ОТЧЕТ ПО ПРАКТИЧЕСКОМУ ЗАДАНИЮ №8
«Знакомство с Docker Swarm»

Практическая работа
по дисциплине «Современные технологии программирования»
студента 1 курса группы ПИ-б-о-232
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направления подготовки 09.03.04 «Программная инженерия»

Симферополь, 2024

Цель: ознакомиться на практике с инструментом оркестрации контейнеризированных приложений Docker Swarm.

Ход выполнения задания.

1,2,3,4,5,6

```
asan@asan:~$ docker info | grep Swarm
 Swarm: inactive
asan@asan:~$ docker swarm init
Swarm initialized: current node (cgj9nueao936h2ej1xzmsrd63) is now a manager.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-15x8vuumh7txszbo46lonh4mwldpufrbbk0pxtgm0r0
qcwkzwm-9izhi2ed1r9ey7diygjhb5dno 192.168.1.107:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow t
he instructions.

asan@asan:~$ docker info | grep Swarm
 Swarm: active
asan@asan:~$ docker node ls
ID                              HOSTNAME   STATUS    AVAILABILITY    MANAGER STATUS
 ENGINE VERSION
cgj9nueao936h2ej1xzmsrd63 *   asan       Ready     Active          Leader
 26.1.3
asan@asan:~$ docker swarm leave --force
Node left the swarm.
asan@asan:~$ 
```

7,8,9,10,11

```
asan@asan:~$ docker swarm init
Swarm initialized: current node (vdf4letesxoanmq2dpvv600b5) is now a manager.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-3ho2d9l8hder9qumbdjsy9xcutyrydilc76fs00r78g
aqgtw1w-4l1lw3ax5yq3uc977i33h1keh 192.168.1.107:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow t
he instructions.

asan@asan:~$ docker service create --name timecheck --replicas 1 diamol/ch12-timec
heck:1.0
xz0v4arg5q9yqiwghlw1k2zd4
overall progress: 1 out of 1 tasks
1/1: running
verify: Service xz0v4arg5q9yqiwghlw1k2zd4 converged
asan@asan:~$ docker service ls
ID              NAME          MODE          REPLICAS    IMAGE                         POR
TS
xz0v4arg5q9y    timecheck    replicated    1/1         diamol/ch12-timecheck:1.0
asan@asan:~$ docker service ps timecheck
ID              NAME          IMAGE                         NODE      DESIRED STATE
 CURRENT STATE           ERROR        PORTS
xarv55pr3s8y    timecheck.1   diamol/ch12-timecheck:1.0    asan      Running
 Running 20 seconds ago
asan@asan:~$ docker ps
CONTAINER ID    IMAGE                         COMMAND                  CREATED
   STATUS          PORTS       NAMES
c48a65559f74    diamol/ch12-timecheck:1.0    "dotnet TimeCheck.dll"   32 seconds ago
    Up 31 seconds              timecheck.1.xarv55pr3s8ylrtj9yclhowht
asan@asan:~$ []
```

12,13,14,15

```
asan@asan:~$ docker rm -f $(docker ps --last 1 -q)
bb9f2e85de62
asan@asan:~$ docker service ps timecheck
ID              NAME              IMAGE                         NODE      DESIRED STA
TE   CURRENT STATE           ERROR                        PORTS
kqybu602fls0    timecheck.1       diamol/ch12-timecheck:1.0    asan      Running
     Running less than a second ago
1ursvw28663w    \_ timecheck.1   diamol/ch12-timecheck:1.0    asan      Shutdown
     Failed 7 seconds ago             "task: non-zero exit (137)"
xarv55pr3s8y    \_ timecheck.1   diamol/ch12-timecheck:1.0    asan      Shutdown
     Shutdown 53 seconds ago
asan@asan:~$ docker service logs --since 10s timecheck
timecheck.1.kqybu602fls0@asan     | App version: 1.0; time check: 15:25.43
timecheck.1.kqybu602fls0@asan     | App version: 1.0; time check: 15:25.48
asan@asan:~$ docker service inspect timecheck
[
    {
        "ID": "xz0v4arg5q9yqiwghlw1k2zd4",
        "Version": {
            "Index": 11
        },
```

16,17

```
asan@asan:~$ docker service update --image diamol/ch12-timecheck:2.0 timecheck
timecheck
overall progress: 1 out of 1 tasks
1/1: running
verify: Service timecheck converged
asan@asan:~$ docker service ps timecheck
ID              NAME                IMAGE                       NODE      DESIRED STA
TE   CURRENT STATE              ERROR                          PORTS
09xfmbvu533u    timecheck.1         diamol/ch12-timecheck:2.0   asan      Running
     Running 8 seconds ago
kqybu602fls0     \_ timecheck.1     diamol/ch12-timecheck:1.0   asan      Shutdown
     Shutdown 10 seconds ago
1ursvw28663w     \_ timecheck.1     diamol/ch12-timecheck:1.0   asan      Shutdown
     Failed 3 minutes ago       "task: non-zero exit (137)"
xarv55pr3s8y     \_ timecheck.1     diamol/ch12-timecheck:1.0   asan      Shutdown
     Shutdown 4 minutes ago
```

