

PROGRAM STUDI S1 INFORMATIKA

IMPLEMENTASI PROXY SERVER, SOCKET PROGRAMMING,  
DAN ANALISIS QOS MENGGUNAKAN WIRESHARK

DATE

14/12/2025



Dosen Pengampu:  
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# HASIL RUNNING

## HTTP SINGLE

terminal client

```
PS C:\Users\USER\tubes-jarkom> python client.py

=== CLIENT MENU ===
1. HTTP Single
2. HTTP Multi
3. Browser Mode (Save HTML)
4. UDP Direct (tanpa proxy)
5. UDP via Proxy
0. Keluar
Pilih menu: 1
HTTP Single
1. Direct (8000)
2. Via Proxy (8080)
Pilih: 1
2025-12-14 18:18:16,049 [CLIENT] INFO: Received 3948 bytes in 0.0847 s

=== CLIENT MENU ===
1. HTTP Single
2. HTTP Multi
3. Browser Mode (Save HTML)
4. UDP Direct (tanpa proxy)
5. UDP via Proxy
0. Keluar
Pilih menu: 1
HTTP Single
1. Direct (8000)
2. Via Proxy (8080)
Pilih: 2
2025-12-14 18:21:04,201 [CLIENT] INFO: Received 3948 bytes in 0.0106 s
```

terminal web server

```
PS D:\Kuliah\Tugas\sms 5\jarmok\tubes> python web_server.py --mode threaded
2025-12-14 18:18:01,334 [WEB-SERVER] INFO: ===== QUICK COMMANDS (Laptop A) =====
2025-12-14 18:18:01,334 [WEB-SERVER] INFO: HTTP single : python web_server.py --mode single --host 0.0.0.0 --http-port 8000 --www w
2025-12-14 18:18:01,334 [WEB-SERVER] INFO: HTTP threaded : python web_server.py --mode threaded --host 0.0.0.0 --http-port 8000 --www
2025-12-14 18:18:01,334 [WEB-SERVER] INFO: UDP echo port : default 9000 (jalan otomatis bareng HTTP)
2025-12-14 18:18:01,335 [WEB-SERVER] INFO: =====
2025-12-14 18:18:01,337 [WEB-SERVER] INFO: [UDP] Echo server listening on 0.0.0.0:9000
2025-12-14 18:18:01,338 [WEB-SERVER] INFO: [HTTP] Threaded server listening on 0.0.0.0:8000 with 5 workers (www=www)
2025-12-14 18:18:16,781 [WEB-SERVER] INFO: [HTTP] Request from 192.168.1.12:65226 -> GET /
2025-12-14 18:18:16,781 [WEB-SERVER] INFO: [HTTP] Sent response to 192.168.1.12:65226 file=index.html size=3863 bytes time=76.47 ms
2025-12-14 18:21:04,934 [WEB-SERVER] INFO: [HTTP] Request from 192.168.1.3:55983 -> GET /
2025-12-14 18:21:04,935 [WEB-SERVER] INFO: [HTTP] Sent response to 192.168.1.3:55983 file=index.html size=3863 bytes time=0.65 ms
█
```

terminal proxy server

```
PS D:\Kuliah\Tugas\sms 5\jarmok\tubes> python proxy_server.py --target-host 192.168.1.3
2025-12-14 18:18:06,992 [PROXY] INFO: [PROXY] Ready. TCP:8080 UDP:9090
2025-12-14 18:18:06,992 [PROXY] INFO: [UDP] Proxy listening on 0.0.0.0:9090 -> target 192.168.1.3:9000
2025-12-14 18:18:06,992 [PROXY] INFO: [TCP] Proxy listening on 0.0.0.0:8080 -> target 192.168.1.3:8000
2025-12-14 18:21:04,932 [PROXY] INFO: [TCP] New client ('192.168.1.12', 61117)
2025-12-14 18:21:04,935 [PROXY] INFO: [TCP] ('192.168.1.12', 61117) -> 192.168.1.3:8000 cache=MISS bytes=3948
█
```

