Департамент образования и науки города Москвы

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Департамент информатики, управления и технологий

Практическая работа № 1

Тема: «HTTP»

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<h1 style="text-align:center">Структура запроса и ответа</h1>

1. Проверка порта telnet адрес номер порта
2. Проверка сокета telnet localhost < >
3. Режим «отладка» (подробный отчёт) sudo telnet –d localhost 22

```
lemp001@u20-17:~$ sudo telnet -d localhost 22
[sudo] password for lemp001:
Trying 127.0.0.1...
telnet: Unable to connect to remote host: Connection refused
```

4. Режим «тестирование»

```
lemp001@u20-17:~$ sudo telnet opennet.ru 80
Trying 217.65.3.21...
Connected to opennet.ru.
Escape character is '^]'.




^[[A^[Connection closed by foreign host.
```

```
lemp001@u20-17:~$ sudo telnet india.colorado.edu 13
Trying 128.138.140.44...
Connected to india.colorado.edu.
Escape character is '^]'.

59835 22-09-13 07:59:17 50 0 0 652.9 UTC(NIST) *
Connection closed by foreign host.
```

Проверка МГПУ

```
lemp001@u20-17:~$ sudo telnet -d mgpu.ru 80
Trying 37.230.157.233...
Connected to mgpu.ru.
Escape character is '^]'.

^CConnection closed by foreign host.
```

```
lemp001@u20-17:~$ sudo curl -v http://mgpu.ru
*   Trying 37.230.157.233:80...
* TCP_NODELAY set
* Connected to mgpu.ru (37.230.157.233) port 80 (#0)
> GET / HTTP/1.1
> Host: mgpu.ru
> User-Agent: curl/7.68.0
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 301 Moved Permanently
< Content-length: 0
< Location: https://mgpu.ru/
<
* Connection #0 to host mgpu.ru left intact
```

В ответе пришел 301 код и заголовок Location. Сервер просит не ходить по голому http на домен mgpu.ru, а вместо этого пойти по адресу https://www.mgpu.ru/.

```
lemp001@u20-17:~$ sudo curl -v https://mgpu.ru/
*   Trying 37.230.157.233:443...
* TCP_NODELAY set
* Connected to mgpu.ru (37.230.157.233) port 443 (#0)
* ALPN, offering h2
* ALPN, offering http/1.1
* successfully set certificate verify locations:
*   CAfile: /etc/ssl/certs/ca-certificates.crt
  CApath: /etc/ssl/certs
* TLSv1.3 (OUT), TLS handshake, Client hello (1):
* TLSv1.3 (IN), TLS handshake, Server hello (2):
* TLSv1.3 (IN), TLS handshake, Encrypted Extensions (8):
* TLSv1.3 (IN), TLS handshake, Certificate (11):
* TLSv1.3 (IN), TLS handshake, CERT verify (15):
* TLSv1.3 (IN), TLS handshake, Finished (20):
* TLSv1.3 (OUT), TLS change cipher, Change cipher spec (1):
* TLSv1.3 (OUT), TLS handshake, Finished (20):
* SSL connection using TLSv1.3 / TLS_AES_256_GCM_SHA384
* ALPN, server did not agree to a protocol
* Server certificate:
*  subject: CN=*.mgpu.ru
*  start date: Mar 29 11:44:41 2022 GMT
*  expire date: Apr 30 11:44:40 2023 GMT
*  subjectAltName: host "mgpu.ru" matched cert's "mgpu.ru"
*  issuer: C=BE; O=GlobalSign nv-sa; CN=AlphaSSL CA - SHA256 - G2
*  SSL certificate verify ok.
> GET / HTTP/1.1
> Host: mgpu.ru
> User-Agent: curl/7.68.0
> Accept: */*
>
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
```

```
lemp001@u20-17:~$ sudo curl -v https://www.mgpu.ru/
*   Trying 37.230.157.233:443...
* TCP_NODELAY set
* Connected to www.mgpu.ru (37.230.157.233) port 443 (#0)
* ALPN, offering h2
* ALPN, offering http/1.1
```

```
> GET / HTTP/1.1
> Host: www.mgpu.ru
> User-Agent: curl/7.68.0
> Accept: */*
>
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* old SSL session ID is stale, removing
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
< Server: nginx/1.18.0 (Ubuntu)
< Date: Tue, 13 Sep 2022 08:09:20 GMT
< Content-Type: text/html; charset=UTF-8
< Transfer-Encoding: chunked
< Vary: Accept-Encoding
< Last-Modified: Tue, 13 Sep 2022 08:08:55 GMT
< Cache-Control: max-age=575, must-revalidate
< Vary: Cookie
```

