Design Plan

Exercise 4: displaying numerical characters in string on 7-seg.

Subroutines:

1. Read

❖ Set baud rate to 9600
❖ Set control register values to read signals
❖ Poll RDRF (Receive Data Register Full)
  ➢ Use state register to check if serial control is ready to receive.
  ➢ Wait until serial control is ready.

❖ Load string address from data register into index register X.
❖ Store current character at X in accumulator A and increment X.

❖ Compare character in A to null character.
  ➢ If equal, branch to subroutine that completes the string.
  ➢ If unequal, continue looping:

  ➢ Check if character is alphabetical
    ■ If alphabetical, branch to subroutine that converts to uppercase letters.
    ■ If non-alphabetical, continue looping:

    ■ Check if character is numerical.
      ● If numerical, branch to subroutine that sends to serial output.
      ● If non-numerical, continue looping:

      ● Return from subroutine.

2. Send

❖ Set baud rate to 9600
❖ Set control register values to send outgoing signals
❖ Poll TDRE (Transmit Data Register Empty)
  ➢ Use state register to check if serial control is ready to transmit.
  ➢ Wait until serial control is ready.

❖ Load numerical character from register A into data register.
❖ Use data register to send character to serial port.

❖ Return from subroutine.