Bus Systems

Exercise 2

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Exercise 2

Modulation

- Consider bit sequence 1 1 0 0 1 0 1
  - Explain concepts of ASK, FSK, PSK with that bit sequence
  - Do an example modulation of that bit sequence for ASK, FSK, PSK

Line Coding

- Consider (again) bit sequence 1 1 0 0 1 0 1
  - Encode the Signal using bipolar and manchester 2 encoding

Exercise 2

Fourier Transformation

- Consider signal s(x) = sin(x) → Unmodulated carrier signal
  - What is the spectrum of an unmodulated carrier signal?
  - How does the spectrum change when data is modulated on a carrier?

- Signal spreading
  - What is a narrow band signal?
  - How is a signal converted from narrow band signal to wideband signal?
  - Why are wideband signals preferred in wireless networks?

Exercise 2

CAN Bus

- Create a state machine that describes the CAN bus arbitration
  - The currently transmitted bit is indicated via input signal *bit*
  - Input signal medium carries the bit that is read back from the medium after transmission
  - The state machine should end either in state tx if the node did win the arbitration or in state defer, if it did loose.
  - Consider only 11 bits of CAN basic frames

- Create a state machine that describes CAN bus bit stuffing
  - The currently transmitted bit is indicated via input signal *bit*
  - Output bits are indicated with output signal *out* that carries a to be transmitted bit value