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Branch - CBA Batch - 61

ITIM Practical 10

Aim : Suppose you have a hosted a site as -yourname.com, initially it was accessible on http only, but you want it to be accessible on 443 and for that you don't want to use any additional CA to be involved as the site will be accessed only by your company users. So how you are going to implement the same? Explain the same using proper screenshot.

Steps :

1. Check if the directory of your name exists (as done in previous practicals) and create openssl certificate and key there

The screenshot shows a terminal window with a dark background and light-colored text. The terminal is running on a system with a dock at the bottom containing various application icons. The terminal history is as follows:

```
yash ~ 11:09 ls /srv/http/ | grep 'yash'  
drwxr-xp-x - root 27 Feb 11:07 yash  
drwxr-xp-x - root 18 Feb 19:19 yash_21162101012  
yash ~ 11:09 cd /srv/http/yash/  
yash .../yash 11:10 sudo openssl req -x509 -nodes -newkey rsa:2048 -keyout server.key -out server.crt  
You are about to be asked to enter information that will be incorporated into your certificate request.  
What you are about to enter is what is called a Distinguished Name or a DN.  
There are quite a few fields but you can leave some blank  
For some fields there will be a default value,  
If you enter '.', the field will be left blank.  
----  
Country Name (2 letter code) [AU]:IN  
State or Province Name (full name) [Some-State]:Gujarat  
Locality Name (eg, city) []:Ahmedabad  
Organization Name (eg, company) [Internet Widgits Pty Ltd]:YSL Technologies  
Organizational Unit Name (eg, section) []:Haribol  
Common Name (e.g. server FQDN or YOUR name) []:Yash  
Email Address []:yash@ysl.com  
yash .../yash 11:10
```

Commands :

- **ls /srv/http/ | grep 'yash'** (to check if 'yash' directory exists in apache root)
- **cd /srv/http/yash/** (to change directory to the domain directory)

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Command : **sudo openssl req -x509 -nodes -newkey rsa:2048 -keyout selfsigned.key -out selfsigned.crt**

