Lab 4

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Lab 4 Documentation

Directory Structure:

- **src**: contains the source code used to generate the executable
- bin: holds the executable program generated from my source code
- doc: contains resources used and tests

Makefile:

- Standard "make" to execute everything
- Standard "make clean" to remove executable files

Usage:

All requests should follow the format of

For the server

./myclient <servn> <servaddr.conf> <mtu> <winsz> <in_filepath> <out_filepath>

For the client

./myserver <port_number> <droppc> <root_folder_path>\n

Functionality

Multiple Thread Support

PROBLEMS (2) OUTPUT DEBUG CONSOLE TERMINAL				∑ ssh + ∨ □ @ ··· ∨ >
ADX sent for packet sequence number: 338 Received packet for outfield: /green/egg/hom.txt 2024-03-01722:4052.3332, OATA, 322 Received data: And I avid out them in a house.	ACK sent for packet sequence number: 300 Received packet for outfield: /green/egg/ham.txt 2004-03-03122:40-32.5402, DMTA, 322 Received data: And I will eat them in a house.	ADX sent for packet sequence number: 320 Received packet for outfield; /green/egg/ham.txt 2824-89-81722-869-26-3862, DATA, 322 Received data: And I will eat them in a house.	ACX sent for packet sequence number: 328 Received packet for outfield; /green/epg/ham.txt 282-03-01722:05:22.3332, UATA, 322 Roccived data: Acd I will eat them in a house.	2024-83-02786:de:52 04TA 314, 315, 316, 306 Received acknowledgeent for sequence susters 326 A204-83-02786:de:32 04TA 328, 327, 328, 322 Received acknowledgeent for sequence susters 320 Received acknowledgeent for sequence susters 320 A204-83-02786:de:30 04TA 328, 321, 323, 321, 323
2024-03-01722:40:52.335Z, ACK, 322 ACK sent for packet sequence number: 322 Received packet for outfield: /grem/egg/ham.txt 2024-03-01722:40:52.337Z, DATA, 324 Received data: Acd I all Lost then with a mouse.	2824-83-81722:48:52.3467, ACK, 322 ACK sent for packet sequence number: 322 Received packet for outfield: /groen/egg/ham.txt 2824-83-91722:48:52.3472, DATA, 324 Received data: And I will eat them with a mouse.	2024-03-0172:40:52.3567, ACK, 322 ACK sent for packet sequence number: 322 Roccived packet for outfield: /green/cgg/ham.txt 2024-03-0172:40:52.3582, DATA, 324 Roccived data: And I will eat them with a mouse.	2024-03-01T2:40:52.3332, ACK, 322 ACK sent for packet sequence number: 322 Rockived packet for outfields /greem/cgg/ham.txt 2024-03-01T2:40:52.3362, DATA, 324 Rockived data: Add I will est them with a mouse.	2804-69-62766:46952 DATA 328, 321, 322, 326 Received acknowledgement for sequence numbers 339 2804-69-62766:46952 DATA 338, 331, 332, 336 Received acknowledgement for sequence numbers 322 Received acknowledgement for sequence numbers 332 Received acknowledgement for sequence numbers 316 2804-69-812766-6952 DATA 318, 337, 318, 327
2024—83-61T2:40:52.337Z, ACK, 324 ACK sent for packet sequence number: 324 ACK sent for packet sequence number: 324 Received packet for outfield: /green/egg/ham.txt 2024—83-81T2:40:52.348Z, DATA, 326 Received data: And I will est than here and there.	2004-03-01722-00:52.3477, ADX, 324 ADX sent for packet sequence susbers 324 Received packet for outfield: /green/egy/han.txt 2004-03-01722-00:52.3487, DATA, 326 Received data: And I still out then here and there.	2824-83-8172:48:52.3582, ACK, 324 ACK sent for packet sequence number: 324 Rockived packet for outfields /green/cgg/ham.txt 2824-83-8172:48:52.3582, DATA, 326 Rockived data: Ack I will cat them here and there.	2024-03-0172:40:52.3362, ACK, 324 ACK sent for packet sequence number: 324 Rockived packet for outfields /green/egg/ham.txt 2024-03-0172:40:52.3372, DATA, 326 Rockived data: Act I will eat then here and there.	2004-83-82786-64-52 DATA 316, 317, 318, 322 Becaleva advonexionament for separence matter 328 2004-83-82786-64-52 DATA 326, 329, 339, 334 Recaleva advonexionament for separence matter 332 2004-83-82786-64-52 DATA 326, 329, 339, 334 Recaleva advonexionament for separence matter 332 Recaleva advonexionament for separence matter 332 2004-83-82786-64-50 DATA 328, 327, 328, 328, 338
2834-83-91T2-48:32.34K2, ACK, 326 ACK sent for packet sequence number: 326 Received packet for outfield: /green/egg/ham.txt 2824-83-81T2:48:52.34K2, QXTA, 328 Received data: Say! 1 will eat them anywhere!	2824-83-81722-86-52-3407, ACK, 326 ACK sent for packet sequence fumber: 326 Recolved packet for outfield: /green/egg/ham.txt 2824-83-8172-818-52-3492, DMTA, 328 Recolved data: Say I will eat them anywhere!	2824—83—81T2-148:52.3592, ACK, 326 ACK sent for packet sequence number: 326 Roccived packet for outfields; /green/egg/ham.txt 2824—83—81T2:148152.5862, QLTH, 328 Roccived data: Say) 1 will eat them anywhere!	2024—93-0172:40:52.3372, ACK, 326 ACK Sent for packet sequence number: 326 Roccived packet for outfields /green/egg/ham.txt 2024—93-0172:40152.3462, DATH, 328 Roccived data Sayl 1 will eat them anywhere!	2004-09-00:001-01-01-01-02-02-02-02-02-02-02-02-02-02-02-02-02-
2024-03-0172:40:52.3462, ACK, 328 ACK sent for pecket sequence number: 328 Received packet for outfield: /green/egg/ham.txt 2024-03-0172:40:52.3472, UATA, 330 Received data: 1 do so 10:10	2024-03-01722:40:52.349Z, AOX, 328 ACX sent for packet sequence number: 328 Received packet for outfield: /green/egg/ham.txt 2024-03-01722:40:52.350Z, DATA, 330 Received data: I do so like	2024-03-0172:40:52.3662, ACK, 328 ACK sent for packet sequence number: 328 Roccived packet for outfield: /green/egg/ham.txt 2024-03-0172:40:52.3612, UATA, 330 Roccived data: I do so Like	2024-03-03T22:40:52.3462, ACK, 328 ACK sent for packet sequence number: 328 Roccieved packet for outfields /green/egg/ham.txt 2024-03-03T22:40:52.3422, DATA, 330 Roccieved data I do so Uike	2004-98-94 (1991-2) July 3.20, 327, 329, 332 Received administrative for superior sulls3 332 Received administrative for superior sulls3 Received administrative for superior sulls3 Received administrative for superior sulls7 304-98-94 (1991-98)-95 (1914-32), 329, 339, 334 Received administrative for superior sulls7 334 Received administrative for superior sulls7 334 204-98-94 (1991)-95 (1992) (1914-33), 333, 334, 334, 334, 334, 334, 334,