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```
asan@asan:~$ docker service logs --since 200s timecheck
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:25.53
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:25.58
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.03
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.08
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.14
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.18
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.24
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.29
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.33
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.38
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.43
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.48
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.53
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:26.58
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.03
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.08
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.13
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.18
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.24
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.29
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.33
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.39
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.43
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.48
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.53
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:27.58
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.04
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.09
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.13
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.18
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.24
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.28
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.33
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.38
timecheck.1.kqybu602fls0@asan       | App version: 1.0; time check: 15:28.43
timecheck.1.09xfmbvu533u@asan       | App version: 2.0; time check: 15:28.52
timecheck.1.09xfmbvu533u@asan       | App version: 2.0; time check: 15:28.57
timecheck.1.09xfmbvu533u@asan       | App version: 2.0; time check: 15:29.02
timecheck.1.09xfmbvu533u@asan       | App version: 2.0; time check: 15:29.07
asan@asan:~$
```

18,19,20

```
asan@asan:~$ docker service update --rollback timecheck
timecheck
rollback: manually requested rollback
overall progress: rolling back update: 1 out of 1 tasks
1/1: running
verify: Service timecheck converged
asan@asan:~$ docker service ps timecheck
ID              NAME                IMAGE                         NODE        DESIRED STA
TE    CURRENT STATE               ERROR                         PORTS
muw3vrgor0g1    timecheck.1         diamol/ch12-timecheck:1.0     asan        Running
      Running 13 seconds ago
09xfmbvu533u     \_ timecheck.1     diamol/ch12-timecheck:2.0     asan        Shutdown
      Shutdown 13 seconds ago
kqybu602fls0     \_ timecheck.1     diamol/ch12-timecheck:1.0     asan        Shutdown
      Shutdown 3 minutes ago
1ursvw28663w     \_ timecheck.1     diamol/ch12-timecheck:1.0     asan        Shutdown
      Failed 7 minutes ago        "task: non-zero exit (137)"
xarv55pr3s8y     \_ timecheck.1     diamol/ch12-timecheck:1.0     asan        Shutdown
      Shutdown 7 minutes ago
asan@asan:~$ docker service logs --since 100s timecheck
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:30.32
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:30.38
timecheck.1.muw3vrgor0g1@asan      | App version: 1.0; time check: 15:31.53
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:30.43
timecheck.1.muw3vrgor0g1@asan      | App version: 1.0; time check: 15:31.58
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:30.48
timecheck.1.muw3vrgor0g1@asan      | App version: 1.0; time check: 15:32.03
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:30.53
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:30.58
timecheck.1.muw3vrgor0g1@asan      | App version: 1.0; time check: 15:32.08
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.03
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.08
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.13
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.17
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.22
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.27
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.32
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.38
timecheck.1.09xfmbvu533u@asan      | App version: 2.0; time check: 15:31.42
asan@asan:~$
```

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```
asan@asan:~$ docker service rm timecheck
timecheck
asan@asan:~$ docker service ps timecheck
no such service: timecheck
asan@asan:~$ []
```

22,23,24,25,26

```
asan@asan:~$ docker service rm timecheck
timecheck
asan@asan:~$ docker service ps timecheck
no such service: timecheck
asan@asan:~$ docker network create --driver overlay iotd-net
9e5m08oi7wtd0uxroey44rvm4
asan@asan:~$ docker network ls
NETWORK ID      NAME                DRIVER      SCOPE
d705f6ed4d4e    asan_outside        ipvlan      local
55129c50a270    bridge              bridge      local
15d1a29d8034    docker_gwbridge     bridge      local
2eb65868113a    host                host        local
ys8a66huu0uu    ingress             overlay     swarm
9e5m08oi7wtd    iotd-net            overlay     swarm
9e9c15cca80b    none                null        local
asan@asan:~$ docker service create --detach --replicas 3 --network iotd-net --name
 iotd diamol/ch09-image-of-the-day
b971l0bw2u5gt2165dsvf3cp6
asan@asan:~$ docker service create --detach --replicas 2 --network iotd-net --name
 accesslog diamol/ch09-access-log
i2hygmcbqvg1o74ufhss7zi2s
asan@asan:~$ docker service ls
ID              NAME        MODE        REPLICAS    IMAGE
        PORTS
i2hygmcbqvg1    accesslog   replicated  2/2         diamol/ch09-access-log:latest

b971l0bw2u5g    iotd        replicated  3/3         diamol/ch09-image-of-the-day:la
test
asan@asan:~$ ▮
```

