CS2105
Problem Set 3
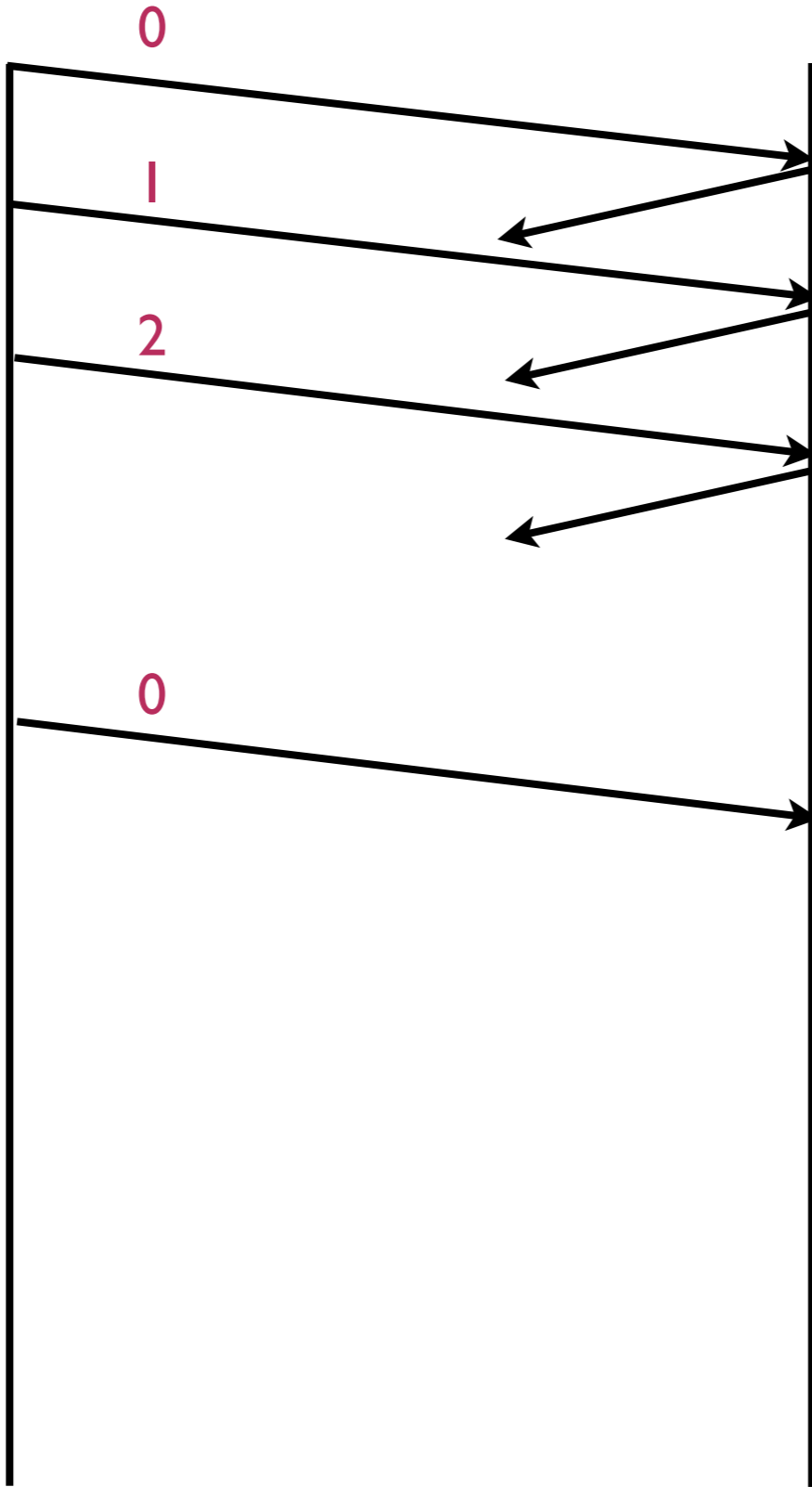# Question 5

Consider Selective Repeat with window size of 3 and sequence number {0, 1, 2, 3}.

