<h1 style="text-align:center">EXPERIMENT-7</h1>

Write a Program to implement Sliding window protocol for Selective repeat.

What is Sliding Window Protocol?

Sliding Window Protocol is a method of flow control in Computer Network, where multiple frames can be sent before requiring an acknowledgment (ACK). It uses a window to keep track of sent and acknowledged frames.

What is Selective Repeat ARQ?

Selective Repeat ARQ (Automatic Repeat request) is a type of error control protocol in which:

- The sender can send **multiple frames** at once (up to the window size).

- The receiver individually acknowledges **each correct frame**.

- If a frame is **lost or corrupted**, only **that specific frame** is **retransmitted**, not the whole window.

Sender Side:

- Maintains a **sending window** of N frames.

- Sends frames within the window without waiting for ACKs.

- On receiving ACKs, it **slides** the window forward.

- If a NACK (negative ACK) or timeout occurs, **only that frame is resent.**

Receiver Side:

- Maintains a **receiving window** of size N.

- Accepts frames **out of order**.

- Stores received frames in buffer and sends ACK for each.

- When the **missing frames arrive**, they are placed in the correct order

Program

```
#include <stdio.h>
void main()
{
int windowSize, totalFrames, sent = 0, ack,i;
clrscr();
printf("Enter total number of frames to send: ");
scanf("%d", &totalFrames);
printf("Enter window size: ");
```

```c
scanf("%d", &windowSize);
while (sent < totalFrames)
{
  printf("\n--- Sending Window ---\n");
  // Send frames in the current window
  for (i = 0; i < windowSize && sent+i < totalFrames; i++)
  {
    printf("Frame %d sent.\n", sent + i);
  }
  // Receive ACKs manually (simulate loss or success)
  for (i = 0; i < windowSize && sent < totalFrames; i++)
  {
    printf("Was Frame %d received successfully? (1 = Yes, 0 = No): ", sent);
    scanf("%d", &ack);
    if (ack == 1)
    {
      printf("ACK received for Frame %d\n", sent);
      sent++;
    }
    else
    {
      printf("NACK received for Frame %d will resend.\n", sent);
      // Don't move the window forward for NACK
      break;
    }
  }
}
printf("\nAll frames sent and acknowledged.\n");
getch();
}
```

Output

```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip  0, Program:    TC      —    □    ×
Enter total number of frames to send: 5
Enter window size: 3

--- Sending Window ---
Frame 0 sent.
Frame 1 sent.
Frame 2 sent.
Was Frame 0 received successfully? (1 = Yes, 0 = No): 1
ACK received for Frame 0
Was Frame 1 received successfully? (1 = Yes, 0 = No): 1
ACK received for Frame 1
Was Frame 2 received successfully? (1 = Yes, 0 = No): 1
ACK received for Frame 2

--- Sending Window ---
Frame 3 sent.
Frame 4 sent.
Was Frame 3 received successfully? (1 = Yes, 0 = No): 1
ACK received for Frame 3
Was Frame 4 received successfully? (1 = Yes, 0 = No): 1
ACK received for Frame 4

All frames sent and acknowledged.
_
```