27,28,29,30,31

```
asan@asan:~$ docker exec -it $(docker ps --last 1 -q) sh
/app # nslookup iotd
nslookup: can't resolve '(null)': Name does not resolve

Name:       iotd
Address 1: 10.0.1.2
/app # exit
asan@asan:~$ docker service create --detach --replicas 2 --network iotd-net --publ
ish 8010:80 --name image-gallery diamol/ch09-image-gallery
y64gfhbqfv5jokq6huvuxjtgz
asan@asan:~$ docker service ls
ID              NAME            MODE        REPLICAS    IMAGE
        PORTS
i2hygmcbqvg1    accesslog       replicated  2/2         diamol/ch09-access-log:late
st
y64gfhbqfv5j    image-gallery   replicated  2/2         diamol/ch09-image-gallery:l
atest       *:8010->80/tcp
b971l0bw2u5g    iotd            replicated  3/3         diamol/ch09-image-of-the-da
y:latest
asan@asan:~$ ▯
```
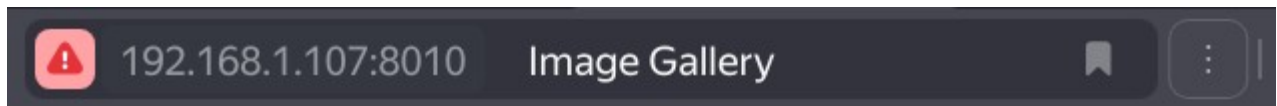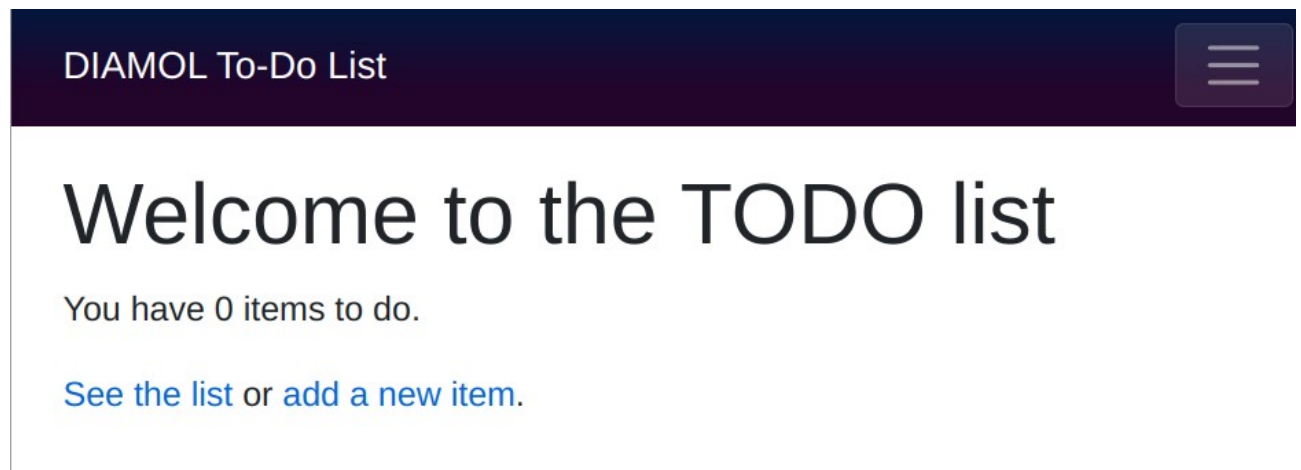
32

33

```
asan@asan:~$ docker service rm
accesslog      image-gallery  iotd
asan@asan:~$ docker service rm accesslog
accesslog
asan@asan:~$ docker service rm image-gallery
image-gallery
asan@asan:~$ docker service rm iotd
iotd
asan@asan:~$
```

34,35,36,37

```
asan@asan:~$ nano v1.yaml
asan@asan:~$ docker stack deploy -c ./v1.yaml todo
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Creating network todo_default
Creating service todo_todo-web
asan@asan:~$ docker stack ls
NAME       SERVICES
todo       1
asan@asan:~$ docker service ls
ID               NAME              MODE          REPLICAS   IMAGE
    PORTS
618tox0ly7yc   todo_todo-web    replicated    1/1        diamol/ch06-todo-list:lates
t    *:8080->80/tcp
asan@asan:~$ 
```

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DIAMOL To-Do List   ☰

Welcome to the TODO list

You have 0 items to do.

See the list or add a new item.

