

Департамент образования и науки города Москвы  
Государственное автономное образовательное учреждение  
высшего образования города Москвы  
«Московский городской педагогический университет»  
Институт цифрового образования  
Департамент информатики, управления и технологий

ДИСЦИПЛИНА: «Распределенные системы»

**Отчет по семинарскому занятию 1**

**Тема:**

**«Протокол HTTP/HTTPS»**

Выполнил: Григорьев П. К.  
группа: ТП-191

Москва  
2022



```
lemp@u20-03:~$ sudo apt install update
[sudo] password for lemp:
Sorry, try again.
[sudo] password for lemp:
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package update
lemp@u20-03:~$ sudo apt install curl
Reading package lists... Done
Building dependency tree
Reading state information... Done
curl is already the newest version (7.68.0-1ubuntu2.13).
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 58 not upgraded.
```

```
lemp@u20-03:~$ telnet opennet.ru 80
Trying 217.65.3.21...
Connected to opennet.ru.
Escape character is '^]'.
^]
HTTP/1.1 400 Bad Request
Server: nginx
Date: Tue, 13 Sep 2022 07:52:34 GMT
Content-Type: text/html
Content-Length: 150
Connection: close

<html>
<head><title>400 Bad Request</title></head>
<body>
<center><h1>400 Bad Request</h1></center>
<hr><center>nginx</center>
```

```
<hr><center>nginx</center>
```

```
</body>
```

```
</html>
```

```
Connection closed by foreign host.
```

```
lemp@u20-03:~$ sudo telnet -d localhost 22
```

```
[sudo] password for lemp:
```

```
Trying 127.0.0.1...
```

```
telnet: Unable to connect to remote host: Connection refused
```

```
lemp@u20-03:~$ sudo telnet opennet.ru 80\
```

```
>
```

```
Trying 217.65.3.21...
```

```
Connected to opennet.ru.
```

```
Escape character is '^]'.
```

```
^CConnection closed by foreign host.
```

```
lemp@u20-03:~$ sudo telnet india.colorado.edu 13
```

```
Trying 128.138.140.44...
```

```
Connected to india.colorado.edu.
```

```
Escape character is '^]'.
```

```
Connection closed by foreign host.
```

```
lemp@u20-03:~$ sudo telnet mgpu.ru 80
```

```
Trying 37.230.157.233...
```

```
Connected to mgpu.ru.
```

```
Escape character is '^]'.
```

```
^CConnection closed by foreign host.
```

```
lemp@u20-03:~$ █
```

```
lemp@u20-03:~$ 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
*   Cpath: /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):
* old SSL session ID is stale, removing
* Mark bundle as not supporting multiuse
< HTTP/1.1 301 Moved Permanently
< Content-length: 0
< Location: https://www.mgpu.ru/
<
* Connection #0 to host mgpu.ru left intact
```

```

lemp@u20-03: ~
lemp@u20-03:~$ 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
* 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 "www.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: 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 08:09:19 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=576, must-revalidate
< Vary: Cookie
< Link: <https://www.mgpu.ru/wp-json/>; rel="https://api.w.org/"
< Link: <https://www.mgpu.ru/wp-json/wp/v2/pages/2>; rel="alternate"; type="application/json"
< Link: <https://www.mgpu.ru/>; rel=shortlink
<

```

```

lemp@u20-03:~$ sudo curl -v www.hse.ru/
* Trying 178.248.234.104:80...
* TCP_NODELAY set
* Connected to www.hse.ru (178.248.234.104) port 80 (#0)
> GET / HTTP/1.1
> Host: www.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 08:17:38 GMT
< Content-Type: text/html
< Content-Length: 162
< Connection: keep-alive
< Keep-Alive: timeout=15
< Location: https://www.hse.ru/
< Strict-Transport-Security: max-age=15552000
< X-XSS-Protection: 1; mode=block; report=https://www.hse.ru/n/api/xss/report
<
<html>
<head><title>301 Moved Permanently</title></head>
<body>
<center><h1>301 Moved Permanently</h1></center>
<hr><center>nginx</center>
</body>
</html>
* Connection #0 to host www.hse.ru left intact