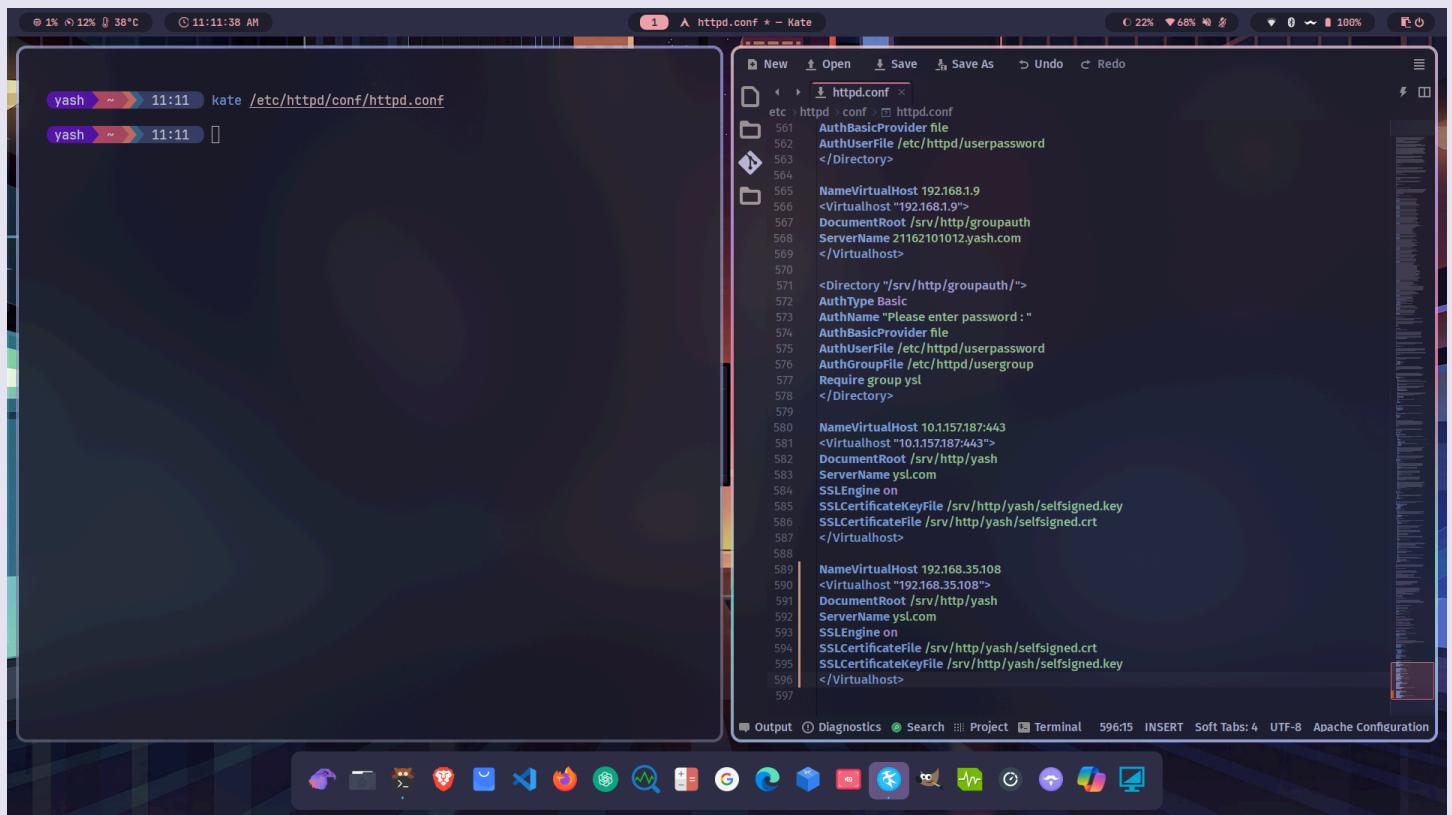
Explanation : This command generates key with the name specified after **-keyout** option and specified certificate after **-out** option, using openssl and **req** specifies required options like **-x509** is the format of the certificate, **-nodes** option specifies not to use passphrase, **-newkey** specifies to generate new key and certificate with **rsa:2048** i.e. RSA algo with 2048 bytes size of the certificate.

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2. Add/Modify the configuration of virtualhost

Text to copy :

```
NameVirtualHost 192.168.35.108
<Virtualhost "192.168.35.108">
DocumentRoot /srv/http/yash
ServerName ysl.com
SSLEngine on
SSLCertificateFile /srv/http/yash/selfsigned.crt
SSLCertificateKeyFile /srv/http/yash/selfsigned.key
</Virtualhost>
```



