

00:56

## CHECKSUM

Checksum = Check + sum.

Sender side – Checksum Creation.

Receiver side – Checksum Validation.

NESO ACADEMY

02:18

## CHECKSUM – OPERATION AT SENDER SIDE

1. Break the original message in to 'k' number of blocks with 'n' bits in each block.
2. Sum all the 'k' data blocks.
3. Add the carry to the sum, if any.
4. Do 1's complement to the sum = Checksum.

NESO ACADEMY

05:34

## CHECKSUM – EXAMPLE

	10011001	11100010	00100100	10000100				
Carry		1	1	1	1			
		1	0	0	0	0	1	0
		0	0	1	0	0	1	0
		1	1	1	0	0	0	1
		1	0	0	1	1	0	0
		0	0	1	0	0	0	1
	1	0						



NESO ACADEMY

06:16

## CHECKSUM – EXAMPLE

	10011001	11100010	00100100	10000100				
Carry		1	1	1	1			
		1	0	0	0	0	1	0
		0	0	1	0	0	1	0
		1	1	1	0	0	0	1
		1	0	0	1	1	0	0
		0	0	1	0	0	0	1
							1	0
		0	0	1	0	0	1	0
		1	1	0	1	1	0	0




1's Complement

NESO ACADEMY

06:36

## CHECKSUM – EXAMPLE

11011010	10011001	11100010	00100100	10000100				
Carry		1	1	1	1			
		1	0	0	0	0	1	0



0	0	1	0	0	1	0	0
1	1	1	0	0	0	1	0
1	0	0	1	1	0	0	1
0	0	1	0	0	0	1	1
						1	0
0	0	1	0	0	1	0	1
1	1	0	1	1	0	1	0

CHECKSUM

NESO ACADEMY

06:59

## CHECKSUM – OPERATION AT RECEIVER SIDE

- ★ Collect all the data blocks including the checksum.
- ★ Sum all the data blocks and checksum
- ★ If the result is all 1's, ACCEPT; Else, REJECT.

NESO ACADEMY

08:14

## CHECKSUM – EXAMPLE

11011010

10011001

11100010

00100100

10000100

Carry

1

1

1

1

1

1

1

0

0

0

0

1

0

0

0

0

1

0

0

1

0

0

1

1

1

0

0

0

1

0

1

0

0

1

1

0

0

1

1

1

0

1

1

0

1

0

1

1

1

1

1

1

0

1

1

0

1

1

1

1

1

1

1

1

Receiver

08:56

### PERFORMANCE OF CHECKSUM

- ★ The checksum detects all errors involving an odd number of bits.
- ★ It detects most errors involving an even number of bits.
- ★ If one or more bits of a segment are damaged and the corresponding bit or bits of opposite value in a second segment are also damaged, the sums of those columns will not change and the receiver will not detect the error(s).