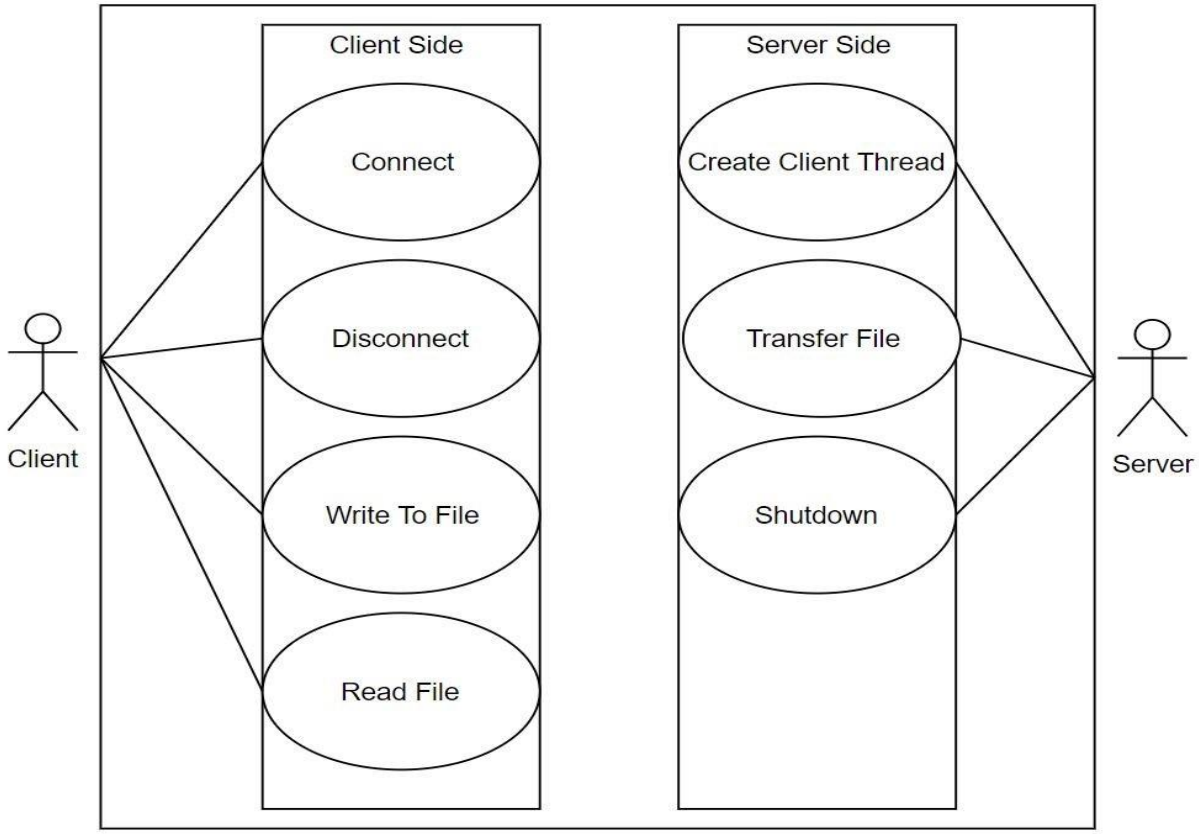
Use Case Diagram



Read File

Description: User requests to read file from server

Actor: User/client

Precondition:

512 byte array must be available for transferring

User must have established a connection to the server

Assumptions: File must exist

Main Sequence:

1. Client sends a read request with file name to the server
2. Server checks validity of request
3. If it is valid it send back the data block number
4. Client sends data back in block of 512 bytes(max size) can be smaller
5. Step 3 and 4 happen until the entire file is read in

Post Condition: Entire file must be read in

Alternate Sequence:

If invalid request, server disconnects from user

If server does not receive ACK packet during transfer after certain time, the most recent data packet is resent.

If server receives duplicate ACK packet, it is ignored

Write to File:

Description: Client requests file for reading from server

Actor: User/Client

Precondition:

User is connected to Server

512 byte array must be available for transferring

Assumptions:

Main Sequence:

1. Client sends a write request to the Server
2. Server checks validity of request
3. If valid, server sends an acknowledgement 0 to the client
4. User sends the file information that is being written in blocks of 512 bytes
5. Once the data is received the server sends acknowledgements
6. Steps 4 and 5 loop through until the entire file is written

Post Conditions: The entire file must be written in

Alternate Sequence:

If invalid request, server disconnects from user

If client does not receive ACK packet during transfer after certain time, the most recent data packet is resent.

If client receives duplicate ACK packet, it is ignored

Delay Packet

Description: Error Simulator delays the transfer of a specified packet by a set time

Actor: Error Simulator

Precondition:

Client and Server are transferring files through the Error Simulator

Assumptions:

Main Sequence:

1. Error Simulator receives packet during transfer
2. Error Simulator checks if packet is the desired packet
3. If desired packet, Error Simulator sleeps for set amount of time
4. Error Simulator continues transfer

Post Conditions: Transfer continues normally, system recovers from delayed packet

Lose Packet

Description: Error Simulator loses a specified packet during transfer

Actor: Error Simulator

Precondition:

Client and Server are transferring files through the Error Simulator

Assumptions:

Main Sequence:

1. Error Simulator receives packet during transfer
2. Error Simulator checks if packet is the desired packet

3. If desired packet, Error Simulator skips transfer
4. Error Simulator waits for data packet
5. Either Client or Server resends most recent data packet after timeout
6. System continues transfer

Post Conditions: Transfer continues normally, system recovers from lost packet

Duplicate Packet

Description: Error Simulator duplicates a specified packet and transfers both to the corresponding actor

Actor: Error Simulator

Precondition:

Client and Server are transferring files through the Error Simulator

Assumptions:

Main Sequence:

1. Error Simulator receives packet during transfer
2. Error Simulator checks if packet is the desired packet
3. If desired packet, Error Simulator creates duplicate
4. Error Simulator passes both packets to corresponding Actor
5. Either Client or Server receives duplicate packets
6. Client or Server

Post Conditions: Transfer continues normally, duplicate packet is handled