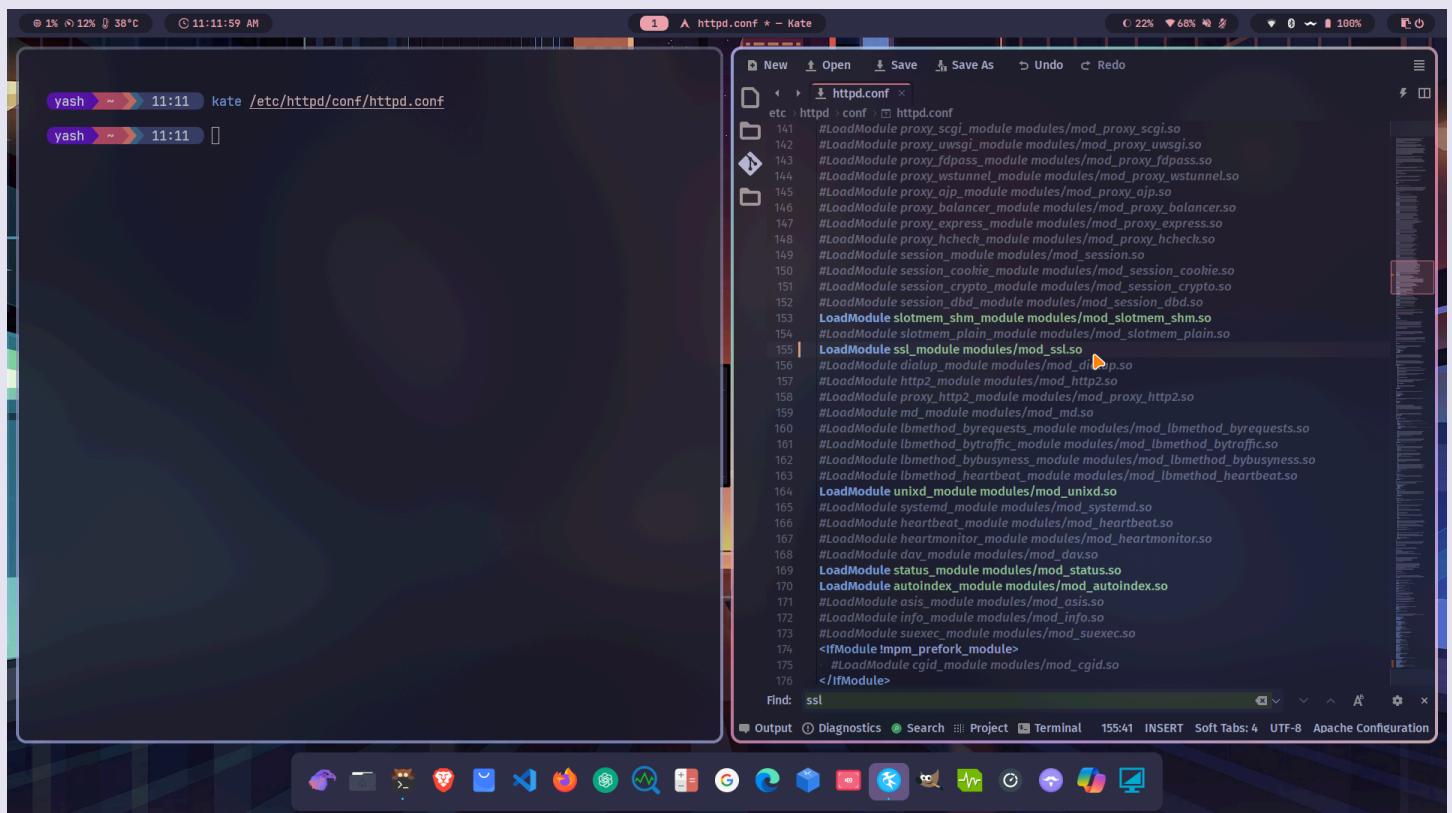
Command : **kate /etc/httpd/conf/httpd.conf** (to open config file using kate editor)

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3. Modify and uncomment the module lines to load them.

Lines to uncomment :

LoadModule ssl_module modules/mod_ssl.so
LoadModule socache_shmcb_module modules/mod_socache_shmcb.so
Include conf/extra/http-ssl.conf



```
# LoadModule proxy_scgi_module modules/mod_proxy_scgi.so
# LoadModule proxy_uwsgi_module modules/mod_proxy_uwsgi.so
# LoadModule proxy_fdpass_module modules/mod_proxy_fdpass.so
# LoadModule proxy_wstunnel_module modules/mod_proxy_wstunnel.so
# LoadModule proxy_ajp_module modules/mod_proxy_ajp.so
# LoadModule proxy_balancer_module modules/mod_proxy_balancer.so
# LoadModule proxy_express_module modules/mod_proxy_express.so
# LoadModule proxy_hcheck_module modules/mod_proxy_hcheck.so
# LoadModule session_module modules/mod_session.so
# LoadModule session_cookie_module modules/mod_session_cookie.so
# LoadModule session_crypto_module modules/mod_session_crypto.so
# LoadModule session_dbd_module modules/mod_session_dbd.so
# LoadModule slotmem_shm_module modules/mod_slotmem_shm.so
# LoadModule slotmem_plain_module modules/mod_slotmem_plain.so
LoadModule ssl_module modules/mod_ssl.so
# LoadModule dialup_module modules/mod_dialup.so
# LoadModule http2_module modules/mod_http2.so
# LoadModule proxy_http2_module modules/mod_proxy_http2.so
# LoadModule md_module modules/mod_md.so
# LoadModule lbmethod_byrequests_module modules/mod_lbmethod_byrequests.so
# LoadModule lbmethod_bytraffic_module modules/mod_lbmethod_bytraffic.so
# LoadModule lbmethod_bybusyness_module modules/mod_lbmethod_bybusyness.so
# LoadModule lbmethod_heartbeat_module modules/mod_lbmethod_heartbeat.so
LoadModule unixd_module modules/mod_unixd.so
# LoadModule systemd_module modules/mod_systemd.so
# LoadModule heartbeat_module modules/mod_heartbeat.so
# LoadModule heartmonitor_module modules/mod_heartmonitor.so
# LoadModule dav_module modules/mod_dav.so
LoadModule status_module modules/mod_status.so
LoadModule autoindex_module modules/mod_autoindex.so
# LoadModule asis_module modules/mod_asis.so
# LoadModule info_module modules/mod_info.so
# LoadModule suexec_module modules/mod_suexec.so
<IfModule mpm_prefork_module>
    # LoadModule cgid_module modules/mod_cgid.so
</IfModule>
```

