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Кафедра И5  
«Информационные системы и программная инженерия»

**ПРАКТИЧЕСКАЯ РАБОТА № 2**  
По дисциплине «**СЕТИ ЭВМ И СИСТЕМ**»  
На тему  
**Использование сетевых утилит**

***Вариант № 3***

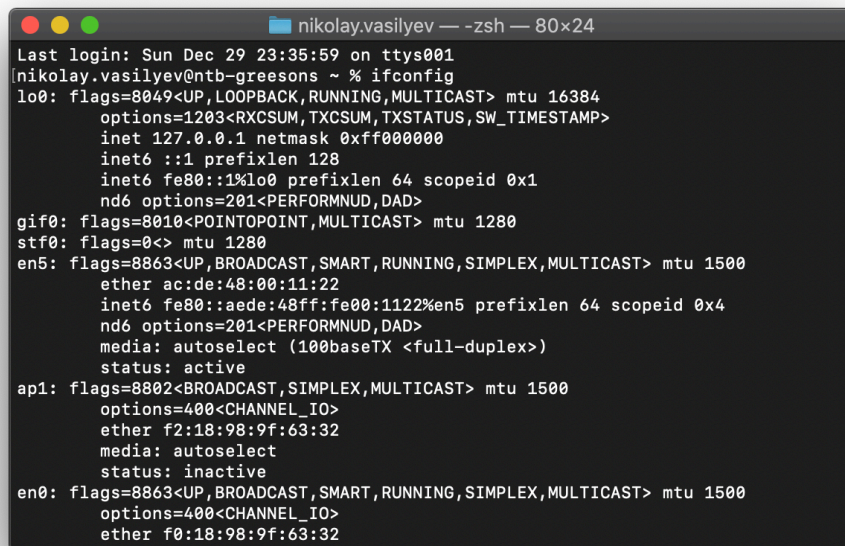
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Санкт-Петербург  
2019

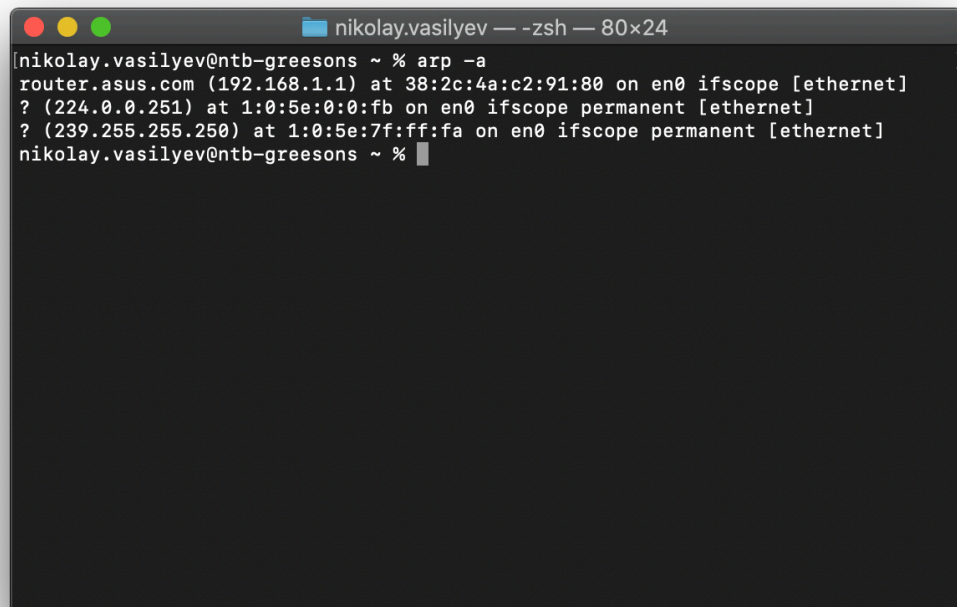
## Задание

1. При помощи утилиты **ifconfig** определить конфигурацию сетевых интерфейсов.



