ECE-5620, F16   Assignment-3   (100 Points)   Due Date: Nov 21, 2016

This is an Individual Assignment. So each student must show his/her own demo of the assignment to the TA

Step1:
Create a CANoe Database that contains the following objects.
o   Three network nodes (N1, N2, N3)
o   Three messages (msg1, msg2, msg3)
o   Four signals (sig1, sig2, sig3, sig4)
Assign sig1 and sig2 to msg1, sig3 to msg2, and sig4 to msg3. Associate msg1, msg2, and msg3 to N1, N2, and N3 respectively.

Step2:
Use environment variables and panel editor. You need to use the Switch button and the LCD (1 switch button and 2 LCDs).

Step3:
When you change the state of the switch to "**ON**" (by pressing on it), the following procedure starts and continues running as long as the state of the switch remains "**ON**".

o   N1 generates two random numbers *R1* and *R2*. *R1* should be between 1 and 20 ($1 \le R1 \le 20$) and *R2* is either 2 or 3. The node should store the generated numbers R1 and R2 in sig1 and sig2 respectively. The node must wait for 1 second and then send the message to the can bus.
o   Nodes (N2 & N3) receive the message and extract its contents. Based on the content of sig2 (The value of the random number *R2*), the two nodes will take the following actions:
    a.   If *R2* = 2, N2 displays random number *R1* on the LCD, while N3 ignores the message.
        i.   N2 generates a new random number between 1 and 4 ($1 \le RN2 \le 4$), this number defines the decrement step.
        ii.   N2 starts to decrement the received *R1* number by *RN2* every *RN2* second. You need to display the value of the random number after each decrement on the *write* window.
        iii.   When the decrement reaches 0 or less, N2 waits for 14*00 msec.* and then sends a new message with the received *R1* incremented by 1. N1 receives the message and increments a counter *CNT2* by 1 (this counter shows the number of messages received from N2), you can display the content of the *CNT2* on the *write* window.
    b.   If *R2* = 3, N3 displays random number *R1* on the LCD, while N2 ignores the message.
        i.   N3 generates a new random number between 1 and 3 ($1 \le RN3 \le 3$), this number defines the decrement step.

ii. N3 starts to decrement the received *R1* number by *RN3* every *RN3* second. You need to display the value of the random number after each decrement on the *write* window.

iii. When the decrement reaches 0 or less, N3 waits for 14*00 msec.* and then sends a new message with the received *R1* incremented by 1. N1 receives the message and increments a counter *CNT3* by 1 (this counter shows the number of messages received from N3), you can display the content of the *CNT3* on the *write* window.

c. As long as *CNT2* or *CNT3* is less than **6,** N1 keeps generating and sending new messages with new random numbers R1 and R2. If anytime, the switch state is changed to **"OFF"**, the process should stop.