ELEG5765 Fundamental of Automotive IC
Spring Semester, 2025
Home Work 1
Due date: Feb. 9, 2025

1. Concepts and fundamentals:
   a. What are the characteristics of future automotive compared to the traditional one with fuel engine?
   b. What are the advantages of software defined car?
   c. What are the temperature range of typical consumer, industry and automotive IC, respectively?
   d. What are the key requirements for automotive IC?

2. Draw the diagram of normal CMOSFET and Floating Gate CMOSFET Transistors. Explain briefly how Flash memory stores data.

3. SPI:
   a. Draw the circuit architecture of SPI system with one master and two slave devices connected in daisy chain.
   b. Draw the data transmission timing diagram with clock polarity = 1 and clock phase = 1.

4. Show the steps in vertical format of the following modulo 2 calculation:
   a. 1011 + 1001
   b. 0101 - 1110
   c. 1001 x 1010
   d. 100101101 / 1101