Exercise 2

CRC

```
0101 1101 1010 0101 1110 0000 000
                              1110
 110 1                        1101
                              0011 00
 011 01                         11 01
                                00 010
  11 01
  00 0001 101
         1 101
         0 0000 0101 1
                  110 1
                  011 01
                   11 01
                   00 0010 00
                      11 01
                      01 010
```

Link layer purpose

- Transmits dataframe from one hop to another adjactant hop.
- Uses framing, may implement error detection, correction and/or reliable data transfer mechanisms
- Takes care of multiple access to shared media

ARP

- If you want to connect to a host outside your LAN, your PC uses the default gateway to route the packet.
- Therefore, ARP resolves the IP address of the router to a MAC address (broadcasts: Who has message and receives an unicast reply)
- IP packet destinated to real dest IP is encapsulted into layer 2 packet destined to the router.

MAC vs. IP

- MAC address is a unique, flat identifier
- MAC address is bound to hardware and therefore remains constant (e.g., in mobility cases)
- IP is hierachically structured and aggregatable (meaning: you can make a decision like: all packets for 134.76.XXX.XXX should go to Göttingen University)

Ethernet exponential backoff

- Element of randomness as exponent is randomly chosen
- Exponential should allow to adapt to different network loads quickly:
  - If load is low, backoff only a bit
  - If load is very high, don‘t create too many collisions by trying to often