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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 libfwupplugin1
  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 amd64 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-focal) ...
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: enabled)
   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/download/1.25.0/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
[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/download/1.25.0/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
[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'.
```

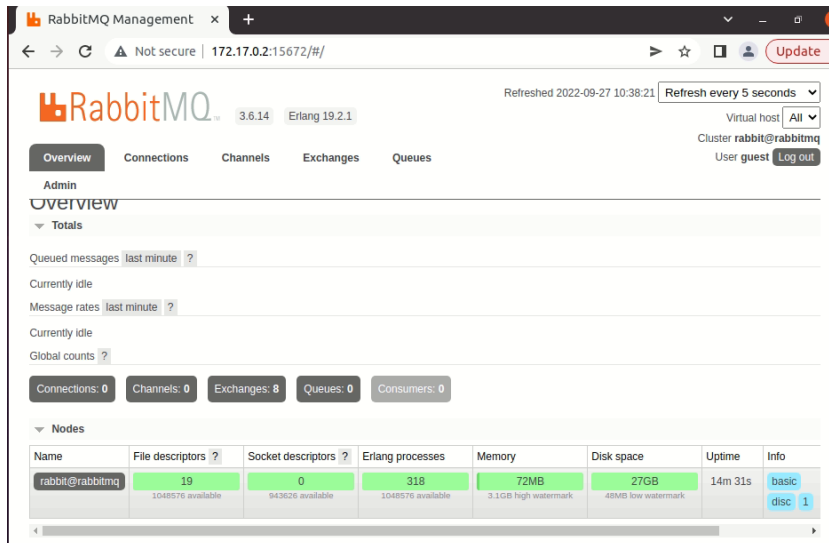
## 12. Удаление контейнеров

```
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 stop 79ebab5f1256
docker: 'stop' 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                  C
REATED        STATUS    PORTS                               NAMES
```

## 13. IP – адрес контейнера

```
lemp001@u20-17:~$ sudo docker container inspect rabbitmq
[
  {
    "Id": "d44d6e4ac920fe8573fd8dfa96aa7ea74d35fceb78d24f4752e1b4a94bef0e23
",
    "EndpointID": "e3c26b0891590c2b025b3a1c426a2490ce141ca3689e
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$ python3 --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 number=1 OPEN conn=<SelectConnection OPEN transport=<pika.adapters.utils.io_services_utils.AsyncPlaintextTransport object at 0x7f7af6f6c790> params=<ConnectionParameters host=localhost port=5672 virtual_host=/ ssl=False>>>>, method <Basic.Deliver(['consumer_tag=ctag1.5b126d43eca0489c8125c98753038752', 'delivery_tag=1', 'exchange=', 'redelivered=False', 'routing_key=default'])>
```

```
[reciever] Received task-queue from channel <BlockingChannel impl=<Channel number=1 OPEN conn=<SelectConnection OPEN transport=<pika.adapters.utils.io_services_utils.AsyncPlaintextTransport object at 0x7f7af6f6c790> params=<ConnectionParameters host=localhost port=5672 virtual_host=/ ssl=False>>>>, method <Basic.Deliver(['consumer_tag=ctag1.5b126d43eca0489c8125c98753038752', 'delivery_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 >>>
```