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Class : IUP CS B

Assignment 2 – Lab Computer Network and Operating System

1. Revisit problem no.3 in Activity 2.1. Explain why the content of this html file is equal to 128 bytes.

Taking closer look at the content section, we may see the hexadecimal and HTML snippets code contained in the 128 bytes data. This HTML file then corresponds to content rendered in browser.

The image displays a Wireshark packet capture of an HTTP 200 OK response. The packet list shows the response is for the file 'wireshark-file1.html' and its size is 128 bytes. The packet details pane shows the content type as 'text/html' and the file size as '128 bytes'. The packet bytes pane shows the hexadecimal and ASCII representation of the HTML content, which is a simple 'Congratulations' message.

No.	Time	Source	Destination	Protocol	Length	Info
75	3.017077	10.113.84.98	128.119.245.12	HTTP	445	GET /wireshark-labs/HTTP-wireshark-file1.html HTTP/1.1
83	3.285904	128.119.245.12	10.113.84.98	HTTP	540	HTTP/1.1 200 OK (text/html)
88	3.347151	10.113.84.98	128.119.245.12	HTTP	402	GET /favicon.ico HTTP/1.1
135	3.642408	128.119.245.12	10.113.84.98	HTTP	539	HTTP/1.1 404 Not Found (text/html)

Keep-Alive: timeout=5, max=100\r\n
Connection: Keep-Alive\r\n
Content-Type: text/html; charset=UTF-8\r\n
\r\n
[HTTP response 1/1]
[Time since request: 0.268827000 seconds]
[Request in frame: 75]
[request OK: http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html]
File Data: 128 bytes

Content-Type: text/html (4 lines)
<html>\n
Congratulations. You've downloaded the file \n
http://gaia.cs.umass.edu/wireshark-labs/HTTP-wireshark-file1.html!\n
</html>\n

0110 63 65 65 70 74 2d 52 61 6e 67 65 73 3a 20 62 79 ccept-Ranges: by
0120 74 65 73 0d 0a 43 6f 6e 74 65 6e 74 2d 4c 65 6e tes--Content-Len
0130 67 74 68 3a 20 31 32 38 0d 0a 4b 65 65 70 2d 41 gth: 128 --Keep-A
0140 6c 69 76 65 3a 20 74 69 6d 65 6f 75 74 3d 35 2c live: timeout=5,
0150 20 6d 61 78 3d 31 30 30 0d 0a 43 6f 6e 6e 65 63 max=100 --Connec
0160 74 69 6f 6e 3a 20 4b 65 65 70 2d 41 6c 69 76 65 tion: Ke ep-Alive

0170 0d 0a 45 0f 0e 74 65 6e 74 2d 54 79 70 65 3a 20 Content-Type:
0180 74 65 78 74 2f 68 74 6d 6c 3b 20 63 68 61 72 73 text/html; chars
0190 65 74 3d 55 54 46 2d 38 0d 0a 0d 0a 3c 68 74 6d et=UTF-8 --<htm
01a0 6c 3e 0a 43 6f 6e 67 72 61 74 75 6c 61 74 69 6f l>Congratulatio
01b0 6e 73 2e 20 20 59 6f 75 27 76 65 20 64 6f 77 6e ns. You've down
01c0 6c 6f 61 64 65 64 20 74 68 65 20 66 69 6c 65 20 loaded the file
01d0 0a 68 74 74 70 3a 2f 2f 67 61 69 61 2e 63 73 2e .http://gaia.cs.
01e0 75 6d 61 73 73 2e 65 64 75 2f 77 69 72 65 73 68 umass.ed u/wiresh
01f0 61 72 6b 2d 6c 61 62 73 2f 48 54 54 50 2d 77 69 ark-labs /HTTP-wi
0200 72 65 73 68 61 72 6b 2d 66 69 6c 65 31 2e 68 74 reshark- file1.ht
0210 6d 6c 21 0a 3c 2f 68 74 6d 6c 3e 0a ml!</ht ml>

2. Perform Activity 2.2 using chrome as the web browser. Enter the same URL multiple times (at least two times) by pressing the Enter-key (not reload, i.e., F5). Chrome is well known to its resource-intensive characteristic where it tends to consume more memory,

*Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

http

No.	Time	Source	Destination	Protocol	Length	Info
2483	16.005616	128.119.245.12	192.168.3.91	HTTP	238	HTTP/1.1 304 Not Modified
2509	19.210814	128.119.245.12	192.168.3.91	HTTP	238	HTTP/1.1 304 Not Modified
2568	25.483694	128.119.245.12	192.168.3.91	HTTP	238	HTTP/1.1 304 Not Modified
2855	41.065294	128.119.245.12	192.168.3.91	HTTP	238	HTTP/1.1 304 Not Modified
2896	43.898243	128.119.245.12	192.168.3.91	HTTP	238	HTTP/1.1 304 Not Modified
3046	53.222423	128.119.245.12	192.168.3.91	HTTP	238	HTTP/1.1 304 Not Modified
3168	55.922282	128.119.245.12	192.168.3.91	HTTP	238	HTTP/1.1 304 Not Modified
3074	53.863167	34.104.35.123	192.168.3.91	HTTP	245	HTTP/1.1 200 OK
3114	53.863167	34.104.35.123	192.168.3.91	HTTP	263	HTTP/1.1 404 Not Found (text/html)
2720	37.260303	128.119.245.12	192.168.3.91	HTTP	425	HTTP/1.1 200 OK (text/html)
2992	51.065295	128.119.245.12	192.168.3.91	HTTP	425	HTTP/1.1 200 OK (text/html)
540	3.419138	192.168.3.91	128.119.245.12	HTTP	445	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
2480	15.471504	192.168.3.91	128.119.245.12	HTTP	531	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
2503	18.687756	192.168.3.91	128.119.245.12	HTTP	531	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
2565	24.876903	192.168.3.91	128.119.245.12	HTTP	531	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
2956	50.552182	192.168.3.91	128.119.245.12	HTTP	533	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
2601	36.660906	192.168.3.91	128.119.245.12	HTTP	547	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
3060	53.777988	34.104.35.123	192.168.3.91	HTTP	603	HTTP/1.1 200 OK
3036	52.963899	192.168.3.91	128.119.245.12	HTTP	645	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
3120	55.366176	192.168.3.91	128.119.245.12	HTTP	645	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
2846	40.734133	192.168.3.91	128.119.245.12	HTTP	659	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1
2889	43.349915	192.168.3.91	128.119.245.12	HTTP	659	GET /wireshark-labs/HTTP-wireshark-file2.html HTTP/1.1

Observe that from these 3 different browser mechanisms, chrome has the largest packet length on HTTP GET among MS Edge and Firefox. This may correspond to the intensive resources and memory usages performed by chrome.

Firefox

MS Edge

Chrome

From the image given above, as we may see that the package length vary among those browsers and chrome ranked as the largest package length which could impact the memory resources and usages.

3. Theoretically, TCP packet size can reach up to 64kB is size. Investigate why the TCP packets are usually sent in much smaller size (~15kB) compared its theoretical max size.

In Theory, the maximum size of a TCP packet that can be carried out is 65535 bytes or 64kB. But in practice and in the world of ethernet, due to the limitations of hardware mainly ethernet, the TCP packets that were sent will be limited to up to 1500 bytes due to the MTU (Maximum Transmission Unit) of network resources restricts this rule to reduce the probability of packet loss and packet fragmented during the transmission. The larger the packet, the higher the chance that it could cause miscellaneous impacts on the communication process and throughput such packet loss.

Therefore, until these days, the maximum packet sizes may range around 1500 bytes for each packet to help reduce intervening the transmission.

4. Do the module 2's Activity 4 and submit it to Activity 2.4. Search about Base64 encoding-decoding method and try to manually encode the following username and password:

-user: students-ugm

-pass: dcse

Show the encoding steps in detail. After you finish encoding, perform decoding, and show the steps in detail!

Module 2.4 Submitted :

Activity 2.4

Kerjakan pertanyaan 12-13 pada Modul 2. Upload jawaban beserta screenshot bersesuaian yang mendukung jawaban anda.

Do questions 12-13 in the modul. Upload the answers along with their corresponding screenshots.

Submission status

Submission status	Submitted for grading
Grading status	Not graded
Last modified	Thursday, 8 September 2022, 11:09 AM

File submissions



472698 - Ramzy Izza Wardha...