0 1 2 3 0 1 2 3

0

0 1 2 3 0 1 2 3

1

0 1 2 3 0 1 2 3

2

0 1 2 3 0 1 2 3

0 1 2 3 0 1 2 3

0 1 2 3 0 1 2 3

0

0 1 2 3 0 1 2 3

sender's window
does not move since
no ACK received
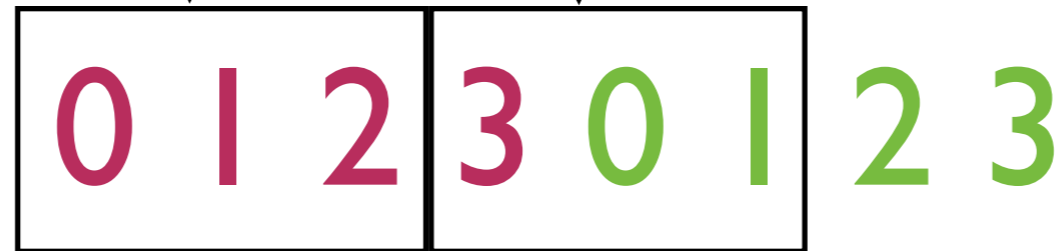
receiver cannot
distinguish between
red 0 or green 0

sender's window:
what the sender can send.

receiver's window:
new packets the receiver expects

0 1 2 3 0 1 2 3

sender's window:
what the sender can
send.

receiver's window:
new packets the
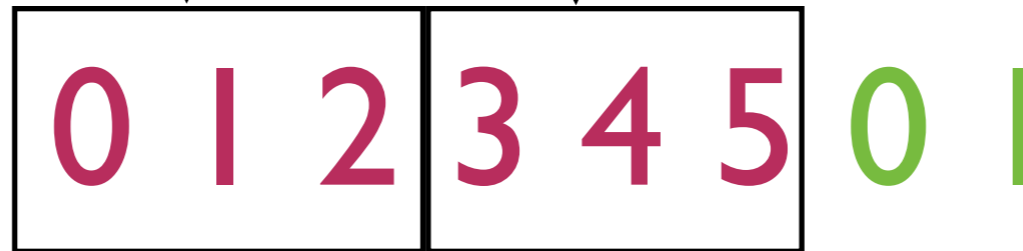receiver expects

0 1 2 3 0 1 2 3
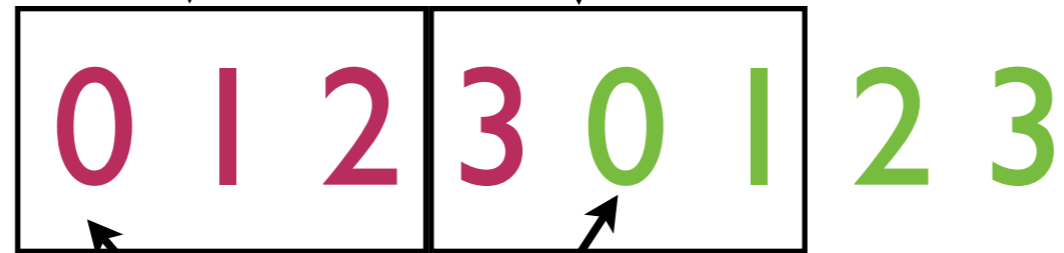
Different 0s appear in
sender's window and
receiver's window!
Sender can retransmit
red 0 but confused to be
a green 0

Let's make the sequence number range the same as the **sum** of sender window size and receiver window size.

sender's window:
what the sender can send.