39,40,41,42,43

```
asan@asan:~$ nano v2.yaml
asan@asan:~$ docker stack deploy -c ./v2.yaml todo
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service todo_todo-web (id: 618tox0ly7yciv54td58txi3z)
asan@asan:~$ docker stack deploy -c ./v2.yaml todo
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service todo_todo-web (id: 618tox0ly7yciv54td58txi3z)
asan@asan:~$ docker stack services todo
ID              NAME              MODE          REPLICAS    IMAGE
    PORTS
618tox0ly7yc    todo_todo-web    replicated    2/2         diamol/ch06-todo-list:lates
t   *:8080->80/tcp
asan@asan:~$ docker service ps todo_todo-web
ID              NAME              IMAGE                          NODE      DESI
RED STATE    CURRENT STATE          ERROR      PORTS
5ldqiczznxuz    todo_todo-web.1    diamol/ch06-todo-list:latest    asan      Runn
ing          Running 32 seconds ago
pqx4yhw5us5z    \_ todo_todo-web.1    diamol/ch06-todo-list:latest    asan      Shut
down         Shutdown 33 seconds ago
mtztof2g8tf9    todo_todo-web.2    diamol/ch06-todo-list:latest    asan      Runn
ing          Running 35 seconds ago
asan@asan:~$ docker stack rm todo
Removing service todo_todo-web
Removing network todo_default
asan@asan:~$
```
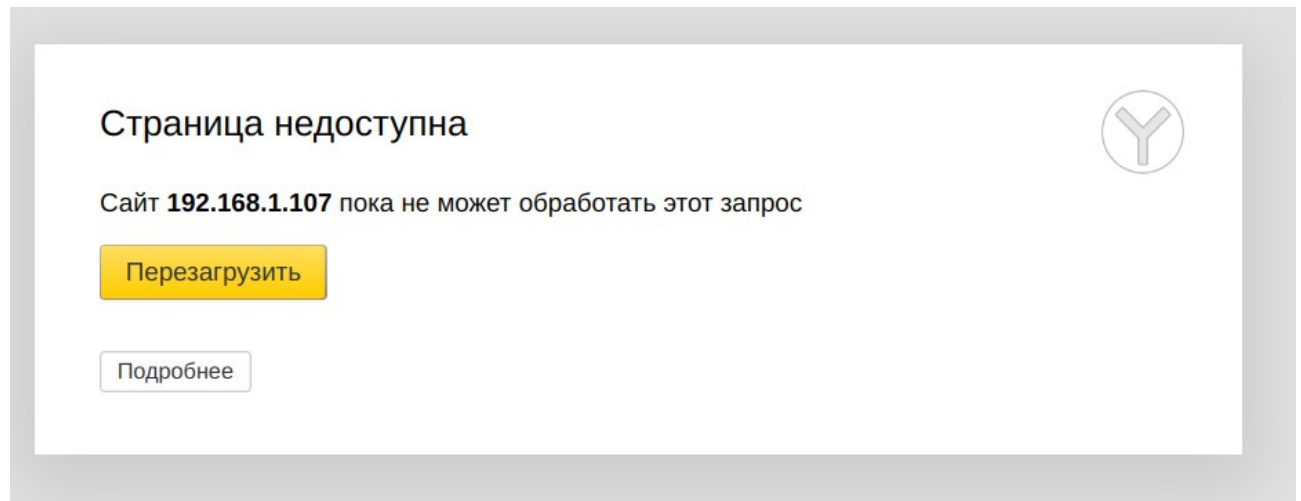
44,45,46,47

```
asan@asan:~$ mkdir configs
asan@asan:~$ cd configs/
asan@asan:~/configs$ nano config.json
asan@asan:~/configs$ docker config create todo-list-config ./congif.json
open ./congif.json: no such file or directory
asan@asan:~/configs$ cd ..
asan@asan:~$ docker config create todo-list-config ./congif.json
open ./congif.json: no such file or directory
asan@asan:~$ cd configs/
asan@asan:~/configs$ docker config create todo-list-config ./config.json
kro082umwdyq0i7fnj2euwwdp
asan@asan:~/configs$ docker config ls
ID                         NAME              CREATED          UPDATED
kro082umwdyq0i7fnj2euwwdp  todo-list-config  10 seconds ago   10 seconds ago
asan@asan:~/configs$ docker config inspect --pretty todo-list-config
ID:                  kro082umwdyq0i7fnj2euwwdp
Name:                todo-list-config
Created at:          2024-06-02 16:03:53.106089689 +0000 utc
Updated at:          2024-06-02 16:03:53.106089689 +0000 utc
Data:
{
  "Logging": {
    "LogLevel": {
      "Default": "Information",
      "Microsoft": "Warning",
      "Microsoft.Hosting.Lifetime": "Warning"
    }
  },
  "AllowedHosts": "*",
  "Database": {
    "Provider": "Postgres"
  }
}

asan@asan:~/configs$
```

48,49,50

```
asan@asan:~/configs$ cd ..
asan@asan:~$ nano v3.yaml
asan@asan:~$ docker stack deploy -c ./v3.yaml todo
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Creating network todo_app-net
Creating service todo_todo-web
Creating service todo_todo-db
asan@asan:~$ docker stack services todo
ID             NAME           MODE        REPLICAS   IMAGE
    PORTS
ev8ffdury3gv   todo_todo-db   replicated  1/1        diamol/postgres:11.5

mrtx4z2zrr8q   todo_todo-web  replicated  1/1        diamol/ch06-todo-list:lates
t   *:8080->80/tcp
asan@asan:~$
```