# HASIL RUNNING

## HTTP MULTI

terminal client

```
=== CLIENT MENU ===
1. HTTP Single
2. HTTP Multi
3. Browser Mode (Save HTML)
4. UDP Direct (tanpa proxy)
5. UDP via Proxy
0. Keluar
Pilih menu: 2
HTTP Multi (5 client via proxy)
2025-12-14 18:38:24,641 [CLIENT] INFO: Received 3948 bytes in 0.0123 s
2025-12-14 18:38:24,642 [CLIENT] INFO: Received 3948 bytes in 0.0125 s
2025-12-14 18:38:24,642 [CLIENT] INFO: Thread-1 selesai
2025-12-14 18:38:24,642 [CLIENT] INFO: Thread-3 selesai
2025-12-14 18:38:24,659 [CLIENT] INFO: Received 3948 bytes in 0.0296 s
2025-12-14 18:38:24,660 [CLIENT] INFO: Received 3948 bytes in 0.0306 s
2025-12-14 18:38:24,660 [CLIENT] INFO: Received 3948 bytes in 0.0306 s
2025-12-14 18:38:24,660 [CLIENT] INFO: Thread-5 selesai
2025-12-14 18:38:24,660 [CLIENT] INFO: Thread-2 selesai
2025-12-14 18:38:24,660 [CLIENT] INFO: Thread-4 selesai
```

terminal web server

```
2025-12-14 18:38:25,383 [PROXY] INFO: [TCP] New client ('192.168.1.12', 51204)
2025-12-14 18:38:25,383 [PROXY] INFO: [TCP] ('192.168.1.12', 51204) -> 192.168.1.3:8000 cache=HIT bytes=3948
2025-12-14 18:38:25,384 [PROXY] INFO: [TCP] New client ('192.168.1.12', 51206)
2025-12-14 18:38:25,385 [PROXY] INFO: [TCP] ('192.168.1.12', 51206) -> 192.168.1.3:8000 cache=HIT bytes=3948
2025-12-14 18:38:25,385 [PROXY] INFO: [TCP] New client ('192.168.1.12', 51205)
2025-12-14 18:38:25,385 [PROXY] INFO: [TCP] New client ('192.168.1.12', 51207)
2025-12-14 18:38:25,386 [PROXY] INFO: [TCP] New client ('192.168.1.12', 51208)
2025-12-14 18:38:25,402 [PROXY] INFO: [TCP] ('192.168.1.12', 51208) -> 192.168.1.3:8000 cache=HIT bytes=3948
2025-12-14 18:38:25,402 [PROXY] INFO: [TCP] ('192.168.1.12', 51205) -> 192.168.1.3:8000 cache=HIT bytes=3948
2025-12-14 18:38:25,402 [PROXY] INFO: [TCP] ('192.168.1.12', 51207) -> 192.168.1.3:8000 cache=HIT bytes=3948
□
```