```

```
lemp@u20-03: ~  
lemp@u20-03:~$ 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:  
* 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_128_GCM_SHA256  
* ALPN, server accepted to use h2  
* Server certificate:  
* subject: CN=*.hse.ru  
* start date: Jan 21 00:00:00 2022 GMT  
* expire date: Feb 21 23:59:59 2023 GMT  
* subjectAltName: host "www.hse.ru" matched cert's "*.hse.ru"  
* issuer: C=GB; ST=Greater Manchester; L=Salford; O=Sectigo Limited; CN=Sectigo RSA Domain Validation Secure Serv  
* SSL certificate verify ok.  
* Using HTTP2, server supports multi-use  
* Connection state changed (HTTP/2 confirmed)  
* Copying HTTP/2 data in stream buffer to connection buffer after upgrade: len=0  
* Using Stream ID: 1 (easy handle 0x563b54df42f0)  
> GET / 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/2 302  
< server: QRATOR  
< date: Tue, 13 Sep 2022 08:14:05 GMT  
< content-type: text/html  
< content-length: 138  
< location: https://www.hse.ru/en/  
< expires: Tue, 13 Sep 2022 08:14:05 GMT  
< cache-control: max-age=0  
< strict-transport-security: max-age=15552000  
< x-xss-protection: 1; mode=block; report=https://www.hse.ru/n/api/xss/report  
< set-cookie: tracking=ZEsubGMg081L38EyCVdMAg==; expires=Thu, 31-Dec-37 23:55:55 GMT; domain=.hse.ru; path=/
```

```

lemp@u20-03:~$ 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
* successfully set certificate verify locations:
*   CAfile: /etc/ssl/certs/ca-certificates.crt
*   CAspace: /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_128_GCM_SHA256
* ALPN, server accepted to use h2
* Server certificate:
*   subject: CN=*.hse.ru
*   start date: Jan 21 00:00:00 2022 GMT
*   expire date: Feb 21 23:59:59 2023 GMT
*   subjectAltName: host "www.hse.ru" matched cert's "*.hse.ru"
*   issuer: C=GB; ST=Greater Manchester; L=Salford; O=Sectigo Limited; CN=Sectigo RSA Domain Validation Secure Server CA
*   SSL certificate verify ok.
* Using HTTP2, server supports multi-use
* Connection state changed (HTTP/2 confirmed)
* Copying HTTP/2 data in stream buffer to connection buffer after upgrade: len=0
* Using Stream ID: 1 (easy handle 0x556227ce22f0)
> 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
< date: Tue, 13 Sep 2022 08:16:15 GMT
< content-type: text/html; charset=utf-8
< content-length: 100547

```

## NGINX

```

lemp@u20-03:~$ sudo apt update && sudo apt install -y nginx
Hit:1 http://ru.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://ru.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://ru.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Hit:4 http://deb.anydesk.com all InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:6 http://ppa.launchpad.net/serge-rider/dbeaver-ce/ubuntu focal InRelease
Get:7 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:8 https://download.docker.com/linux/ubuntu focal InRelease
Get:9 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2 080 kB]
Get:10 http://ru.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [717 kB]
Get:11 http://ru.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [277 kB]
Get:12 http://ru.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [950 kB]
Get:13 http://ru.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [392 kB]
Get:14 http://ru.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [944 B]
Get:15 http://ru.archive.ubuntu.com/ubuntu focal-backports/main amd64 DEP-11 Metadata [7 980 B]
Get:16 http://ru.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [30,5 kB]
Get:17 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [40,7 kB]
Get:18 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [77,4 kB]
Get:19 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 DEP-11 Metadata [2 464 B]
Fetched 4 912 kB in 1s (3 911 kB/s)

lemp@u20-03:~$ ls -l /etc/nginx/sites-enabled/
total 0
lrwxrwxrwx 1 root root 34 ceH 13 11:28 default -> /etc/nginx/sites-available/default

lemp@u20-03:~$ ls -l /etc/nginx/sites-available/
total 4
-rw-r--r-- 1 root root 2416 map 26 2020 default

```

## Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](https://nginx.org).  
Commercial support is available at [nginx.com](https://nginx.com).

Thank you for using nginx.

```
lemp@u20-03:~$ sudo rm /etc/nginx/sites-enabled/default
```

```
lemp@u20-03:~$ sudo rm /etc/nginx/sites-enabled/default
```

```
lemp@u20-03:~$ sudo mkdir -p /var/www/simple_static
```

```
lemp@u20-03:~$ sudo chown lemp /var/www/simple_static
```

```
lemp@u20-03:~$ cd /var/www/simple_static
```

```
lemp@u20-03:/var/www/simple_static$ curl https://www.google.com/images/branding/googlelogo/2x/googlelogo_color_272x92dp.png>google.png
```

% Total	% Received	% Xferd	Average Speed	Time	Time	Time	Current
			Dload	Upload	Total	Spent	Left
100	13504	100	13504	0	0	171k	0
							173k

```
lemp@u20-03:/var/www/simple_static$ printf "<body>This is our first html file</body>\n" > index.html
```

```
lemp@u20-03:/var/www/simple_static$ ls
```

```
google.png  index.html
```

```
lemp@u20-03:/var/www/simple_static$ sudo service nginx stop
```

```
lemp@u20-03:/var/www/simple_static$ cd
```

```
lemp@u20-03:~$ sudo nano /etc/nginx/sites-available/simple_static.conf
```

```
lemp@u20-03: ~  
GNU nano 4.8 /etc/nginx/sites-available/simple_static.conf  
server {  
listen 80 default_server;  
server_name _;  
root /var/www/simple_static;  
}
```

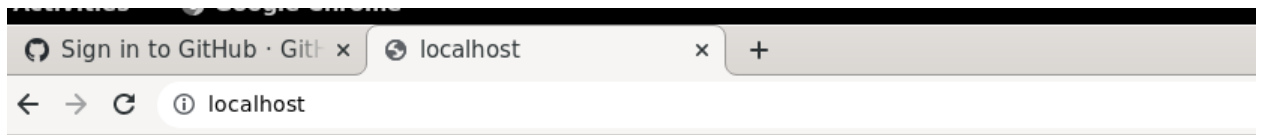
```
lemp@u20-03:/etc/nginx$ sudo ln sites-available/simple_static.conf sites-enabled/simple_static.conf
```

```
lemp@u20-03:/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
```





This is our first html file