step read from file fr (warms)

write a program to implement flow control at data link Am: using sliding window protocol. Simulate the flow of frames from one node to another.

Program should achieve afteast below requirements. You can make it a bidirectional program wherein receiver is sending its forething some prison of the data. water to file (cender lugger + 1006; window)

Program:

sender.py

import time

import os

def input. window. strel):

return int (input ("Enter window size: "))

def input text_message ():

verom input ("Entertext message:")

des create-frames (text-message):

frames=[(i,char)for i, char in enumerate (text'message)]

frames - append ((un (text mexage), 'END'))

octum frames

def worte to file (filename, data):

with open (filename, 'w') as file;

for frame in data:

file write (f "Iframe [0] }, {frame[]]}\n")

```
if not as path exists (filename):
  def read from file (filmame):
  with open (filename, 'v') as file .
    servan [line ship!) split (). )
for line in file-realines U minu (i.ze):
                                        sin on add in motion
def sond frames (frames, windowsize):
                          negrum should achieve effect of
 while izlen (frames):
  while izlentrames.

window = frames [i: i+ window size]

window = frames [i: i+ window size]
 printf "sending frames: foundaring")
 write to file ('sender buffer. toxt', window)
 time. slep13)
 if_name == "__main_-
   main_sender()
                                       hout window size 1):
 receiver-py
  import random (" ! 3 7 is wallow is to full of fugue) the usual
 import time
                                        mount least message ():
 def witho_to_file (filename, data) is not so the file filename
   with open (Hilmane, 'w') as file : german sufferment show
     file. write (data) of storming in so i so (sobjection
 def read-from file (filename):
    if not as path. exists (filename):
                                                     in frames
      return []
  with men (filoname, 'r') as file;
    return [line. 8trip 1), split (3) for line was colif of ototion
 in file. readlines ()]
                                          for frame in data:
                leto was a 1 " Language 1 of 2 State also
```

```
def process frames (frames):
      acks=[]
    frame_seen = set()
   for frame in frames:
     frame number = int (frame [0])
   if frame number in frame seen:
       continue
 def main receiver ():
  while True:
       time.sleep(3)
  framer = read from file ('sender Buffer.txt')
  if not frames:
                                                     sording act
    print ("No Frames")
                                           Bu of Darmining
    continue.
 actu = process frames ('frames')
                                             O WILLIAM
write_to_file ('Receiver'. tet', acts)
 0/P:
    sender. Py
Enter Window Size: 3
finter text message! hello
serding frames: [(0,'h') (1, e') (2, '1')]
Ach received for frame o
sending frames: [(3,'1').(4,0')(5, E')
 Ack received for frame 1.
```

receiver.py No frames to process, waiting. Received Frame o. h (Lange and read (Lame [0]) sencling Ack . Was number in rapiding minutes Received frame 1:0 sonding ACK Received frame 2:1 sending Ack Received frame 3:1 sending ACK mer react from tile (, sender Butter txt) Received frame 4:0 of frames: sending ACK era of transmission. No Frames Result: Thus the program was successfully executed