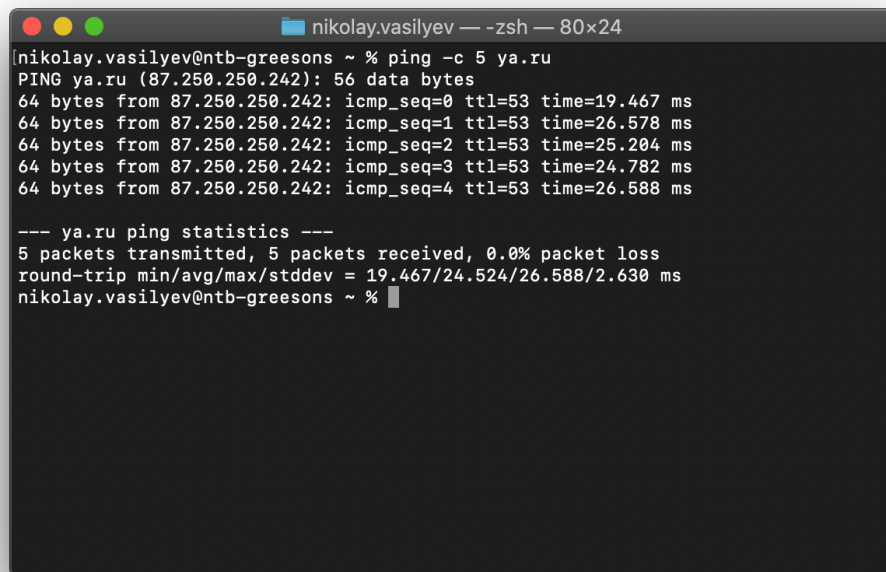
```
nikolay.vasilyev — zsh — 80x24
Last login: Sun Dec 29 23:35:59 on ttys001
[nikolay.vasilyev@ntb-greensons ~ % ifconfig
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 16384
    options=1203<RXCSUM,TXCSUM,TXSTATUS,SW_TIMESTAMP>
    inet 127.0.0.1 netmask 0xff000000
    inet6 ::1 prefixlen 128
    inet6 fe80::1%lo0 prefixlen 64 scopeid 0x1
    nd6 options=201<PERFORMNUD,DAD>
gif0: flags=8010<POINTOPOINT,MULTICAST> mtu 1280
stf0: flags=0<> mtu 1280
en5: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    ether ac:de:48:00:11:22
    inet6 fe80::aede:48ff:fe00:1122%en5 prefixlen 64 scopeid 0x4
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect (100baseTX <full-duplex>)
    status: active
ap1: flags=8802<BROADCAST,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_IO>
    ether f2:18:98:9f:63:32
    media: autoselect
    status: inactive
en0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_IO>
    ether f0:18:98:9f:63:32
```

2. При помощи утилиты **arp** узнать известные физические адреса.



```
nikolay.vasilyev — zsh — 80x24
[nikolay.vasilyev@ntb-greensons ~ % arp -a
router.asus.com (192.168.1.1) at 38:2c:4a:c2:91:80 on en0 ifscope [ethernet]
? (224.0.0.251) at 1:0:5e:0:0:fb on en0 ifscope permanent [ethernet]
? (239.255.255.250) at 1:0:5e:7f:ff:fa on en0 ifscope permanent [ethernet]
nikolay.vasilyev@ntb-greensons ~ %
```