# HASIL RUNNING

## BROWSER MODE

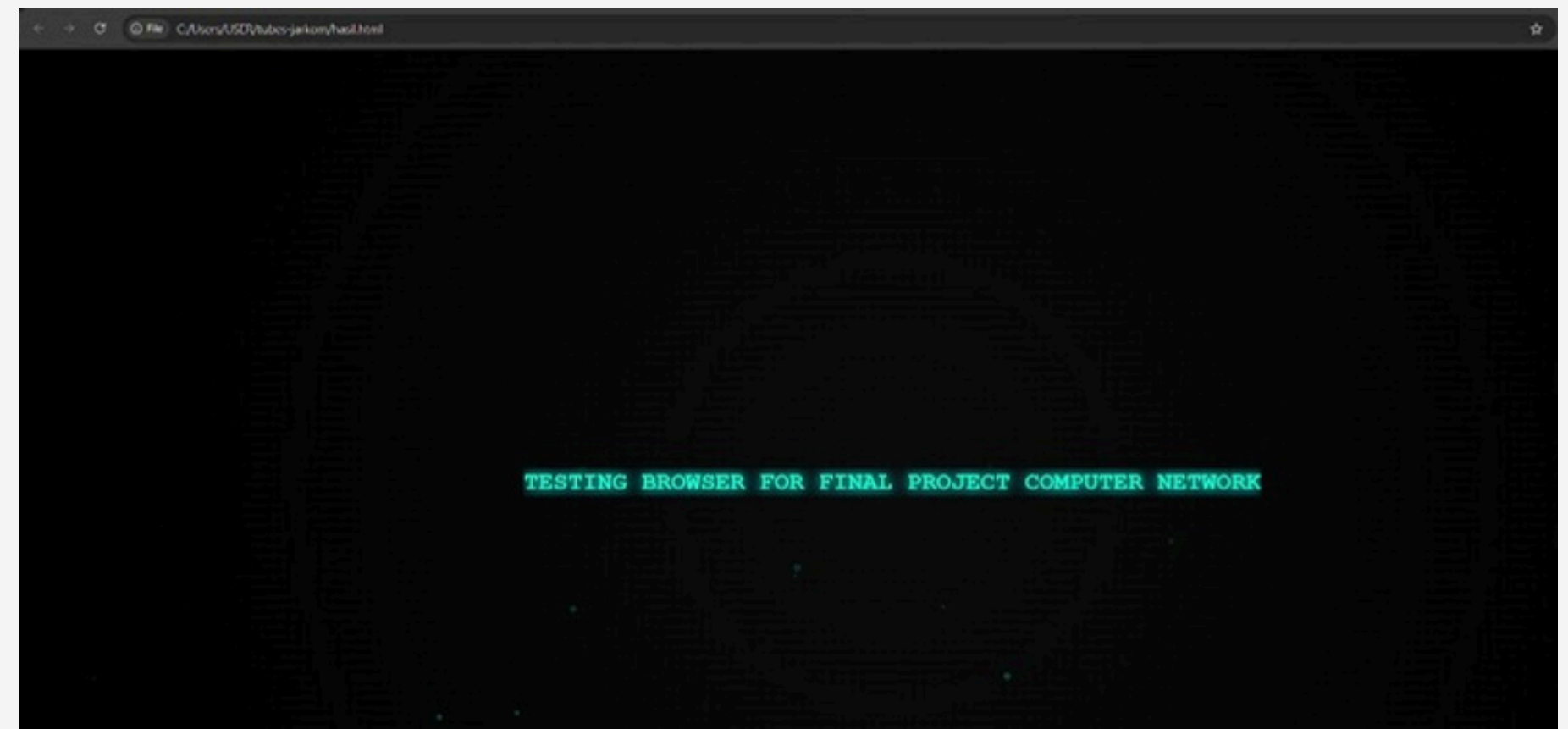
terminal client

```
=== CLIENT MENU ===
1. HTTP Single
2. HTTP Multi
3. Browser Mode (Save HTML)
4. UDP Direct (tanpa proxy)
5. UDP via Proxy
0. Keluar
Pilih menu: 3
Browser Mode
2025-12-14 18:48:27,465 [CLIENT] INFO: Received 3948 bytes in 0.0320 s
2025-12-14 18:48:27,466 [CLIENT] INFO: Saved to hasil.html
```

terminal proxy server

```
2025-12-14 18:48:28,191 [PROXY] INFO: [TCP] New client ('192.168.1.12', 62405)
2025-12-14 18:48:28,214 [PROXY] INFO: [TCP] ('192.168.1.12', 62405) -> 192.168.1.3:8000 cache=HIT bytes=3948
```

