cURL

Introduction

- cURL - Client URL

https://curl.se/

- free and open source software
- protocol support - DICT, FILE, FTP, FTPS, GOPHER, GOPHERS, HTTP, HTTPS, IMAP, IMAPS, LDAP, LDAPS, MQTT, POP3, POP3S, RTMP, RTMPS, RTSP, SCP, SFTP, SMB, SMBS, SMTP, SMTPS, TELNET, TFTP, WS, WSS

Setup

- Microsoft version

```
C:\Users\Nithi>curl -V
curl 8.7.1 (Windows) libcurl/8.7.1 Schannel zlib/1.3 WinIDN
Release-Date: 2024-03-27
Protocols: dict file ftp ftps http https imap imaps ipfs ipns mqtt pop3 pop3s
smb smbs smtp smtps telnet tftp
Features: alt-svc AsynchDNS HSTS HTTPS-proxy IDN IPv6 Kerberos Largefile libz
NTLM SPNEGO SSL SSPI threadsafe Unicode UnixSockets
```

- download

https://curl.se/windows/

https://curl.se/windows/dl-8.9.0_1/curl-8.9.0_1-win64-mingw.zip

- Unzip

D:\curl-8.9140_1-win64-mingw

- open command prompt

Win+R > cmd

```
C:\Users\Nithi>
```

- set PATH

```
C:\Users\Nithi>set PATH=D:\curl-8.9.0_1-win64-mingw\bin;%PATH%;
```

- Opensource version

```
D:\curl-8.9.0_1-win64-mingw\bin>curl -V
curl 8.9.0 (x86_64-w64-mingw32) libcurl/8.9.0 LibreSSL/3.9.2 zlib/1.3.1
brotli/1.1.0 zstd/1.5.6 WinIDN libpsl/0.21.5 libssh2/1.11.0 nghttp2/1.62.1
ngtcp2/1.6.0 nghttp3/1.4.0
Release-Date: 2024-07-24
Protocols: dict file ftp ftps gopher gophers http https imap imaps ipfs ipns
ldap ldaps mqtt pop3 pop3s rtsp scp sftp smb smbs smtp smtps telnet tftp ws wss
Features: alt-svc AsynchDNS brotli HSTS HTTP2 HTTP3 HTTPS-proxy IDN IPv6
Kerberos Largefile libz NTLM PSL SPNEGO SSL SSPI threadsafe UnixSockets zstd
```

Usage

HTTP

- เปิด http url

```
curl http://nithi.cs.psu.ac.th/wireshark/index.html
```

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Nithi Lab</title>
    </head>
    <body>
        <h1>Nithi Thanon</h1>
    </body>
</html>
```

- แสดงเฉพาะ Header

```
curl -I http://nithi.cs.psu.ac.th/wireshark/index.html
```

```
HTTP/1.1 200 OK
Date: Wed, 24 Jul 2024 11:24:12 GMT
Server: Apache
X-Frame-Options: SAMEORIGIN
Upgrade: h2,h2c
Connection: Upgrade
Last-Modified: Sun, 06 Aug 2023 04:34:00 GMT
Accept-Ranges: bytes
Content-Length: 172
Cache-Control: max-age=600
Expires: Wed, 24 Jul 2024 11:34:12 GMT
Vary: Accept-Encoding
X-XSS-Protection: 1; mode=block
X-Permitted-Cross-Domain-Policies: none
X-Content-Type-Options: nosniff
Content-Type: text/html; charset=UTF-8
```

- แสดง Header และ Data

```
curl -i http://nithi.cs.psu.ac.th/wireshark/index.html
```

```
HTTP/1.1 200 OK
Date: Wed, 24 Jul 2024 11:24:55 GMT
Server: Apache
X-Frame-Options: SAMEORIGIN
Upgrade: h2,h2c
Connection: Upgrade
Last-Modified: Sun, 06 Aug 2023 04:34:00 GMT
Accept-Ranges: bytes
Content-Length: 172
Cache-Control: max-age=600
Expires: Wed, 24 Jul 2024 11:34:55 GMT
Vary: Accept-Encoding
X-XSS-Protection: 1; mode=block
X-Permitted-Cross-Domain-Policies: none
X-Content-Type-Options: nosniff
Content-Type: text/html; charset=UTF-8

<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Nithi Lab</title>
    </head>
    <body>
        <h1>Nithi Thanon</h1>
    </body>
</html>
```

- แสดงขั้นตอนการทำงาน

```
curl -v http://nithi.cs.psu.ac.th/wireshark/index.html
* Host nithi.cs.psu.ac.th:80 was resolved.
* IPv6: (none)
* IPv4: 202.29.148.235
*   Trying 202.29.148.235:80...
* Connected to nithi.cs.psu.ac.th (202.29.148.235) port 80
> GET /wireshark/index.html HTTP/1.1
> Host: nithi.cs.psu.ac.th
> User-Agent: curl/8.9.0
> Accept: */*
>
* Request completely sent off
< HTTP/1.1 200 OK
< Date: Wed, 24 Jul 2024 11:25:40 GMT
< Server: Apache
< X-Frame-Options: SAMEORIGIN
< Upgrade: h2,h2c
< Connection: Upgrade
< Last-Modified: Sun, 06 Aug 2023 04:34:00 GMT
< Accept-Ranges: bytes
```

