11/09/2024

Practical -7

AIM: Write a program to implement flow control at data link layer using SLIDING WINDOW PROTOCOL. simulate the flow of frames from one node to another.

Program Code

```
import os

def create_frames(message):
    frames = []
    for i, char in enumerate(message):
        frames.append({'Frame_No': i, 'DATA': char})
    return frames

def sender(frames, window_size, start_frame):
    sent_frames = []
    for i in range(start_frame, len(frames),
                   window_size):
        window_frames = frames[i:i+window_size]
        print(f"Sent frames: {window_frames}")

        with open('sender_Buffer.txt', 'w') as sender_file
            for frame in window_frames:
                sender_file.write(f"{frame['Frame_No']}
                                  {frame['DATA']}\n")

        with open('Receiver_Buffer.txt', 'w') as
                                        receiver_file:
            for frame in window_frames:
                receiver_file.write(f"{frame['Frame_No']}
                                    \n")
        save_last_frame(window_frames[-1]['Frame_No'
        input("Press Enter to run the receiver...")
        if not receiver():
            print("NACK received: Frame mismatch detected.")
        break
    return sent_frames
```

```
def receiver():
    with open('sender_Buffer.txt', 'r') as sender_file:
        sender_frames = [line.split()[0] for line in
                         sender_file.readlines()]

    with open('Receiver_Buffer.txt', 'r') as receiver_file:
        receiver_frames = [line.strip() for line in
                           receiver_file.readlines()]

    if sender_frames != receiver_frames:
        return False

    else:
        print("Frames received correctly, sending ACK!")
        return True

def save_last_frame(last_frame_no):
    with open('Last_Frame.txt', 'w') as f:
        f.write(str(last_frame_no))

def load_last_frame():
    if os.path.exists('Last_Frame.txt'):
        with open('Last_Frame.txt', 'r') as f:
            content = f.read().strip()
            if content.isdigit():
                return int(content) + 1
    return 0

def main():
    window_size = int(input("Enter window size: "))
    message = input("Enter text message: ")
    frames = create_frames(message)
    start_frame = load_last_frame()
    sender(frames, window_size, start_frame)

if __name__ == "__main__":
    main()
```

Output

```
Enter window size : 4
Enter text message : rajalakshmi
Sent frames : [{'Frame_No':0, 'DATA':'r'}, {'Frame_No':1, 'DATA':'a'}, {'Frame_No':2, 'DATA':'j'}, {'Frame_No':3, 'DATA':'a'}]
Press Enter to see the receiver...
Frames received correctly, sending ACKs
```

Result

Thus, a program to implement flow control at data link layer using sliding window protocol has been written and successfully executed and the output is verified.

14/9/24