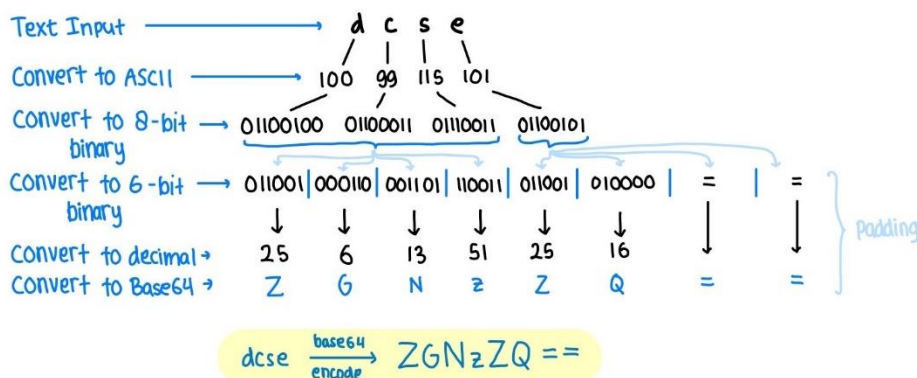
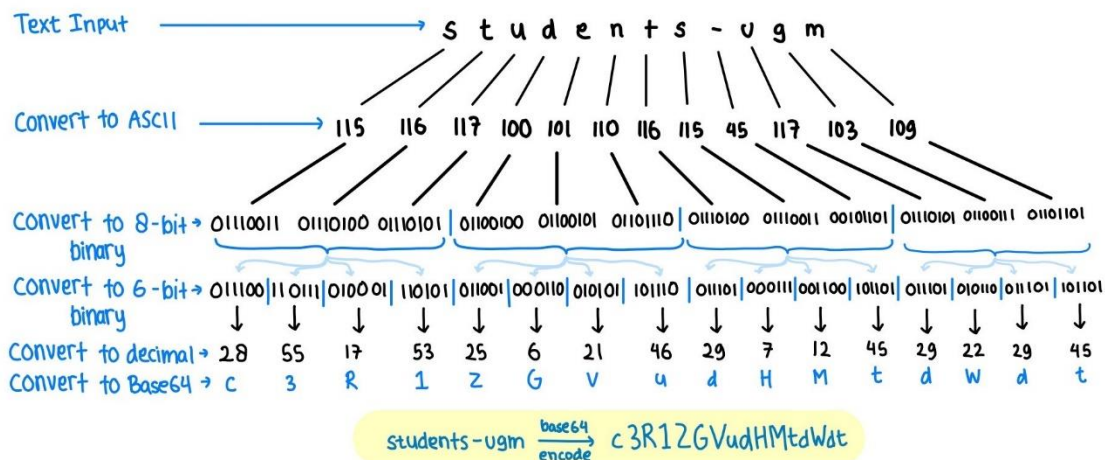
8 September 2022, 11:09 AM

Edit submission

Remove submission

You can still make changes to your submission.

Base 64 Encoding



Base64 Decoding

c3R1ZGVudHMtdWdt & ZGNzZQ ==

Base 64 Input	c	3	R	1	Z	G	V	u	d	H	M	t	d	W	d	t
Convert to base64 Index	28	55	17	53	25	6	21	46	29	7	12	45	29	22	29	45
Convert to 6-bit binary	011100	110111	010001	110101	011001	000110	010101	101110	011101	000111	001100	101101	011101	010110	011101	101101
Convert to 8-bit binary	01110011	01101010	01101011	01100100	01100101	01101110	01110100	01110011	00101101	01110101	01100111	01101101	01110101	01100111	01101101	01101101
Convert to decimal	115	116	117	100	101	110	116	115	45	117	103	109				
Convert to ASCII format Alphabets	s	t	u	d	e	n	t	s	-	u	g	m				

c3R1ZGVudHMtdWdt $\xrightarrow[\text{decode}]{\text{base64}}$ students-ugm

Base 64 Input	25	6	13	51	25	16	=	=
Convert to base64 Index	Z	G	N	z	Z	Q	=	=
Convert to 6-bit binary	011001	000110	001101	110011	011001	010000	=	=
Convert to 8-bit binary	01100100	01100011	01110011	01100101	-	-		
Convert to decimal	100	99	115	101				
Convert to ASCII format Alphabets	d	c	s	e				

ZGNzZQ == $\xrightarrow[\text{decode}]{\text{base64}}$ dcse