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```
yash ~ 11:11 kate /etc/httpd/conf/httpd.conf
yash ~ 11:11
```

```
httpd.conf
86 #LoadModule auth_form_module modules/mod_auth_form.so
87 #LoadModule auth_digest_module modules/mod_auth_digest.so
88 #LoadModule allowmethods_module modules/mod_allowmethods.so
89 #LoadModule file_cache_module modules/mod_file_cache.so
90 #LoadModule cache_module modules/mod_cache.so
91 #LoadModule cache_disk_module modules/mod_cache_disk.so
92 #LoadModule cache_socache_module modules/mod_cache_socache.so
93 LoadModule socache_shmcb_module modules/mod_socache_shmcb.so
94 #LoadModule socache_dbm_module modules/mod_socache_dbm.so
95 #LoadModule socache_memcache_module modules/mod_socache_memcache.so
96 #LoadModule socache_redis_module modules/mod_socache_redis.so
97 #LoadModule watchdog_module modules/mod_watchdog.so
98 #LoadModule macro_module modules/mod_macro.so
99 #LoadModule dbd_module modules/mod_dbd.so
100 #LoadModule dumpio_module modules/mod_dumpio.so
101 #LoadModule echo_module modules/mod_echo.so
102 #LoadModule buffer_module modules/mod_buffer.so
103 #LoadModule data_module modules/mod_data.so
104 #LoadModule ratelimit_module modules/mod_ratelimit.so
105 LoadModule reqtimeout_module modules/mod_reqtimeout.so
106 #LoadModule ext_filter_module modules/mod_ext_filter.so
107 #LoadModule request_module modules/mod_request.so
108 LoadModule include_module modules/mod_include.so
109 LoadModule filter_module modules/mod_filter.so
110 #LoadModule reflector_module modules/mod_reflector.so
111 #LoadModule substitute_module modules/mod_substitute.so
112 #LoadModule sed_module modules/mod_sed.so
113 #LoadModule charset_lite_module modules/mod_charset_lite.so
114 #LoadModule deflate_module modules/mod_deflate.so
115 #LoadModule xml2enc_module modules/mod_xml2enc.so
116 #LoadModule proxy_html_module modules/mod_proxy_html.so
117 #LoadModule brotli_module modules/mod_brotli.so
118 LoadModule mime_module modules/mod_mime.so
119 #LoadModule ldap_module modules/mod_ldap.so
120 LoadModule log_config_module modules/mod_log_config.so
121 #LoadModule log_debug_module modules/mod_log_debug.so
122
Find: socache
```