tampilan browser





# HASIL RUNNING

## UDP DIRECT

terminal client

```
Pilih menu: 4
UDP Direct
2025-12-14 19:00:44,914 [CLIENT] INFO: Seq 1 RTT 8.12 ms
2025-12-14 19:00:44,969 [CLIENT] INFO: Seq 2 RTT 63.43 ms
2025-12-14 19:00:45,023 [CLIENT] INFO: Seq 3 RTT 116.70 ms
2025-12-14 19:00:45,079 [CLIENT] INFO: Seq 4 RTT 173.24 ms
2025-12-14 19:00:45,132 [CLIENT] INFO: Seq 5 RTT 225.84 ms
2025-12-14 19:00:45,265 [CLIENT] INFO: Seq 6 RTT 359.65 ms
2025-12-14 19:00:45,319 [CLIENT] INFO: Seq 7 RTT 413.67 ms
2025-12-14 19:00:45,374 [CLIENT] INFO: Seq 8 RTT 467.84 ms
2025-12-14 19:00:45,428 [CLIENT] INFO: Seq 9 RTT 521.82 ms
2025-12-14 19:00:45,483 [CLIENT] INFO: Seq 10 RTT 577.38 ms
2025-12-14 19:00:45,537 [CLIENT] INFO: Seq 11 RTT 631.05 ms
2025-12-14 19:00:45,610 [CLIENT] INFO: Seq 12 RTT 704.27 ms
2025-12-14 19:00:45,665 [CLIENT] INFO: Seq 13 RTT 759.30 ms
2025-12-14 19:00:45,727 [CLIENT] INFO: Seq 14 RTT 820.93 ms
2025-12-14 19:00:45,788 [CLIENT] INFO: Seq 15 RTT 882.15 ms
2025-12-14 19:00:45,842 [CLIENT] INFO: Seq 16 RTT 936.25 ms
2025-12-14 19:00:45,899 [CLIENT] INFO: Seq 17 RTT 993.34 ms
2025-12-14 19:00:45,987 [CLIENT] INFO: Seq 18 RTT 1080.70 ms
2025-12-14 19:00:46,042 [CLIENT] INFO: Seq 19 RTT 1136.53 ms
2025-12-14 19:00:46,096 [CLIENT] INFO: Seq 20 RTT 1190.12 ms
2025-12-14 19:00:46,192 [CLIENT] INFO: Seq 21 RTT 1286.29 ms
2025-12-14 19:00:46,246 [CLIENT] INFO: Seq 22 RTT 1339.70 ms
2025-12-14 19:00:46,302 [CLIENT] INFO: Seq 23 RTT 1396.22 ms
2025-12-14 19:00:46,396 [CLIENT] INFO: Seq 24 RTT 1490.52 ms
2025-12-14 19:00:46,450 [CLIENT] INFO: Seq 25 RTT 1544.46 ms
2025-12-14 19:00:46,505 [CLIENT] INFO: Seq 26 RTT 1598.71 ms
2025-12-14 19:00:46,558 [CLIENT] INFO: Seq 27 RTT 1652.02 ms
2025-12-14 19:00:46,613 [CLIENT] INFO: Seq 28 RTT 1706.77 ms
2025-12-14 19:00:46,666 [CLIENT] INFO: Seq 29 RTT 1760.01 ms
2025-12-14 19:00:46,719 [CLIENT] INFO: Seq 30 RTT 1813.27 ms
2025-12-14 19:00:46,772 [CLIENT] INFO: Seq 31 RTT 1866.33 ms
2025-12-14 19:00:46,911 [CLIENT] INFO: Seq 32 RTT 2004.95 ms
2025-12-14 19:00:46,965 [CLIENT] INFO: Seq 33 RTT 2059.30 ms
2025-12-14 19:00:47,019 [CLIENT] INFO: Seq 34 RTT 2112.71 ms
2025-12-14 19:00:47,122 [CLIENT] INFO: Seq 35 RTT 2215.69 ms
2025-12-14 19:00:47,177 [CLIENT] INFO: Seq 36 RTT 2271.45 ms
2025-12-14 19:00:47,233 [CLIENT] INFO: Seq 37 RTT 2326.83 ms
2025-12-14 19:00:47,287 [CLIENT] INFO: Seq 38 RTT 2380.77 ms
2025-12-14 19:00:47,345 [CLIENT] INFO: Seq 39 RTT 2439.19 ms
2025-12-14 19:00:47,400 [CLIENT] INFO: Seq 40 RTT 2494.19 ms
2025-12-14 19:00:47,453 [CLIENT] INFO: Seq 41 RTT 2547.65 ms
2025-12-14 19:00:47,508 [CLIENT] INFO: Seq 42 RTT 2602.13 ms
2025-12-14 19:00:47,631 [CLIENT] INFO: Seq 43 RTT 2725.09 ms
2025-12-14 19:00:47,686 [CLIENT] INFO: Seq 44 RTT 2780.16 ms
2025-12-14 19:00:47,743 [CLIENT] INFO: Seq 45 RTT 2836.91 ms
2025-12-14 19:00:47,836 [CLIENT] INFO: Seq 46 RTT 2929.97 ms
2025-12-14 19:00:47,890 [CLIENT] INFO: Seq 47 RTT 2983.83 ms
2025-12-14 19:00:47,945 [CLIENT] INFO: Seq 48 RTT 3038.84 ms
2025-12-14 19:00:47,997 [CLIENT] INFO: Seq 49 RTT 3091.47 ms
2025-12-14 19:00:48,051 [CLIENT] INFO: Seq 50 RTT 3144.75 ms
2025-12-14 19:00:48,103 [CLIENT] INFO: CSV disimpan: direct.csv
```