2024-03-04172::00:52.3472, ACX, 338 ACX sent for packet sequence number: 338 Received packet for outfield: /green/egg/ham.txt 2024-03-04172::00:52.3482, OATA, 332 Received datus green eggs and ham!	2024-03-03T22-045-52.350Z, ACK, 330 ACK sent for packet sequence number: 330 Received packet for outfield: /green/egg/ham.txt 2024-03-03T22:405-52.351Z, DaTA, 332 Received data: green eggs and hun!	2024—83-6172-246:52.3612, ACK, 338 ACK sent for packet sequence number: 338 Roccived packet for outfield: /green/egg/ham.txt 2024—83-8172-246:52.3622, ACM, 332 Roccived data: green eggs and ham:	2024—83-0172:246:52.3422, ACK, 338 ACK sent for packet sequence number: 338 Received packet for outfields; /green/egg/ham.txt 2024—83-0172:246:52.3472, DATA, 332 Received data: green eggs and ham:	Received accounted on the commence sucher: 398 2040-88-08705-68450 DATA 339, 331, 332, 335 Received accounted opened for sequence sucher: 336 Received acconsiderated for sequence sucher: 336 Received acconsiderated for sequence sucher: 337 2024-63-02705-6855 DATA 332, 333, 334, 338 Received acconsiderated for sequence sucher: 337 Received acconsiderated for sequence sucher: 336 Received acconsiderated for sequence sucher: 336
2024-03-01T2:40:52.349Z, ACK, 332 ACK sent for packet sequence number: 332 Roccived packet for outfalds: /green/egg/ham.txt 2024-03-01T2:140:52.349Z, DATA, 334 Roccived data: Thank you	2824-83-81722:48:52.351Z, AOX, 332 ACX sent for publet sequence number: 332 Received publet for outfield: /grosen/egg/ham.txt 2824-83-81722:48:52.355Z, DMTA, 334 Received data: Thank you!	2824-83-0172:48:52.3622, ACK, 332 ACK sent for packet sequence number: 332 Roccived packet for outfield: /green/cgg/ham.txt 2824-83-8172:48:52.3632, DATA, 334 Roccived data: Thenk you!	2024-03-01T22:40:52.3472, ACK, 332 ACK sent for packet sequence number: 332 Roccived packet for outfield: /green/egg/ham.txt 2024-03-01T22:40:52.3482, DATA, 334 Roccived data: Thank you!	rectived advisor-deginent for separate number; 336 Rectived advisor-deginent for separate number; 336 Rectived advisor-deginent for separate number; 338 Rectived advisor-deginent for separate number; 338 Rectived advisor-deginent for separate number; 338 Rectived advisor-deginent for separate number; 336 Rectived advisor-deginent for separate number; 334 Rectived advisor-deginent for separate number; 334 ROM-48-8-1078-68-52 DATA 334, 335, 338, 338, 388
2024-03-0172:40:52.349Z, ACK, 334 ACK sent for packet sequence number: 334 Received packet for outfaled: /green/egg/hom.txt 2024-03-0172:40:52.351Z, DATA, 336 Received data: Thank you, Sam-E-ami	2024-03-01722:40:52.355Z, AOX, 334 ACK sent for packet sequence number: 334 Received packet for outfield: /green/egg/ham.txt 2024-03-01722:40:52.357Z, DATA, 336 Received data: Thank you, Sam-1-ami:	2024-03-0172:40:52.3632, ACK, 334 ACK sent for packet sequence number: 334 Roccived packet for outfield: /green/cgg/ham.txt 2024-03-0172:40:52.3642, DATA, 336 Roccived data: Thenk, you, Sam-1-am!	2024-03-01T22:40:52.3482, ACK, 334 ACK sent for packet sequence number: 334 Rockived packet for outfields /green/egg/ham.txt 2024-03-01T22:40:52.3512, DATA, 330 Rockived data: Thank you, San-1-an!	Received acknowledgment for sequence number: 322 2024-03-02706:40:52.0ATA 322, 323, 324, 328 Received acknowledgment for sequence number: 336 Received acknowledgment for sequence number: 324 2024-03-0706:40:62:50:ATA 324, 325, 326, 339
2024-03-0172:40:52.3512, ACX, 336 ACX sent for packet sequence number: 336 ACX sent for packet sequence number: 336 Received packet for outfield: /green/egg/ham.txt End of transmission signal received, entering the pass 2.3552, DXTA, 336 Received data: Thank you, Sam-E-an!	2024-83-01722:48:52.3572, ADX, 336 ADX sent for packet sequence number: 336 Reccived posicle for outfield: /green/egg/ham.txt End of transmission signal received. entering the path 2024-83-01722:40:52.3582, DATA, 336 Reccived data: Thank you, Sam-1-am!	2824-83-8172:48:52.8642, ACK, 336 ADK sent for packet segamen unaber: 336 Received packet for outfields /green/egg/ham.txt End of transmission signal received. entering the path 2824-83-8172:4812.3652, DATA, 336 Received data: Thank you, Sam-I-am!	2824-83-8172:48:52.2512, ACK, 336 ACK sent for packet sequence number: 336 Received packet for outfields / green/egg/ham.txt End of transmission signal received. entering the path 2824-83-8172:48:22.3552, DATA, 336 Received data: Thank you, San-I-am!	Received actions indigently for insquired mishers 126 for the control of the cont
2024-03-0172:40:52.3552, ACK, 336 ACK sent for packet sequence number: 336	2824-83-81722:48:52.3587, ACK, 336 ACK sent for packet sequence number: 336	2824-83-81722:48:52.3652, ACK, 336 ACK sent for packet sequence number: 336 []	2824-83-81T22:48:52.3552, ACK, 336 ADK sent for packet sequence number: 336	Received acknowledgment for sequence number: 334 2024-03-02706:40:52 DATA 334, 335, 336, 340 Received acknowledgment for sequence number: 336 -bash-4-25 []