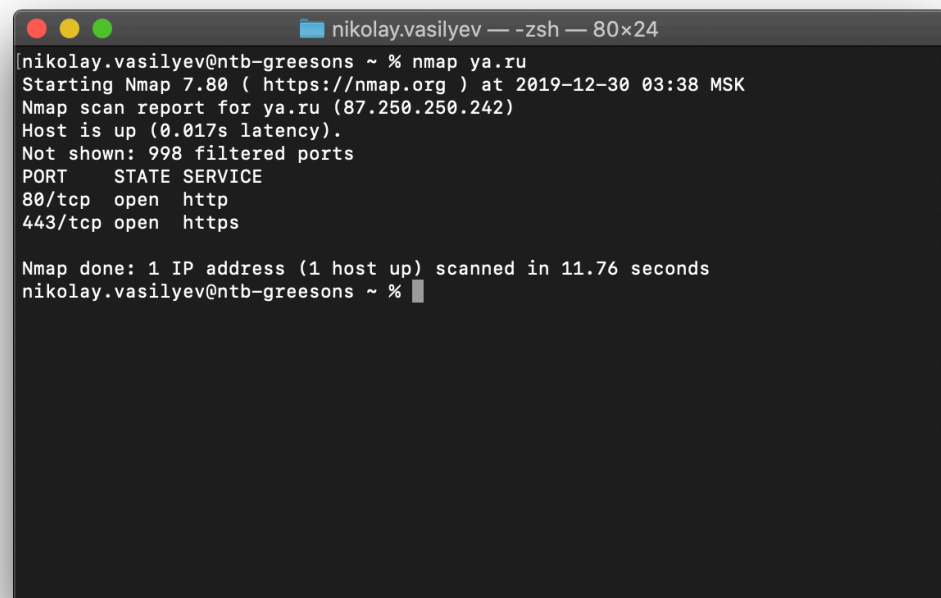
3. При помощи утилиты **ping** проверить доступность некоторого узла сети (выбрать самостоятельно).



```
nikolay.vasilyev@ntb-greeseons ~ % ping -c 5 ya.ru
PING ya.ru (87.250.250.242): 56 data bytes
64 bytes from 87.250.250.242: icmp_seq=0 ttl=53 time=19.467 ms
64 bytes from 87.250.250.242: icmp_seq=1 ttl=53 time=26.578 ms
64 bytes from 87.250.250.242: icmp_seq=2 ttl=53 time=25.204 ms
64 bytes from 87.250.250.242: icmp_seq=3 ttl=53 time=24.782 ms
64 bytes from 87.250.250.242: icmp_seq=4 ttl=53 time=26.588 ms

--- ya.ru ping statistics ---
5 packets transmitted, 5 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 19.467/24.524/26.588/2.630 ms
nikolay.vasilyev@ntb-greeseons ~ %
```

4. При помощи утилиты **nmap** определить открытые порты некоторого узла сети (выбрать самостоятельно).



```
nikolay.vasilyev@ntb-greeseons ~ % nmap ya.ru
Starting Nmap 7.80 ( https://nmap.org ) at 2019-12-30 03:38 MSK
Nmap scan report for ya.ru (87.250.250.242)
Host is up (0.017s latency).
Not shown: 998 filtered ports
PORT      STATE SERVICE
80/tcp    open  http
443/tcp   open  https

Nmap done: 1 IP address (1 host up) scanned in 11.76 seconds
nikolay.vasilyev@ntb-greeseons ~ %
```

5. При помощи утилиты **telnet** проверить доступность определенного порта некоторого узла сети (выбрать самостоятельно).

```
nikolay.vasilyev — zsh — 80x24
[nikolay.vasilyev@ntb-greensons ~ % telnet ya.ru 80
Trying 87.250.250.242...
Connected to ya.ru.
Escape character is '^]'.
test123
HTTP/1.1 400 Bad request
Connection: Close
Content-Length: 0

Connection closed by foreign host.
nikolay.vasilyev@ntb-greensons ~ %
```