terminal web server

```
2025-12-14 19:00:45,669 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:45,727 [WEB-SERVER] INFO: [UDP] Received 19 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:45,780 [WEB-SERVER] INFO: [UDP] Received 18 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:45,836 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:45,889 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,023 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,077 [WEB-SERVER] INFO: [UDP] Received 19 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,131 [WEB-SERVER] INFO: [UDP] Received 18 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,185 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,239 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,294 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,367 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,422 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,483 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,542 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,599 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,656 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,744 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,799 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,853 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:46,948 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,003 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,057 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,153 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,207 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,261 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,315 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,368 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,423 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,477 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,530 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,667 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,722 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,776 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,879 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,934 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:47,989 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,043 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,102 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,157 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,211 [WEB-SERVER] INFO: [UDP] Received 19 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,264 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,387 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,442 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,498 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,592 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,647 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,700 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,755 [WEB-SERVER] INFO: [UDP] Received 20 bytes from ('192.168.1.12', 63022), echo back
2025-12-14 19:00:48,808 [WEB-SERVER] INFO: [UDP] Received 21 bytes from ('192.168.1.12', 63022), echo back
```



# HASIL RUNNING UDP PROXY

# terminal client

```
Pilih menu: 5
UDP via Proxy
2025-12-14 19:12:33,905 [CLIENT] INFO: Seq 1 RTT 5.18 ms
2025-12-14 19:12:33,958 [CLIENT] INFO: Seq 2 RTT 58.38 ms
2025-12-14 19:12:34,011 [CLIENT] INFO: Seq 3 RTT 111.61 ms
2025-12-14 19:12:34,067 [CLIENT] INFO: Seq 4 RTT 167.89 ms
2025-12-14 19:12:34,123 [CLIENT] INFO: Seq 5 RTT 223.35 ms
2025-12-14 19:12:34,221 [CLIENT] INFO: Seq 6 RTT 321.28 ms
2025-12-14 19:12:34,278 [CLIENT] INFO: Seq 7 RTT 378.73 ms
2025-12-14 19:12:34,333 [CLIENT] INFO: Seq 8 RTT 433.13 ms
2025-12-14 19:12:34,387 [CLIENT] INFO: Seq 9 RTT 487.83 ms
2025-12-14 19:12:34,441 [CLIENT] INFO: Seq 10 RTT 541.67 ms
2025-12-14 19:12:34,612 [CLIENT] INFO: Seq 11 RTT 712.11 ms
2025-12-14 19:12:34,665 [CLIENT] INFO: Seq 12 RTT 765.66 ms
2025-12-14 19:12:34,739 [CLIENT] INFO: Seq 13 RTT 839.88 ms
2025-12-14 19:12:34,844 [CLIENT] INFO: Seq 14 RTT 944.14 ms
2025-12-14 19:12:34,941 [CLIENT] INFO: Seq 15 RTT 1041.74 ms
2025-12-14 19:12:35,044 [CLIENT] INFO: Seq 16 RTT 1144.82 ms
2025-12-14 19:12:35,193 [CLIENT] INFO: Seq 17 RTT 1293.69 ms
2025-12-14 19:12:35,298 [CLIENT] INFO: Seq 18 RTT 1398.08 ms
2025-12-14 19:12:35,510 [CLIENT] INFO: Seq 19 RTT 1610.36 ms
2025-12-14 19:12:35,582 [CLIENT] INFO: Seq 20 RTT 1682.26 ms
2025-12-14 19:12:35,716 [CLIENT] INFO: Seq 21 RTT 1816.18 ms
2025-12-14 19:12:35,770 [CLIENT] INFO: Seq 22 RTT 1870.31 ms
2025-12-14 19:12:35,878 [CLIENT] INFO: Seq 23 RTT 1978.54 ms
2025-12-14 19:12:36,013 [CLIENT] INFO: Seq 24 RTT 2113.41 ms
2025-12-14 19:12:36,068 [CLIENT] INFO: Seq 25 RTT 2168.28 ms
2025-12-14 19:12:36,123 [CLIENT] INFO: Seq 26 RTT 2223.06 ms
2025-12-14 19:12:36,175 [CLIENT] INFO: Seq 27 RTT 2275.70 ms
2025-12-14 19:12:36,230 [CLIENT] INFO: Seq 28 RTT 2330.79 ms
2025-12-14 19:12:36,285 [CLIENT] INFO: Seq 29 RTT 2385.70 ms
2025-12-14 19:12:36,383 [CLIENT] INFO: Seq 30 RTT 2483.31 ms
2025-12-14 19:12:36,436 [CLIENT] INFO: Seq 31 RTT 2536.80 ms
2025-12-14 19:12:36,491 [CLIENT] INFO: Seq 32 RTT 2591.16 ms
2025-12-14 19:12:36,546 [CLIENT] INFO: Seq 33 RTT 2646.16 ms
2025-12-14 19:12:36,601 [CLIENT] INFO: Seq 34 RTT 2701.14 ms
2025-12-14 19:12:36,655 [CLIENT] INFO: Seq 35 RTT 2755.29 ms
2025-12-14 19:12:36,793 [CLIENT] INFO: Seq 36 RTT 2893.17 ms
2025-12-14 19:12:36,847 [CLIENT] INFO: Seq 37 RTT 2947.94 ms
2025-12-14 19:12:36,902 [CLIENT] INFO: Seq 38 RTT 3002.19 ms
2025-12-14 19:12:36,959 [CLIENT] INFO: Seq 39 RTT 3058.67 ms
2025-12-14 19:12:37,114 [CLIENT] INFO: Seq 40 RTT 3213.98 ms
2025-12-14 19:12:37,204 [CLIENT] INFO: Seq 41 RTT 3304.79 ms
2025-12-14 19:12:37,259 [CLIENT] INFO: Seq 42 RTT 3359.91 ms
2025-12-14 19:12:37,313 [CLIENT] INFO: Seq 43 RTT 3413.29 ms
2025-12-14 19:12:37,370 [CLIENT] INFO: Seq 44 RTT 3470.15 ms
2025-12-14 19:12:37,423 [CLIENT] INFO: Seq 45 RTT 3523.75 ms
2025-12-14 19:12:37,512 [CLIENT] INFO: Seq 46 RTT 3612.43 ms
2025-12-14 19:12:37,571 [CLIENT] INFO: Seq 47 RTT 3671.16 ms
2025-12-14 19:12:37,625 [CLIENT] INFO: Seq 48 RTT 3725.15 ms
2025-12-14 19:12:37,679 [CLIENT] INFO: Seq 49 RTT 3779.14 ms
2025-12-14 19:12:37,733 [CLIENT] INFO: Seq 50 RTT 3833.11 ms
2025-12-14 19:12:37,784 [CLIENT] INFO: CSV disimpan: via_proxy.csv
```

