 'redelivered=False', 'routing_key=default'])>
```

```
[reciever] Received task-queue from channel <BlockingChannel impl=<Channel nu
mber=1 OPEN conn=<SelectConnection OPEN transport=<pika.adapters.utils.io_ser
vices_utils._AsyncPlaintextTransport object at 0x7f7af6f6c790> params=<Connec
tionParameters host=localhost port=5672 virtual_host=/ ssl=False>>>>, method
<Basic.Deliver(['consumer_tag=ctag1.5b126d43eca0489c8125c98753038752', 'deliv
ery_tag=2', 'exchange=', 'redelivered=False', 'routing_key=default'])>
```

5. Запуск send.py

```
lemp001@u20-17:~/Downloads/Distributed_systems-main/d-zadanie/03-mq/examples/
rabbitmq/hello-world$ python3 send.py
enter message >>> hello-word
[sender] Sent hello-word to queue default on host localhost
enter message >>> hello-word
[sender] Sent hello-word to queue default on host localhost
enter message >>> hello-word
[sender] Sent hello-word to queue default on host localhost
enter message >>>
```

```
enter message >>> task-queue
[sender] Sent task-queue to queue default on host localhost
enter message >>> task-queue
[sender] Sent task-queue to queue default on host localhost
enter message >>>
```



6. Удалим контейнер

```
lemp001@u20-17:~$ sudo docker stop rabbitmq
rabbitmq
lemp001@u20-17:~$ sudo docker rm  rabbitmq
rabbitmq
```

7. Создадим файл в каталоге проекта run.sh и определим ему права на запуск

```
lemp001@u20-17:~$ sudo touch run.sh
lemp001@u20-17:~$ sudo chmod +x run.sh
```

8. Запишем скрипт для поднятия брокера в докере:

```
  GNU nano 4.8                                  run.sh
docker run -d \
--hostname rabbitmq \
--log-driver=journald \
--name rabbitmq \
-p 5672:5672 \
-p 15672:15672 \
-p 15674:15674 \
-p 25672:25672 \
-p 61613:61613 \
-v rabbitmq_data:/var/lib/rabbitmq \
rabbitmq:3.6.14-management
```

9. Сохраняем и запускаем исполняемый файл run.sh

```
lemp001@u20-17:~$ sudo sh run.sh
932b01d92f04df30076e0a3866b919080d42a89aec6530398e6e7f01a3fef412
```

10. Создадим docker volume для RabbitMQ – папку хоста, примонтированную к файловой системе контейнера

```
lemp001@u20-17:~$ sudo docker volume create rabbitmq_data
rabbitmq_data
```

11. Контейнер rabbitmq запущен

```
                    "NetworkID": "43d606353d9cd5fad3f7d6ebdc3
cf21045740207848e6ba4",
                    "EndpointID": "e1b188f0ae7b7d8e0bea6d108d
d2fe72d651696671631c3b",
                    "Gateway": "172.17.0.1",
                    "IPAddress": "172.17.0.2",
                    "IPPrefixLen": 16,
                    "IPv6Gateway": "",
                    "GlobalIPv6Address": "",
                    "GlobalIPv6PrefixLen": 0,
                    "MacAddress": "02:42:ac:11:00:02",
                    "DriverOpts": null
                }
            }
```