

Telematics Homework #7

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Port numbers

- Consider a UDP connection between Host A and Host B. Suppose that the UDP segments traveling from Host A to Host B have source port number 8118 and destination port number 5875. What are the source and destination port numbers travelling from Host B to Host A?
- Vice versa: Host B source port: 5875, Host A destination port: 8118

Checksums

- UDP and TCP use 1s complement for their checksums. Suppose you have the following three 8-bit bytes: 01010011, 01010100, 01110100.
- Solution: 1. Sum up the three bytes:

```
  01010011
  01010100
  01110100
  -----
  100011011
```

Checksums cont'd

- Add the carry bit to sum 100011011:

$$\begin{array}{r} 00011011 \\ 00000001 \\ \hline 00011100 \end{array}$$

- Complement: 11100011

- Error detection:
$$\begin{array}{r} 00011100 \text{ (sum)} \\ 11100011 \\ \hline 11111111 \end{array}$$

Checksums cont'd

- Detection of 1 bit error: Sum will be changed
- Detection of 2 bit error: 2 Bits at exact same positions can equal each other out:

$$\begin{array}{r} 01010010 \\ 01010100 \\ 01110101 \\ \hline 100011011 \end{array}$$

Reliable Data Transfer

- Is it possible for an application to enjoy reliable data transfer even if the application runs over UDP? If so, how? Name and explain the methods.
- Solution: Has to be solved in the application layer: Application layer protocol with e.g., ACKs, NACKs, and re-sending of packets.

Thank you

Any questions?