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Страница недоступна

Сайт **192.168.1.107** пока не может обработать этот запрос

Перезагрузить

Подробнее

52,53,54,55,56,57,58,59

```
asan@asan:~$ mkdir secrets
asan@asan:~$ cd secrets/
asan@asan:~/secrets$ nano secret.json
asan@asan:~/secrets$ docker secret create todo-list-secret ./secret.json
rrp9zgrie2ldgygeius99qkvs
asan@asan:~/secrets$ docker secret ls
ID                              NAME                DRIVER      CREATED          UPDATED
rrp9zgrie2ldgygeius99qkvs       todo-list-secret                6 seconds ago    6 seconds
 ago
asan@asan:~/secrets$ docker secret inspect --pretty todo-list-secret
ID:             rrp9zgrie2ldgygeius99qkvs
Name:           todo-list-secret
Driver:
Created at:     2024-06-02 16:10:10.941053296 +0000 utc
Updated at:     2024-06-02 16:10:10.941053296 +0000 utc
asan@asan:~/secrets$ cd ..
asan@asan:~$ nano v4.yaml
asan@asan:~$ docker stack deploy -c ./v4.yaml todo
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service todo_todo-web (id: mrtx4z2zrr8qwobwew7cpmxqd)
Updating service todo_todo-db (id: ev8ffdury3gvooltby67zdaqk)
asan@asan:~$ docker stack ps todo
ID              NAME                IMAGE                           NODE        DESI
RED STATE       CURRENT STATE       ERROR       PORTS
l5cv55di8plv    todo_todo-db.1      diamol/postgres:11.5            asan        Runn
ing             Running 4 minutes ago
uz0ds8yszgtb    todo_todo-web.1     diamol/ch06-todo-list:latest    asan        Runn
ing             Running 51 seconds ago
u9et616r7s5r    \_ todo_todo-web.1  diamol/ch06-todo-list:latest    asan        Shut
down            Shutdown 52 seconds ago
asan@asan:~$
```

60

DIAMOL To-Do List ☰

Welcome to the TODO list

You have 0 items to do.

See the list or add a new item.

61,62

```
asan@asan:~$ docker node update --label-add storage=raid $(docker node ls -q)
vdf4letesxoanmq2dpvv600b5
asan@asan:~$ docker node inspect $(docker node ls -q)
[
    {
        "ID": "vdf4letesxoanmq2dpvv600b5",
        "Version": {
            "Index": 185
        },
        "CreatedAt": "2024-06-02T15:21:36.94711646Z",
        "UpdatedAt": "2024-06-02T16:19:06.25889109Z",
```

63,64,65

```
asan@asan:~$ nano v5.yaml
asan@asan:~$ docker volume ls -q
636b8c5da4636c4494c8020732b7539375207344d58fd31e28411aa997e15db9
bde970825f7c146f6aaecb591bf9634e30a4bfea5262739fde562ffeec875e43
f0f82aed1754f5889120a9891b75672ba2d99f4910ff1656d05255497347c140
asan@asan:~$ docker stack deploy -c ./v5.yaml todo
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service todo_todo-db (id: ev8ffdury3gvooltby67zdaqk)
Updating service todo_todo-web (id: mrtx4z2zrr8qwobwew7cpmxqd)
asan@asan:~$ docker volume ls -q
636b8c5da4636c4494c8020732b7539375207344d58fd31e28411aa997e15db9
bde970825f7c146f6aaecb591bf9634e30a4bfea5262739fde562ffeec875e43
f0f82aed1754f5889120a9891b75672ba2d99f4910ff1656d05255497347c140
todo_todo-db-data
asan@asan:~$
```

DIAMOL To-Do List ☰

TODO List

There is much still to do.

But there's always room to add more.

Item	Date Added
first_asan_item	Sunday, 02 June 2024
second_asan_item	Sunday, 02 June 2024

```
asan@asan:~$ nano v6.yaml
asan@asan:~$ docker stack deploy -c ./v6.yaml todo
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service todo_todo-web (id: mrtx4z2zrr8qwobwew7cpmxqd)
Updating service todo_todo-db (id: ev8ffdury3gvooltby67zdaqk)
asan@asan:~$ █
```

DIAMOL To-Do List ☰

TODO List

There is much still to do.

But there's always room to add more.

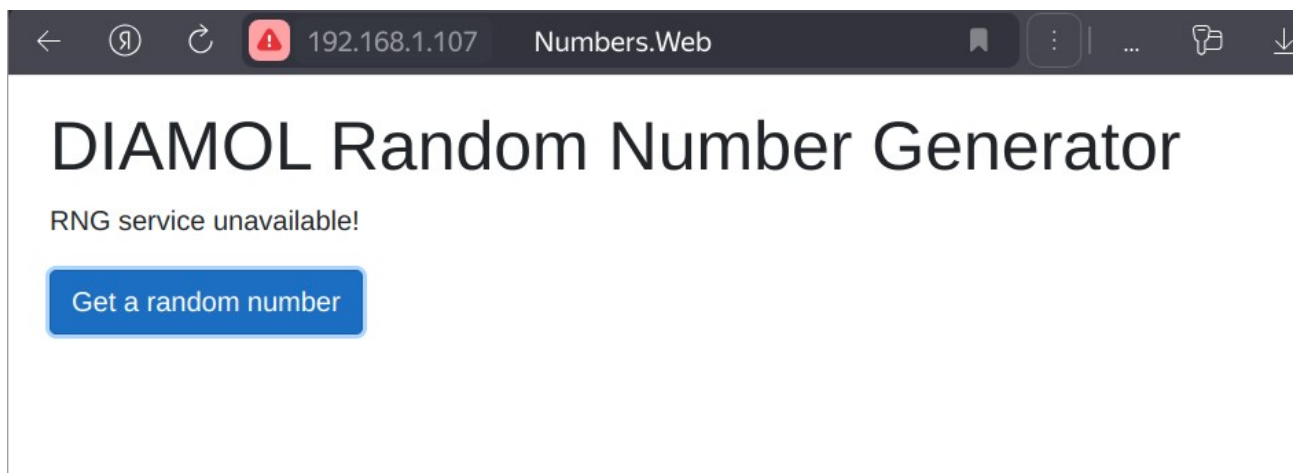| Item	Date Added
first_asan_item	Sunday, 02 June 2024
second_asan_item	Sunday, 02 June 2024