```
yash ~ 11:11 kate /etc/httpd/conf/httpd.conf
yash ~ 11:11
```

```
httpd.conf
515
516 # Virtual hosts
517 #Include conf/extra/httpd-vhosts.conf
518
519 # Local access to the Apache HTTP Server Manual
520 #Include conf/extra/httpd-manual.conf
521
522 # Distributed authoring and versioning (WebDAV)
523 #Include conf/extra/httpd-dav.conf
524
525 # Various default settings
526 Include conf/extra/httpd-default.conf
527
528 # Configure mod_proxy_html to understand HTML4/XHTML1
529 <ifModule proxy_html_module>
530   Include conf/extra/proxy-html.conf
531 </ifModule>
532
533 # Secure (SSL/TLS) connections
534 Include conf/extra/httpd-ssl.conf
535 #
536 # Note: The following must be present to support
537 #   starting without SSL on platforms with no /dev/random equivalent
538 #   but a statically compiled-in mod_ssl.
539 #
540 <ifModule ssl_module>
541   SSLRandomSeed startup builtin
542   SSLRandomSeed connect builtin
543 </ifModule>
544
545 NameVirtualHost 10.1.157.187
546 <VirtualHost 10.1.157.187>
547   DocumentRoot /srv/http/batch61
548   ServerName batch61.com
549 </VirtualHost>
550
Find: include
```

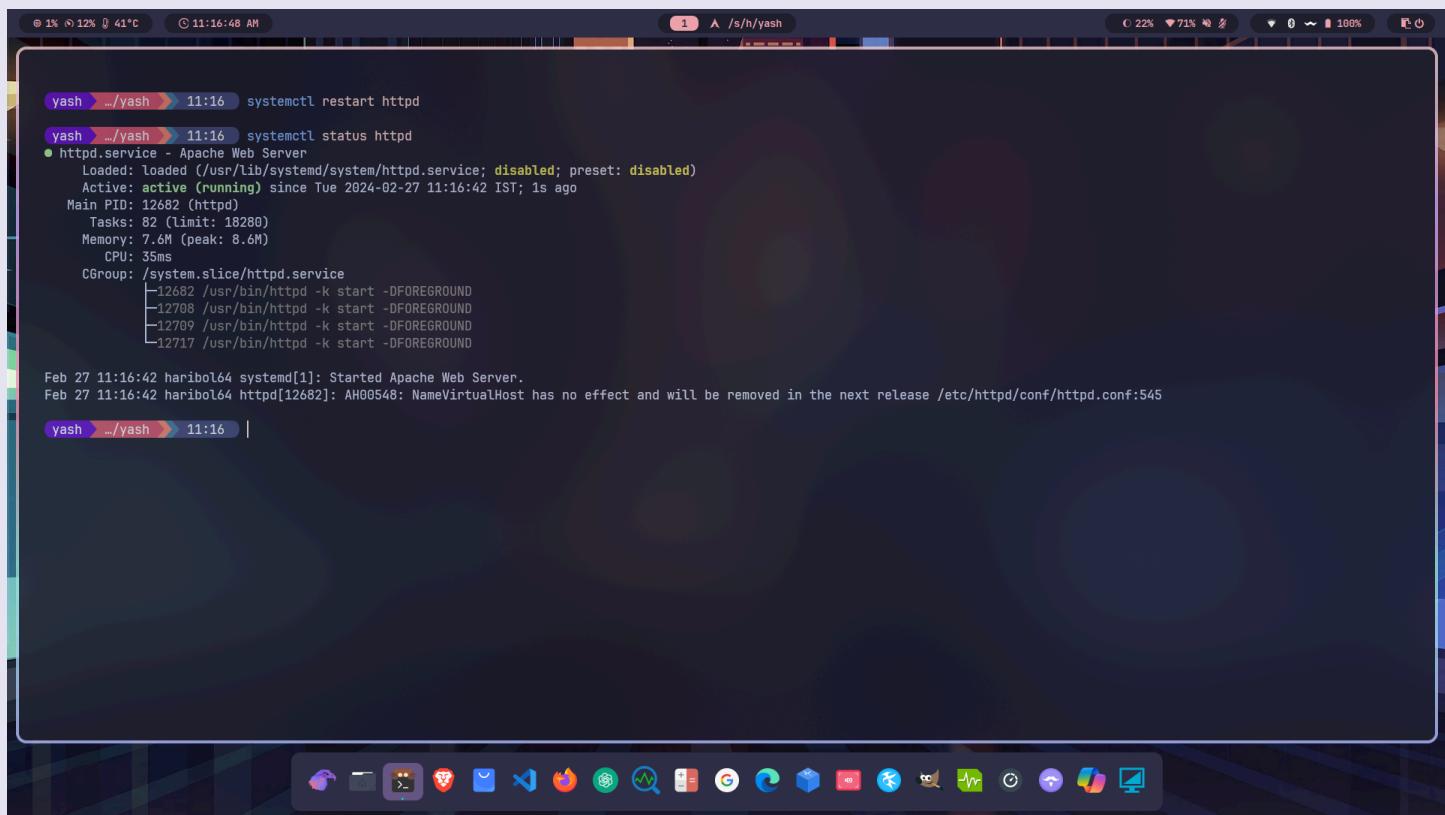
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4. By restarting the apache service, check if the modules are loaded successfully and gives no error



