INDEX

NAME: Harish Ragavendar. S. STD.: SEC.: ROLL NO.: 220701087 SUB.: Computer Network Observatio

Exp No: 07
Date :

Sliding Window Protocol.

Aim :
To write a program to achieve sliding window protocol for achieving packet transmission without packet loss.

Algorithm:

step 1: Initialize variables to set # of sent packet to 0, total packets to total # of packets to be sent, set window_size (according to window size needed).

step 2: loop until all the packets are sent, while (sent_packets < total_packets).

step 3: wait for acknowledgement from the receiver function and if acknowledgement is received send next packet

step 4: Else resend the packet.

step 5: Do the above steps for all packets, till all packets are sent

step 6: End.

Program:

```
import random
import time

def string_to_bits(message):
    return "".join(message[i] for i in range(len(
        message)))
def create_packets( bit_string, packet_size=1):
    list = []
    for i in range( 0, len(bit_string), packet_size)
        list.append( bit_string [i: i+ packet_size])
    return list .
def sender( window_size, packets):
    sent_packets= 0
    total_packets = len(packets).

    while f sent_packets < total_packets :
        print( f "sender: Sending packet {
sent_packets+1}:{ packet[sent_packets ]}")
        ack_received = receiver (sent_packets,
    packets [sent_packets])
        if ack_received ==-1 :
            print ("Sender: TimeOut ! Resending
                packet")
```

```
else
    print (f " Sender: Acknowledgement received
    for packet { sent_packets + 1 }")
    sent_packets + = 1

def receiver ( packet_num, packet_data ) :
    time.sleep ( 0.5 )
    if random.random () < 0.4 :
        print~~f~~ (f " Receiver : Packet { packet_num
        + 1 } lost! ")
        return -1

    else :
        printf ( f " Receiver ; Packet { packet_num+1 }
    received : { packet_data } ")

        return packet_num.

message = input ( " enter the message" )
bit_string = string_to_bits ( message)
packets = create_packets ( bit_string)

print ( f ' Original Message : { message } " )
print ( f " Bit string : { bit_string } " )
print ( f " Packets : { packets } " )
Window_size = input (" enter the window size:" )
Sender ( window_size, packets ) .
```

Output:

```
Enter the message: Hello.
Enter the window size: 2
packets: ['H', 'e', 'l', 'l', 'o']
Sender: sending packets: 'H' 1 sent
Sender: sending packets: 'e' 2 sent
Receiver: 1 packet Received
Sender: Acknowledgement received for packet 1.
Receiver: 2 packet received
Sender: Acknowledgement received for packet 2
Sender: Sending packets: 'l' 3 sent
Sender: sending packets: 'l' 4 sent
Receiver: 3 packet Received.
Receiver: 4 packet Received.
   :
Code terminated successfully
```

Result:

This the program for sliding window protocol is successfully executed & verified

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