70

```
asan@asan:~$ docker stack rm todo
Removing service todo_todo-db
Removing service todo_todo-web
Removing network todo_app-net
asan@asan:~$ docker volume ls -q
bde970825f7c146f6aaecb591bf9634e30a4bfea5262739fde562ffeec875e43
todo_todo-db-data
asan@asan:~$ ▯
```

71,72

```
asan@asan:~$ nano stack.yaml
asan@asan:~$ docker stack deploy -c ./stack.yaml numbers
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Creating network numbers-prod
Creating service numbers_numbers-web
Creating service numbers_numbers-api
asan@asan:~$ docker stack services numbers
ID              NAME                    MODE         REPLICAS   IMAGE
            PORTS
suepp4frww2g    numbers_numbers-api     replicated   6/6        diamol/ch08-numbers-a
pi:latest
xb1h8dfusc2g    numbers_numbers-web     global       1/1        diamol/ch08-numbers-w
eb:latest
asan@asan:~$ ▯
```

73

DIAMOL Random Number Generator

RNG service unavailable!

Get a random number

```
asan@asan:~$ docker stack ps numbers
ID              NAME                                                    IMAGE
                NODE         DESIRED STATE   CURRENT STATE               ERROR      PORTS
n2d5ewe3pjij    numbers_numbers-api.1                                   diamol/ch08-numbers
-api:latest     asan         Running         Running 3 minutes ago
yiqvtkbg8wmj    numbers_numbers-api.2                                   diamol/ch08-numbers
-api:latest     asan         Running         Running 3 minutes ago
obprw8ftjn55    numbers_numbers-api.3                                   diamol/ch08-numbers
-api:latest     asan         Running         Running 3 minutes ago
tlc4mzqq7k8q    numbers_numbers-api.4                                   diamol/ch08-numbers
-api:latest     asan         Running         Running 3 minutes ago
vu9esgbfrfyu    numbers_numbers-api.5                                   diamol/ch08-numbers
-api:latest     asan         Running         Running 3 minutes ago
84i9m9i4p2ca    numbers_numbers-api.6                                   diamol/ch08-numbers
-api:latest     asan         Running         Running 3 minutes ago
1rjfttd0ssbl    numbers_numbers-web.vdf4letesxoanmq2dpvv600b5           diamol/ch08-numbers
-web:latest     asan         Running         Running 3 minutes ago                *:80->80
/tcp,*:80->80/tcp
asan@asan:~$
```

75,76,77,78

```
asan@asan:~$ nano stack.yaml
asan@asan:~$ docker stack deploy -c ./stack.yaml numbers
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service numbers_numbers-web (id: xb1h8dfusc2g7s4mposafvq4i)
Updating service numbers_numbers-api (id: suepp4frww2g60lkoalcl1os7)
asan@asan:~$ docker stack services numbers
ID              NAME                    MODE          REPLICAS    IMAGE
        PORTS
suepp4frww2g    numbers_numbers-api     replicated    5/6         diamol/ch08-numbers-a
pi:v2
xb1h8dfusc2g    numbers_numbers-web     global        0/0         diamol/ch08-numbers-w
eb:v2
asan@asan:~$ docker stack ps numbers
ID              NAME                                                    IMAGE
                NODE         DESIRED STATE   CURRENT STATE                         ERRO
R                        PORTS
19nnbu4lzxm7    numbers_numbers-api.1                                   diamol/ch08-num
bers-api:v2       asan         Running         Running 10 seconds ago

n2d5ewe3pjij    \_ numbers_numbers-api.1                                diamol/ch08-num
bers-api:latest   asan         Shutdown        Shutdown 12 seconds ago

yiqvtkbg8wmj    numbers_numbers-api.2                                   diamol/ch08-num
bers-api:latest   asan         Running         Running 5 minutes ago
```

DIAMOL Random Number Generator

Here it is: 54

[Get a random number]

81,82,83,84,85,86

```
asan@asan:~$ nano stack.yaml
asan@asan:~$ docker stack deploy -c ./stack.yaml numbers
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service numbers_numbers-api (id: suepp4frww2g60lkoalcl1os7)
Updating service numbers_numbers-web (id: xb1h8dfusc2g7s4mposafvq4i)
asan@asan:~$ docker stack services numbers
ID              NAME                       MODE         REPLICAS   IMAGE
       PORTS
suepp4frww2g    numbers_numbers-api    replicated   8/6        diamol/ch08-numbers-a
pi:v3
xb1h8dfusc2g    numbers_numbers-web    global       1/0        diamol/ch08-numbers-w
eb:v3
asan@asan:~$ docker service inspect numbers_numbers-api | jq '.[0].UpdateStatus'
{
  "State": "completed",
  "StartedAt": "2024-06-02T16:41:02.8932481Z",
  "CompletedAt": "2024-06-02T16:42:16.09945588Z",
  "Message": "update completed"
}
asan@asan:~$ nano stack.yaml
asan@asan:~$ docker stack deploy -c ./stack.yaml numbers
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service numbers_numbers-api (id: suepp4frww2g60lkoalcl1os7)
Updating service numbers_numbers-web (id: xb1h8dfusc2g7s4mposafvq4i)
asan@asan:~$ watch -n 0.5 "docker service inspect numbers_numbers-api | jq '.[0].U
pdateStatus'"
asan@asan:~$ docker stack services numbers
ID              NAME                       MODE         REPLICAS   IMAGE
       PORTS
suepp4frww2g    numbers_numbers-api    replicated   6/6        diamol/ch08-numbers-a
pi:v3
xb1h8dfusc2g    numbers_numbers-web    global       1/1        diamol/ch14-numbers-w
eb:v5
asan@asan:~$
```