# terminal web server

[illegible]

# terminal proxy server

2025-12-14	19:12:34,669	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=1.17 ms
2025-12-14	19:12:34,723	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.51 ms
2025-12-14	19:12:34,776	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=18	RTT=0.61 ms
2025-12-14	19:12:34,830	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.61 ms
2025-12-14	19:12:34,888	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=19	RTT=0.70 ms
2025-12-14	19:12:34,986	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.62 ms
2025-12-14	19:12:35,043	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.72 ms
2025-12-14	19:12:35,097	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.58 ms
2025-12-14	19:12:35,152	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.60 ms
2025-12-14	19:12:35,205	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.67 ms
2025-12-14	19:12:35,321	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.61 ms
2025-12-14	19:12:35,430	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.59 ms
2025-12-14	19:12:35,503	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.66 ms
2025-12-14	19:12:35,608	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.58 ms
2025-12-14	19:12:35,705	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.56 ms
2025-12-14	19:12:35,809	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.63 ms
2025-12-14	19:12:35,956	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.70 ms
2025-12-14	19:12:36,062	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.79 ms
2025-12-14	19:12:36,274	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.64 ms
2025-12-14	19:12:36,347	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.62 ms
2025-12-14	19:12:36,427	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.57 ms
2025-12-14	19:12:36,534	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.64 ms
2025-12-14	19:12:36,643	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.86 ms
2025-12-14	19:12:36,775	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.75 ms
2025-12-14	19:12:36,833	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.65 ms
2025-12-14	19:12:36,887	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.96 ms
2025-12-14	19:12:36,941	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.69 ms
2025-12-14	19:12:36,995	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.62 ms
2025-12-14	19:12:37,049	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=21	RTT=0.72 ms
2025-12-14	19:12:37,147	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.62 ms
2025-12-14	19:12:37,201	[PROXY]	INFO:	[UDP]	('192.168.1.12', 63911)	->	('192.168.1.3', 9000)	bytes=20	RTT=0.64 ms
2025-12-14	19:12:37,255	[PROXY]	INFO:	[UDP]	('192.168.1				



TERIMAKASIH