receiver's window:
new packets the receiver expects

0 1 2 3 4 5 0 1

sender's window:
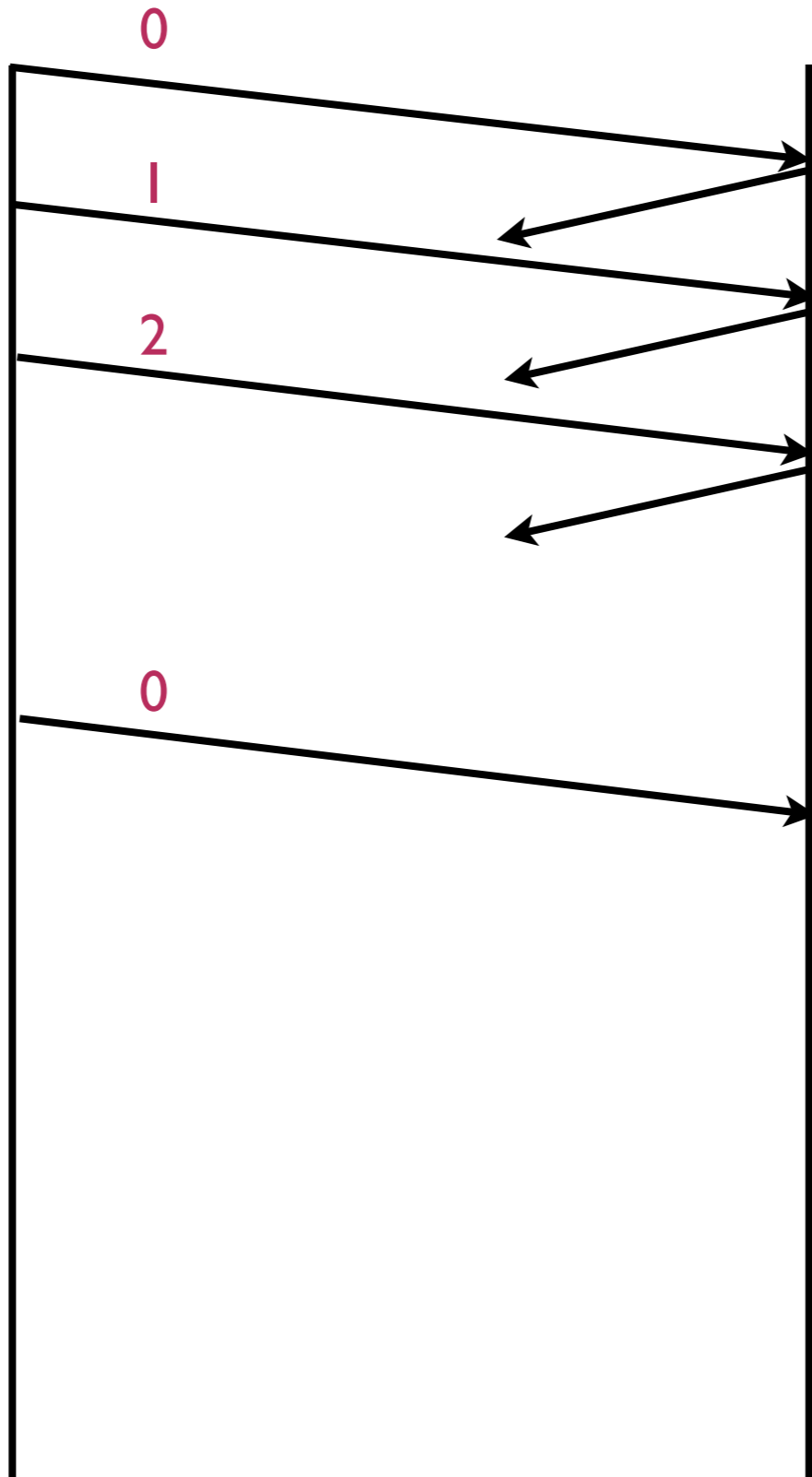what the sender can send.

receiver's window:
new packets the receiver expects

0 1 2 3 4 5 0 1

0 appears once! Sender can retransmit red 0 but receiver won't confuse it to be green 0 (which is outside the receiver's window and thus not expected yet). So receiver would know it must be a retransmission.

0 1 2 3 4 5 0 1

0

0 1 2 3 4 5 0 1

1

0 1 2 3 4 5 0 1

2

0 1 2 3 4 5 0 1

0 1 2 3 4 5 0 1

0 1 2 3 4 5 0 1

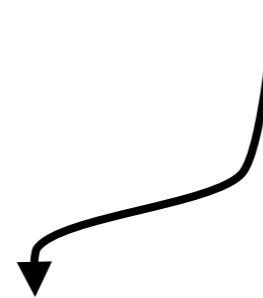0

0 1 2 3 4 5 0 1

0 1 2 3 4 5 0 1

Sender's window
does not move since
no ACK received

Receiver knows 0 is
a retransmission.
Note: sender cannot
send green 0 until red
3 is acknowledged,
and receiver has not
send ACK 3 yet.

Therefore, the number of sequence numbers must be at least **2W** for SR and **W+1** for GBN.

The window is empty.

Puzzle for Geeks:

0 1 2 3 4 5 0 1

Guess a famous Star Wars quote.

"Red Five Standing By"