EEE3096S - Tutorial 2
2023

I2C, BCD, and more!

Submit a single PDF (file should be named "**EEE3096S 2023 Tutorial 2 Hand-in STDNUM001 STDNUM002**") answering the following questions. If you pull from any sources, be sure to correctly cite them.

1 I2C

I2C is a synchronous communication protocol (a common clock signal is used to synchronise the data transfer). It requires only two bus line, SDA (data line) and SCL (Clock line). Each device connected on the bus is identified by its unique address.

1. Give the message structure for I2C protocol when master communicates with slave. [4]
2. Give 2 advantages of I2C over SPI. [2]
3. Describe the start and stop conditions for I2C. [2]
4. Draw a timing diagram showing a Master sending 0b11010101 to slave at address 0b1110000. [6]

2 Binary Coded Decimal (BCD)

1. Explain what Binary Coded Decimal is, and provide an example. [2]
2. Mention one advantage and one disadvantage to using BCD. [2]

3 Unix Epochs

1. Explain briefly what Unix Epoch Time is and why it is used. [2]
2. What is the Epoch Time for 01 January 2023 at 12:00:00 AM (timezone GMT+02:00)? [1]

4 RTS and RISC/CISC

1. What is meant by a “Dynamic, Synchronous" Real-time System? [2]
2. The main differences between RISC and CISC architectures were discussed in lectures. What are the two main discrepancies between these two in terms of instruction set size and memory access for operands? [2]