Проверка ВШЭ

```
lemp001@u20-17:~$ sudo curl -v http://hse.ru
*   Trying 178.248.234.104:80...
* TCP_NODELAY set
* Connected to hse.ru (178.248.234.104) port 80 (#0)
> GET / HTTP/1.1
> Host: hse.ru
> User-Agent: curl/7.68.0
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 301 Moved Permanently
< Server: QRATOR
< Date: Tue, 13 Sep 2022 08:14:19 GMT
< Content-Type: text/html
< Content-Length: 162
< Connection: keep-alive
< Keep-Alive: timeout=15
< Location: https://www.hse.ru/
```

Видим, что требуется проследовать по curl -v https://www.hse.ru

```
lemp001@u20-17:~$ sudo curl -v https://www.hse.ru/
*   Trying 178.248.234.104:443...
* TCP_NODELAY set
* Connected to www.hse.ru (178.248.234.104) port 443 (#0)
* ALPN, offering h2
* ALPN, offering http/1.1
* successfully set certificate verify locations:
< HTTP/2 302
< server: QRATOR
< date: Tue, 13 Sep 2022 08:19:40 GMT
< content-type: text/html
lemp001@u20-17:~$ sudo curl -v https://www.hse.ru/en/
*   Trying 178.248.234.104:443...
* TCP_NODELAY set
* Connected to www.hse.ru (178.248.234.104) port 443 (#0)
* ALPN, offering h2
* ALPN, offering http/1.1
> GET /en/ HTTP/2
> Host: www.hse.ru
> user-agent: curl/7.68.0
> accept: */*
>
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* old SSL session ID is stale, removing
* Connection state changed (MAX_CONCURRENT_STREAMS == 16)!
< HTTP/2 200
< server: QRATOR
```

Ответ 200, причём curl выбрал HTTP/2 для запроса

HTTP серверы

Установка nginx

```
lemp001@u20-17:~$ sudo apt update && sudo apt install -y nginx
[sudo] password for lemp001:
Hit:1 http://ru.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Hit:3 http://deb.anydesk.com all InRelease
Hit:4 https://dl.google.com/linux/chrome/deb stable InRelease
Get:5 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:6 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:7 https://download.docker.com/linux/ubuntu focal InRelease
Get:8 http://ru.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [717
kB]
Get:9 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2 0
80 kB]
Get:10 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metad
ata [277 kB]
```

Проверка содержимого папок 'sites-enable' и 'sites-available'. Удаление конфигурации default. Создание статики, которой можно раздать html файл и картинку.

```
lemp001@u20-17:~$ ls -l/etc/nginx/sites-enabled/
ls: invalid option -- '/'
Try 'ls --help' for more information.
lemp001@u20-17:~$ ls -l/etc/nginx/sites-available/
ls: invalid option -- '/'
Try 'ls --help' for more information.
```

```
lemp001@u20-17:~$ ls -l /etc/nginx/sites-enabled/
total 0
lrwxrwxrwx 1 root root 34 сен 13 11:28 default -> /etc/nginx/sites-available/def
ault
lemp001@u20-17:~$ ls -l /etc/nginx/sites-available/
total 4
-rw-r--r-- 1 root root 2416 мар 26  2020 default
lemp001@u20-17:~$ sudo rm /etc/nginx/sites-enabled/default
lemp001@u20-17:~$ sudo mkdir -p /var/www/simple_static
lemp001@u20-17:~$ sudo chown lemp /var/www/simple_static
chown: invalid user: 'lemp'
lemp001@u20-17:~$ sudo chown lemp001 /var/www/simple_static
lemp001@u20-17:~$ cd /var/www/simple_static
lemp001@u20-17:/var/www/simple_static$ curl https://www.google.com/images/brandi
ng/googlelogo/2x/googlelogo_color_272x92dp.png > google.png
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 13504  100 13504    0     0   146k      0 --:--:-- --:--:-- --:--:--  146k
lemp001@u20-17:/var/www/simple_static$ printf "<body>This is our first html file
</body>\n" > index.html
lemp001@u20-17:/var/www/simple_static$ ls
google.png  index.html
lemp001@u20-17:/var/www/simple_static$ sudo service nginx stop
lemp001@u20-17:/var/www/simple_static$ cd
lemp001@u20-17:~$ sudo nano /etc/nginx/sites-available/simple_static.conf
lemp001@u20-17:~$ cd /etc/nginx/
lemp001@u20-17:/etc/nginx$ sudo ln sites-available/simple_static.conf sites-
lemp001@u20-17:/etc/nginx$ sudo ln sites-available/simple_static.conf sites-enab
led/simple_static.conf
lemp001@u20-17:/etc/nginx$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
lemp001@u20-17:/etc/nginx$ cd
lemp001@u20-17:~$ sudo service nginx start
lemp001@u20-17:~$ curl -v http://localhost:80
*   Trying 127.0.0.1:80...
* TCP_NODELAY set
* Connected to localhost (127.0.0.1) port 80 (#0)
> GET / HTTP/1.1
> Host: localhost
> User-Agent: curl/7.68.0
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
```

Activities   Google Chrome ▾

localhost   ×   +

← → C ⓘ localhost

This is our first html file