```
< Content-Length: 172
< Cache-Control: max-age=600
< Expires: Wed, 24 Jul 2024 11:35:40 GMT
< Vary: Accept-Encoding
< X-XSS-Protection: 1; mode=block
< X-Permitted-Cross-Domain-Policies: none
< X-Content-Type-Options: nosniff
< Content-Type: text/html; charset=UTF-8
<
<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Nithi Lab</title>
    </head>
    <body>
        <h1>Nithi Thanon</h1>
    </body>
</html>

* Connection #0 to host nithi.cs.psu.ac.th left intact
```

HTTPS

- เปิด https url

```
curl -k https://nithi.cs.psu.ac.th/wireshark/index.html
```

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Nithi Lab</title>
    </head>
    <body>
        <h1>Nithi Thanon</h1>
    </body>
</html>
```

- แสดงเฉพาะ Header

```
curl -k -I https://nithi.cs.psu.ac.th/wireshark/index.html
```

```
HTTP/2 200
x-frame-options: SAMEORIGIN
last-modified: Sun, 06 Aug 2023 04:34:00 GMT
accept-ranges: bytes
content-length: 172
cache-control: max-age=600
expires: Wed, 24 Jul 2024 11:48:22 GMT
vary: Accept-Encoding
x-xss-protection: 1; mode=block
x-permitted-cross-domain-policies: none
x-content-type-options: nosniff
content-type: text/html; charset=UTF-8
```

```
date: Wed, 24 Jul 2024 11:38:22 GMT
server: Apache
```

- แสดง Header และ Data

```
curl -k -i https://nithi.cs.psu.ac.th/wireshark/index.html
```

```
HTTP/2 200
x-frame-options: SAMEORIGIN
last-modified: Sun, 06 Aug 2023 04:34:00 GMT
accept-ranges: bytes
content-length: 172
cache-control: max-age=600
expires: Wed, 24 Jul 2024 11:49:26 GMT
vary: Accept-Encoding
x-xss-protection: 1; mode=block
x-permitted-cross-domain-policies: none
x-content-type-options: nosniff
content-type: text/html; charset=UTF-8
date: Wed, 24 Jul 2024 11:39:26 GMT
server: Apache

<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Nithi Lab</title>
    </head>
    <body>
        <h1>Nithi Thanon</h1>
    </body>
</html>
```

- แสดงขั้นตอนการทำงาน

```
curl -k -v https://nithi.cs.psu.ac.th/wireshark/index.html
```

```
* Host nithi.cs.psu.ac.th:443 was resolved.
* IPv6: (none)
* IPv4: 202.29.148.235
*   Trying 202.29.148.235:443...
* Connected to nithi.cs.psu.ac.th (202.29.148.235) port 443
* ALPN: curl offers h2,http/1.1
* TLSv1.3 (OUT), TLS handshake, Client hello (1):
* TLSv1.3 (IN), TLS handshake, Server hello (2):
* TLSv1.3 (IN), TLS handshake, Unknown (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 handshake, Finished (20):
* SSL connection using TLSv1.3 / TLS_AES_256_GCM_SHA384 / [blank] / UNDEF
* ALPN: server accepted h2
* Server certificate:
*  subject: CN=nithi.cs.psu.ac.th
*  start date: Jun 10 19:13:07 2024 GMT
```

```
*  expire date: Sep  8 19:13:06 2024 GMT
*  issuer: OU=generated by Avast Antivirus for SSL/TLS scanning; O=Avast
Web/Mail Shield; CN=Avast Web/Mail Shield Root
*  SSL certificate verify result: unable to get local issuer certificate (20),
continuing anyway.
*   Certificate level 0: Public key type ? (2048/112 Bits/secBits), signed using
sha256WithRSAEncryption
* using HTTP/2
* [HTTP/2] [1] OPENED stream for https://nithi.cs.psu.ac.th/wireshark/index.html
* [HTTP/2] [1] [:method: GET]
* [HTTP/2] [1] [:scheme: https]
* [HTTP/2] [1] [:authority: nithi.cs.psu.ac.th]
* [HTTP/2] [1] [:path: /wireshark/index.html]
* [HTTP/2] [1] [user-agent: curl/8.9.0]
* [HTTP/2] [1] [accept: */*]
> GET /wireshark/index.html HTTP/2
> Host: nithi.cs.psu.ac.th
> User-Agent: curl/8.9.0
> Accept: */*
>
* Request completely sent off
< HTTP/2 200
< x-frame-options: SAMEORIGIN
< last-modified: Sun, 06 Aug 2023 04:34:00 GMT
< accept-ranges: bytes
< content-length: 172
< cache-control: max-age=600
< expires: Wed, 24 Jul 2024 11:49:52 GMT
< vary: Accept-Encoding
< x-xss-protection: 1; mode=block
< x-permitted-cross-domain-policies: none
< x-content-type-options: nosniff
< content-type: text/html; charset=UTF-8
< date: Wed, 24 Jul 2024 11:39:52 GMT
< server: Apache
<
<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Nithi Lab</title>
    </head>
    <body>
        <h1>Nithi Thanon</h1>
    </body>
</html>

* Connection #0 to host nithi.cs.psu.ac.th left intact
```

Response time

- HTTP

```
curl -w "%{time_total}\n" -o /dev/null
http://nithi.cs.psu.ac.th/wireshark/index.html
```

```
0.067205
```

- HTTPS

```
curl -w "%{time_total}\n" -o /dev/null
https://nithi.cs.psu.ac.th/wireshark/index.html
```

```
0.072761
```

Save to File

```
curl -o wirshark.html http://nithi.cs.psu.ac.th/wireshark/index.html
```

```
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   172  100   172    0     0   2390      0 --:--:-- --:--:-- --:--:--  2529
```