87,88,89

```
asan@asan:~$ nano stack.yaml
asan@asan:~$ docker stack deploy -c ./stack.yaml numbers
Since --detach=false was not specified, tasks will be created in the background.
In a future release, --detach=false will become the default.
Updating service numbers_numbers-api (id: suepp4frww2g60lkoalcl1os7)
Updating service numbers_numbers-web (id: xb1h8dfusc2g7s4mposafvq4i)
asan@asan:~$ watch -n 0.5 "docker service inspect numbers_numbers-api | jq '.[0].U
pdateStatus'"
asan@asan:~$ docker stack services numbers
ID              NAME                       MODE         REPLICAS   IMAGE
       PORTS
suepp4frww2g    numbers_numbers-api    replicated   6/6        diamol/ch14-numbers-a
pi:v5
xb1h8dfusc2g    numbers_numbers-web    global       1/1        diamol/ch14-numbers-w
eb:v5
asan@asan:~$
```

90,91,92,93

03:55:39

CLOSE SESSION

Instances 🔧 ⚙

+ ADD NEW INSTANCE

👤 192.168.0.13
   node1

192.168.0.12
node2

192.168.0.11
node3

192.168.0.10
node4

192.168.0.9
node5

GIVE FEEDBACK

cpea5q8l_cpea6hgl2o9000fdg250

IP
192.168.0.13   OPEN PORT

Memory   CPU
1.28% (51.38MiB / 3.906GiB)   1.50%

SSH
ssh ip172-18-0-103-cpea5q8l2o9000fdg230@direct.labs.play-with- 📋

DELETE   📄 EDITOR

```
############################################################
#                    WARNING!!!!                          #
# This is a sandbox environment. Using personal credentials #
# is HIGHLY! discouraged. Any consequences of doing so are  #
# completely the user's responsibilites.                  #
#                                                          #
# The PWD team.                                            #
############################################################
[node1] (local) root@192.168.0.13 ~
$ C^C
[node1] (local) root@192.168.0.13 ~
$ ip=$(hostname -i)
docker swarm init --advertise-addr $ip
Swarm initialized: current node (hutyrz6tsyc6opa12728dlb42) is now a manager.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-24da6sa2091qmaeacb0ybwyespyhu4ih625m1oo3f2byv6vsnu-10q7bmdbmxw8utje2awdvjknt 192.168.0.13:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow the instructions.

[node1] (local) root@192.168.0.13 ~
$
```

94

```
[node1] (local) root@192.168.0.13 ~
$ docker swarm join-token manager
To add a manager to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-24da6sa2091qmaeacb0ybwyespyhu4ih625m1oo3f2byv6vsnu-6nqj9r51w712s3tww62ji6htv 192.168.0.13:2377

[node1] (local) root@192.168.0.13 ~
$
```

95

```
[node2] (local) root@192.168.0.12 ~
$ docker swarm join --token SWMTKN-1-24da6sa2091qmaeacb0ybwyespyhu4ih625m1oo3f2byv6vsnu-6nqj9r51w712s3tww62ji6htv 192.168.0.13:2377
This node joined a swarm as a manager.
[node2] (local) root@192.168.0.12 ~
$
```

```
[node3] (local) root@192.168.0.11 ~
$ docker swarm join --token SWMTKN-1-24da6sa2091qmaeacb0ybwyespyhu4ih625m1oo3f2byv6vsnu-6nqj9r51w712s3tww62ji6htv 192.168.0.13:2377
This node joined a swarm as a manager.
[node3] (local) root@192.168.0.11 ~
$
```

96

```
[node3] (local) root@192.168.0.11 ~
$ docker swarm join-token worker
To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-24da6sa2091qmaeacb0ybwyespyhu4ih625m1oo3f2byv6vsnu-10q7bmdbmxw8utje2awdvjknt 192.168.0.11:2377

[node3] (local) root@192.168.0.11 ~
$
```

97

```
[node4] (local) root@192.168.0.10 ~
$ docker swarm join --token SWMTKN-1-24da6sa2091qmaeacb0ybwyespyhu4ih625m1oo3f2byv6vsnu-10q7bmdbmxw8utje2awdvjknt 192.168.0.11:2377
This node joined a swarm as a worker.
[node4] (local) root@192.168.0.10 ~
$
```

```
[node5] (local) root@192.168.0.9 ~
$ docker swarm join --token SWMTKN-1-24da6sa2091qmaeacb0ybwyespyhu4ih625m1oo3f2byv6vsnu-10q7bmdbmxw8utje2awdvjknt 192.168.0.11:2377
This node joined a swarm as a worker.
[node5] (local) root@192.168.0.9 ~
$
```

