Serial Unit

Communication protocols are one of the most important topics in embedded systems as they can enable the microcontrollers to exchange data among other microcontrollers and modules.

One of the simplest communication protocols is UART (Universal Asynchronous Reception and Transmission). In this experiment we will connect two Arduino boards using this protocol. One board would generate a random number (based on the background noise received on the ADC) and the other should guess the number. From here after, we will call the first board receiver and the second board sender.

Receiver is responsible for generating a random number between 0-100 and sender is responsible for guessing the number. The algorithm used for guessing the number is binary search. The sender board will send a number to the receiver and waits for the response. The sent number is either lower, higher or equal to the generated number and the receiver should respond to the sent number based on these conditions. The guessing continues until the right number is found by the sender. After the number is found, the receiver will print an appropriate message and the correct number on a LCD.

Proteus components:

SIMULINO UNO(x2), LM016L