6. При помощи утилиты **netstat** вывести текущее состояние TCP-соединений и таблицы маршрутизации.

```
nikolay.vasilyev — netstat — 80x24
[nikolay.vasilyev@ntb-greensons ~ % netstat
Active Internet connections
Proto Recv-Q Send-Q Local Address           Foreign Address         (state)
tcp4      0      0 ntb-greensons.55718    82.202.184.163.https    SYN_SENT
tcp4      0      0 localhost.49228        localhost.55716         ESTABLISHED
tcp4      0      0 localhost.55716        localhost.49228         ESTABLISHED
tcp4      0      0 localhost.nfsd-status  localhost.55701         ESTABLISHED
tcp4      0      0 ntb-greensons.55702    top-fwz1.mail.ru.https ESTABLISHED
tcp4      0      0 localhost.55701        localhost.nfsd-status   ESTABLISHED
tcp4      0      0 localhost.nfsd-status  localhost.55697         ESTABLISHED
tcp4      0      0 ntb-greensons.55698    mc.yandex.ru.https     ESTABLISHED
tcp4      0      0 localhost.55697        localhost.nfsd-status   ESTABLISHED
tcp4      0      0 ntb-greensons.55605    ya.ru.http-alt          SYN_SENT
tcp4      0      0 ntb-greensons.55423    17.57.144.21.5223       ESTABLISHED
tcp4      0      0 localhost.nfsd-status  localhost.55418         ESTABLISHED
tcp4      0      0 ntb-greensons.55419    edge-star-mini-s.https  ESTABLISHED
tcp4      0      0 localhost.55418        localhost.nfsd-status   ESTABLISHED
tcp4      0      0 localhost.nfsd-status  localhost.55416         ESTABLISHED
tcp4      0      0 ntb-greensons.55417    104.18.226.52.https     ESTABLISHED
tcp4      0      0 localhost.55416        localhost.nfsd-status   ESTABLISHED
tcp4      0      0 localhost.nfsd-status  localhost.55392         ESTABLISHED
tcp4      0      0 ntb-greensons.55393    151.101.244.84.https    ESTABLISHED
tcp4      0      0 localhost.55392        localhost.nfsd-status   ESTABLISHED
tcp4      0      0 localhost.nfsd-status  localhost.55386         ESTABLISHED
```



7. При помощи утилиты **traceroute** определить маршрут до некоторого узла сети (выбрать самостоятельно).

```
nikolay.vasilyev — zsh — 80x24
nikolay.vasilyev@ntb-greensons ~ % traceroute ya.ru
traceroute to ya.ru (87.250.250.242), 64 hops max, 52 byte packets
 1  router.asus.com (192.168.1.1)  2.888 ms  1.564 ms  1.373 ms
 2  5x19x0x222.static-business.spb.ertelecom.ru (5.19.0.222)  6.555 ms
    5x19x0x218.static-business.spb.ertelecom.ru (5.19.0.218)  3.943 ms
    5x19x0x222.static-business.spb.ertelecom.ru (5.19.0.222)  4.104 ms
 3  5x19x2x246.static-business.spb.ertelecom.ru (5.19.2.246)  3.346 ms  3.359 ms
    3.317 ms
 4  188-234-140-226.ertelecom.ru (188.234.140.226)  4.314 ms  6.599 ms  4.231 ms
 5  188-234-140-227.ertelecom.ru (188.234.140.227)  15.300 ms  11.392 ms  11.810
    ms
 6  ya.ru (87.250.250.242)  18.993 ms  14.536 ms  22.896 ms
nikolay.vasilyev@ntb-greensons ~ %
```

8. При помощи утилиты **nslookup** определить ip-адрес узла сети по его доменному имени, и наоборот. Узел сети выбрать самостоятельно.

```
nikolay.vasilyev — zsh — 80x24
nikolay.vasilyev@ntb-greensons ~ % nslookup ya.ru
Server:      192.168.1.1
Address:     192.168.1.1#53

Non-authoritative answer:
Name:   ya.ru
Address: 87.250.250.242

nikolay.vasilyev@ntb-greensons ~ % nslookup 87.250.250.242
Server:      192.168.1.1
Address:     192.168.1.1#53

Non-authoritative answer:
242.250.250.87.in-addr.arpa      name = ya.ru.

Authoritative answers can be found from:
nikolay.vasilyev@ntb-greensons ~ %
```