98,99

```
[node1] (local) root@192.168.0.13 ~
$ docker node ls
ID                            HOSTNAME   STATUS   AVAILABILITY   MANAGER STATUS   ENGINE VERSION
hutyrz6tsyc6opa12728dlb42 *   node1      Ready    Active         Leader           24.0.7
x4i3of2aceoxmnhw19767psdf     node2      Ready    Active         Reachable        24.0.7
sn97ckg9630dfsuptlwjuspel     node3      Ready    Active         Reachable        24.0.7
sho57w88v2ofnlmcshpvuqlo7     node4      Ready    Active                          24.0.7
uckxie3i3n6b18e2bmrja1c0w     node5      Ready    Active                          24.0.7
[node1] (local) root@192.168.0.13 ~
$ docker node update --availability drain node3
node3
[node1] (local) root@192.168.0.13 ~
$ docker node update --availability drain node5
node5
[node1] (local) root@192.168.0.13 ~
$ docker node ls
ID                            HOSTNAME   STATUS   AVAILABILITY   MANAGER STATUS   ENGINE VERSION
hutyrz6tsyc6opa12728dlb42 *   node1      Ready    Active         Leader           24.0.7
x4i3of2aceoxmnhw19767psdf     node2      Ready    Active         Reachable        24.0.7
sn97ckg9630dfsuptlwjuspel     node3      Ready    Drain          Reachable        24.0.7
sho57w88v2ofnlmcshpvuqlo7     node4      Ready    Active                          24.0.7
uckxie3i3n6b18e2bmrja1c0w     node5      Ready    Drain                           24.0.7
[node1] (local) root@192.168.0.13 ~
```

100

```
[node1] (local) root@192.168.0.13 ~
$ docker swarm leave --force
Node left the swarm.
[node1] (local) root@192.168.0.13 ~
$
```

101

```
[node2] (local) root@192.168.0.12 ~
$ docker node ls
ID                            HOSTNAME   STATUS   AVAILABILITY   MANAGER STATUS   ENGINE VERSION
hutyrz6tsyc6opa12728dlb42     node1      Down     Active         Unreachable      24.0.7
x4i3of2aceoxmnhw19767psdf *   node2      Ready    Active         Reachable        24.0.7
sn97ckg9630dfsuptlwjuspel     node3      Ready    Drain          Leader           24.0.7
sho57w88v2ofnlmcshpvuqlo7     node4      Ready    Active                          24.0.7
uckxie3i3n6b18e2bmrja1c0w     node5      Ready    Drain                           24.0.7
[node2] (local) root@192.168.0.12 ~
$
```

102

```
[node2] (local) root@192.168.0.12 ~
$ docker node promote node5
Node node5 promoted to a manager in the swarm.
[node2] (local) root@192.168.0.12 ~
$ docker node update --availability active node5
node5
[node2] (local) root@192.168.0.12 ~
$ docker node ls
ID                            HOSTNAME   STATUS   AVAILABILITY   MANAGER STATUS   ENGINE VERSION
hutyrz6tsyc6opa12728dlb42     node1      Down     Active         Unreachable      24.0.7
x4i3of2aceoxmnhw19767psdf *   node2      Ready    Active         Reachable        24.0.7
sn97ckg9630dfsuptlwjuspel     node3      Ready    Drain          Leader           24.0.7
sho57w88v2ofnlmcshpvuqlo7     node4      Ready    Active                          24.0.7
uckxie3i3n6b18e2bmrja1c0w     node5      Ready    Active         Reachable        24.0.7
[node2] (local) root@192.168.0.12 ~
$
```

103,104,105

```
[node5] (local) root@192.168.0.9 ~
$ docker node demote node2
Manager node2 demoted in the swarm.
[node5] (local) root@192.168.0.9 ~
$ docker node rm node1
Error response from daemon: rpc error: code = FailedPrecondition desc = node hutyrz6tsyc6opa12728dlb42 is a cluster manager and is a m
mber of the raft cluster. It must be demoted to worker before removal
[node5] (local) root@192.168.0.9 ~
$ docker node demote node1
Manager node1 demoted in the swarm.
[node5] (local) root@192.168.0.9 ~
$ docker node rm node1
node1
[node5] (local) root@192.168.0.9 ~
$ docker node ls
ID                             HOSTNAME   STATUS   AVAILABILITY   MANAGER STATUS   ENGINE VERSION
x4i3of2aceoxmnhw19767psdf      node2      Ready    Active                          24.0.7
sn97ckg9630dfsuptlwjuspel      node3      Ready    Drain          Leader           24.0.7
sho57w88v2ofnlmcshpvuqlo7      node4      Ready    Active                          24.0.7
uckxie3i3n6b18e2bmrja1c0w *    node5      Ready    Active         Reachable        24.0.7
[node5] (local) root@192.168.0.9 ~
$
```

Ответы на вопросы.

Вывод: Я ознакомился на практике с инструментом оркестрации контейнеризированных приложений Docker Swarm.