```
yash ~/yash > 11:16 systemctl restart httpd
yash ~/yash > 11:16 systemctl status httpd
● httpd.service - Apache Web Server
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset: disabled)
  Active: active (running) since Tue 2024-02-27 11:16:42 IST; 1s ago
    Main PID: 12682 (httpd)
      Tasks: 82 (limit: 18280)
     Memory: 7.6M (peak: 8.6M)
        CPU: 35ms
       CGroup: /system.slice/httpd.service
           ├─12682 /usr/bin/httpd -k start -DFOREGROUND
           ├─12708 /usr/bin/httpd -k start -DFOREGROUND
           ├─12709 /usr/bin/httpd -k start -DFOREGROUND
           ├─12717 /usr/bin/httpd -k start -DFOREGROUND

Feb 27 11:16:42 hariboL64 systemd[1]: Started Apache Web Server.
Feb 27 11:16:42 hariboL64 httpd[12682]: AH00548: NameVirtualHost has no effect and will be removed in the next release /etc/httpd/conf/httpd.conf:545
yash ~/yash > 11:16 |
```

Commands :

- **systemctl restart httpd**
- **systemctl status httpd**

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5. Add the IP and domain to hosts and restart the service

The screenshot shows a Linux desktop environment with a terminal window and a hosts file editor.

Terminal Window:

```
yash ~ 11:17 kate /etc/hosts
yash ~ 11:18 systemctl restart httpd
yash ~ 11:18 systemctl status httpd
● httpd.service - Apache Web Server
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; preset: disabled)
  Active: active (running) since Tue 2024-02-27 11:18:14 IST; 1s ago
    Main PID: 15853 (httpd)
      Tasks: 82 (limit: 18280)
     Memory: 7.6M (peak: 9.0M)
        CPU: 36ms
       CGroup: /system.slice/httpd.service
           ├─15853 /usr/bin/httpd -k start -DFOREGROUND
           ├─15879 /usr/bin/httpd -k start -DFOREGROUND
           ├─15881 /usr/bin/httpd -k start -DFOREGROUND
           └─15889 /usr/bin/httpd -k start -DFOREGROUND

Feb 27 11:18:14 haribol64 systemd[1]: Started Apache Web Server.
Feb 27 11:18:14 haribol64 httpd[15853]: AH00548: NameVirtualHost has no effect and wi>
yash ~ 11:18 |
```

hosts File Editor:

```
hosts
# Standard host addresses
127.0.0.1 localhost
::1 localhost ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
# This host address
127.0.1 haribol64
10.1.157.187 batch61.com
192.168.1.9 virtualhost.21162101012.com
192.168.1.9 21162101012.yash.com
192.168.35.108 ysl.com
10.1.157.187 ysl.com
```

The terminal shows the user has opened the hosts file in Kate, restarted the httpd service, and checked its status. The hosts file contains standard host addresses and the local host entry for 'haribol64'. It also includes several entries for different domains and their IP addresses.

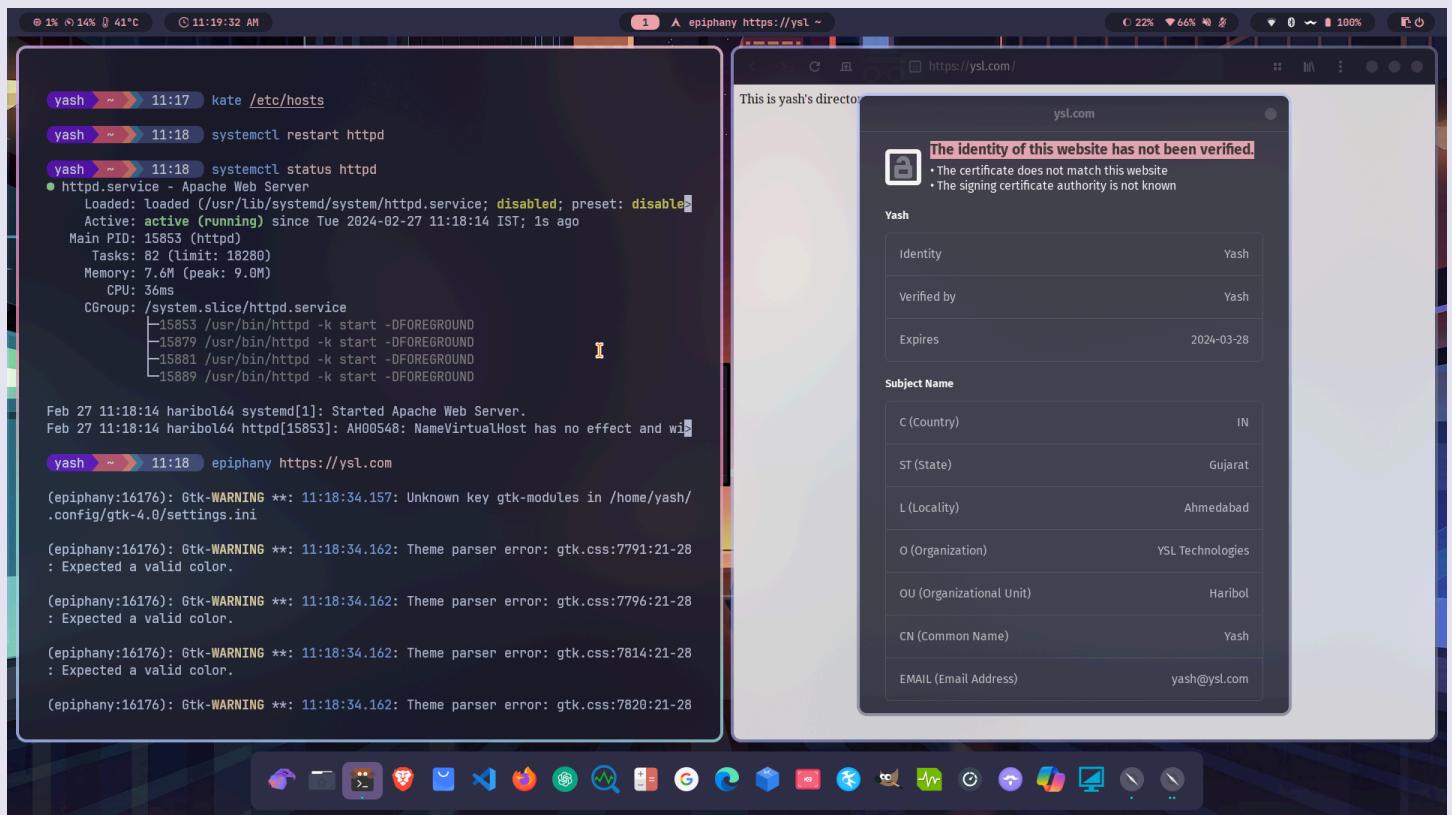
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6. Open the URL and check if secure connection is established



Command : [epiphany https://ysl.com](https://ysl.com) (to open URL in epiphany or GNOME Web browser based on GTK framework and Apple Webkit engine)