#include <stdio.h>

#include <stdlib.h>

#include <time.h>

#define ll long long int

// Function for frame transmission and acknowledgment

void transmission(ll \*i, ll N, ll tf, ll \*tt) {

while (\*i <= tf) {

int z = 0;

// Sending frames within the window size

for (ll k = \*i; k < \*i + N && k <= tf; k++) {

printf("Sending frame %lld \n", k);

(\*tt)++;

}

// Simulating acknowledgments and timeouts

for (ll k = \*i; k < \*i + N && k <= tf; k++) {

int f = rand() % 2; // Random ack success/failure

if (f) {

printf("ack for frame %lld \n", k);

z++;

} else {

printf("Timeout! frame %lld not received \n", k);

printf("Retransmitting window \n");

break; // Break if there's a timeout

}

}

printf("\n");

// Update the starting point for the next set of frames

\*i = \*i + z;

}

}

int main() {

ll tf, N, tt = 0;

srand(time(NULL)); // Initialize random seed

// Input total frames and window size

printf("Enter total number of frames: ");

scanf("%lld", &tf);

printf("Enter window size: ");

scanf("%lld", &N);

ll i = 1; // Starting frame index

transmission(&i, N, tf, &tt); // Call transmission function

// Print total number of frames sent and resent

printf("Total number of frames which were sent and resent are: %lld \n", tt);

return 0;

}