Time-out and Re-send Detection

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Timeout occurred. Retry #1
Retransmitting window starting from sequence number: 0
Sending packet with sequence number: 1
Timeout occurred. Retry #2
Retransmitting window starting from sequence number: 0
Sending packet with sequence number: 2
Timeout occurred. Retry #3
Retransmitting window starting from sequence number: 0
Sending packet with sequence number: 3
Timeout occurred. Retry #4
Retransmitting window starting from sequence number: 0
Sending packet with sequence number: 4
Timeout occurred. Retry #5
Retransmitting window starting from sequence number: 0
Sending packet with sequence number: 5
Timeout occurred. Retry #6
Retransmitting window starting from sequence number: 0
Sending packet with sequence number: 6
-bash-4.2$ 🗌
```

Detects Valid Window Size

-bash-4.2\$./myclient 1 ../server.conf 512 -10 /afs/cats.ucsc.edu/users/c/dyu40/infile/text.tx /joe/mama/epic.txt Client_Error: Invalid window size value

Detects Valid MTU

-bash-4.2\$./myclient 1 ../server.conf 0 10 /afs/cats.ucsc.edu/users/c/dyu40/infile/text.txt /joe/mama/epic.txt Client_Error: Invalid MTU value

Detects if infile does not exist

-bash-4.2\$./myclient 1 ../server.conf 512 10 /afs/cats.ucsc.edu/users/c/dyu40/infile/text.tx /joe/mama/epic.txt Client_Error opening input file -bash-4.2\$ []

./myclient 1 ../server.conf 2 5 /afs/cats.ucsc.edu/users/c/dyu40/infile/cat.txt /green/egg/ham.txt

./myclient 3 serv.conf 512 10 dir/testfile outfile Resources Used

Sources

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 $\frac{https://jamboard.google.com/d/14Ppwl41SwMoU78i4by7-R2bM3jPh2oUD9nAdkSXr7wY/edit?usp=sharing}{}$

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