Assignment #1

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Section: 23

CSE421

Spring25 - Set B

1

Source Port : Ephemeral / Dynamic

Destination Port: Port 25 (SMTP)

Source IP : 1

Destination IP : 11

Source MAC : G

Destination MAC : H

2

① POST

② PUT

③ Delete

The PUT method used for updating or replacing an existing resource. The PUT method would update the assignment with the new file or content provided, ensuring that previous version of the assignment is replaced with the updated version.

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① A Record: maps the domain name to its corresponding IP address, ensuring that the website can be accessed via the domain name.

② CNAME Record: Redirects university.edu to www.university.edu, ensuring users can access the website even without typing www.

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Issue: The website was using the HTTP protocol.

Security improvement: The website was upgraded to use HTTPS (by installing a SSL/TLS certificate).

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Demultiplexing fields:

* source IP
* Destination IP
* Source Port
* Destination Port

segment sequence to Application layer:

1, 2, 3, 4, 5

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The proxy server will send a conditional Get request to the origin server with "If modified-since: March 16, 2025" header.

If the page has not changed, the origin server sends a "304 NOT Modified" response. This save bandwidth by not re-downloading the entire ~~website~~ webpage, improving efficiency by reducing data transfer.

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(i) Total RTT = 2 × RTT × number of objects

⇒ 1200 ms = 2 × RTT × 15

∴ RTT = 40 ms

(ii) Total Data = (10 × 3MB) + (5 × 7MB) = 65 MB

= (65 × 8) Mb

= 520 mb

Server speed = 100 Mbps

Transmission time = 520 Mb / 100 Mbps = 5.2 seconds

= 5200 ms

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(i) segment number = 9876 + 645 ~~+ 10521~~ + 1

= 10522

Client's previous segment (01, 645 bytes) ended at 10521, Ack-1 uses the next sequence number.

~~Ack~~ Acknowledgment number = 5432 + 1 = 5433

client expects server's first byte (5432) + 1, as no data was received yet.

(ii) Rwnd = 8000 - 687 = 7313 bytes

(after receiving retransmitted s1)

(iii) Server's last sent byte was from S3,

(5432 + 687 + 586 + 652 = 7357).

S_n is the next byte to use (7357 + 1 = 7358).

$\therefore S_n = \boxed{7358}$