Implement Stop and Wait Protocol.

#include <stdio.h>

#include <stdlib.h>

#include <unistd.h> // For sleep function

#include <time.h> // For random number generation

void sender();

void receiver(int frame);

int main() {

srand(time(0)); // Seed for random number generation

sender();

return 0;

}

void sender() {

int frame = 0; // Initial frame number

char ack;

int timeout;

while (frame < 5) { // Simulating 5 frames to be sent

printf("Sender: Sending frame %d\n", frame);

// Simulating packet loss with a 30% probability

if (rand() % 10 < 3) {

printf("Sender: Frame %d lost! Resending...\n\n", frame);

sleep(1);

continue;

}

receiver(frame); // Call receiver function

// Simulating waiting for acknowledgment with timeout

timeout = rand() % 10; // Random timeout event (0-9)

printf("Sender: Waiting for acknowledgment...\n");

sleep(1);

if (timeout < 2) { // Simulating timeout with 20% probability

printf("Sender: Timeout occurred! Resending frame %d\n\n", frame);

continue;

}

printf("Receiver: Enter 'y' to acknowledge frame %d: ", frame);

scanf(" %c", &ack);

if (ack == 'y' || ack == 'Y') {

printf("Sender: Acknowledgment received for frame %d\n\n", frame);

frame++; // Send next frame

} else {

printf("Sender: Acknowledgment not received. Resending frame %d\n\n", frame);

}

}

}

void receiver(int frame) {

printf("Receiver: Frame %d received successfully.\n", frame);

}