COMP 8005 Final Project Pseudocode

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port_fwd

main function

Thread dedicated to writing program information to file.

Open defined port forward table file descriptor
Loop through port forward table lines
Parse line and store in a PortForward array (forwarded port, server port, server address)
Close defined port forward table file descriptor
Setup signal handler to close socket when CTRL-c is received
For each PortForward entry
Create stream socket
Reuse address socket option
Bind address to socket
Make socket fd non-blocking
Listen for connections on socket file descriptor
Store socket fd with its PortForward information
Initialize output pipe
Create 8 threads running epollMethod
Create 1 thread running acceptMethod
Open/initialize file for output
Loop forever
Read output pipe
Write pipe data to output file

acceptMethod function

Thread function dedicated to accepting new connections.

Parameter: thread_index

Initialize epoll fd
Add each stream socket to epoll loop
Loop forever
Wait for epoll event to trigger
Loop for all responsive file descriptors
Check for epoll error
If fd is a stream socket
Run setupConn function to get client and server fd

Find worker thread with least connections
Write client and server fd to found worker thread pipe

epollMethod function

Thread function dedicated to handling port forwarding.

Parameter: thread_index

Initialize worker thread pipe
Make reading worker thread pipe non-blocking
Initialize epoll fd
Add each stream socket to epoll loop
Loop forever
Wait for epoll event to trigger (non-blocking)
Loop for all responsive file descriptors
Check for epoll error
If fd is a stream socket
Run setupConn function to get client and server fd
Add client and server fd to epoll
Non-stream socket fd
Run forward function sending fd
If read client fd from worker thread pipe
Wait until read server fd from worker thread pipe
Add client and server fd to epoll

forward function

Function that receives incoming data, forwards it to port forward destination, and writes details to output pipe.

Argument: recv_fd, thread_index

Get associated client/server fd from connection array (using event fd)
Try to receive data from fd
If no data was received, close connection and associated client/server fd connection
Continue to receive data from fd until buffer is full or entire message is received
Send buffer data to associated client/server fd
Process forwarding details and write to output pipe

setupConn function

Function that accepts a connection from a fd port found on port forward table. Connects to associated destination server found on port forward table. Associates connection details with each other.

Argument: config_index, *new_fd

Modifies *new_fd

Accept new client connection
Make client fd non-blocking
Check PortForward array for matching port
Connect to matching server port and address
Make server fd non-blocking
Store in connection array at server fd index: Client flag, client fd
Store in connection array at client fd index: Server flag, server fd
Set new_fd to hold client fd and server fd