United International University
QUEST FOR EXCELLENCE

Lab Report (Grouped)
Microprocessor and Microcontroller lab
Group: 3 | Section: D

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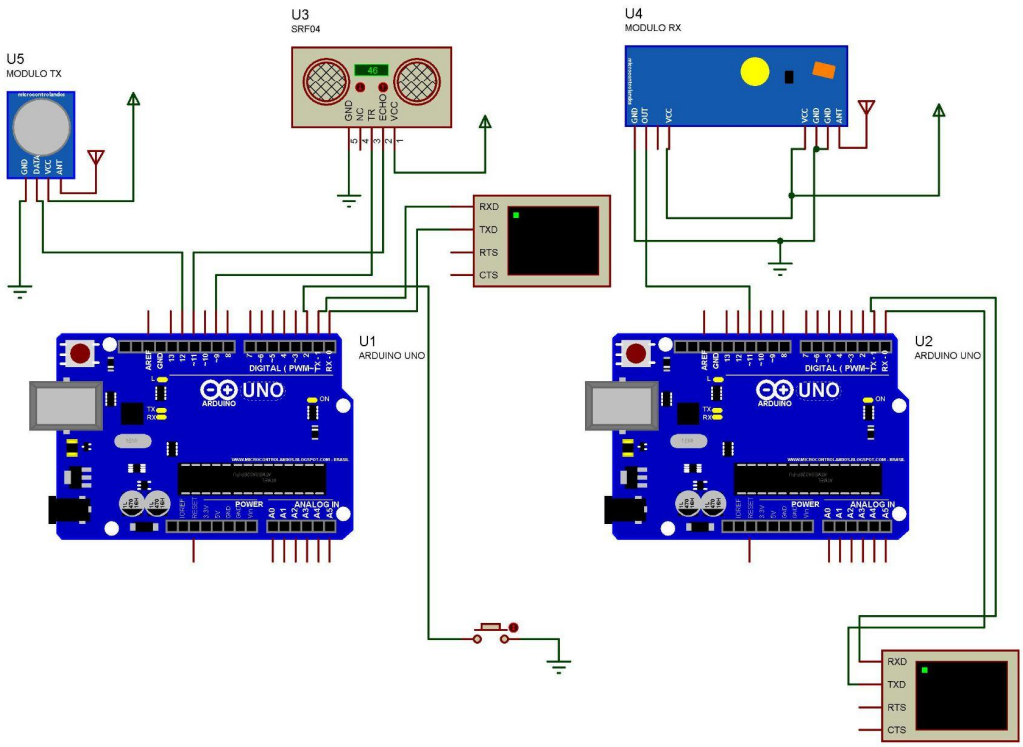
Q.

You are an adventurous person and have gone to find a rare species of spider in the Amazon. Whenever you see a spider from a distance, you push a button that activates an ultrasonic sensor, which then measures the distance between you and the spider. However, the spider is venomous and you don't want it getting too close to you. If it is closer than 500 cm to you, you need to signal your friend via RF transmission that you are in danger by saying "The spider is — cm close to me. Help". The ultrasonic sensor and push button are connected to the master Arduino. Connect a serial monitor to the slave Arduino to check whether the sent message is received properly.

Solve:



Code:

```
//Sender
#include <VirtualWire.h>
char msg[4];

void setup()
{
 Serial.begin(9600);
 vw_set_ptt_inverted(true);
 vw_setup(2000);
 vw_set_tx_pin(12);
 pinMode(9, OUTPUT); // Sets the trigPin as an Output
 pinMode(11, INPUT); // Sets the echoPin as an Input
 pinMode(2, INPUT_PULLUP);
 digitalWrite(9, LOW); // Clears the trigPin
 delayMicroseconds(2);
}

void loop()
{
  int x = digitalRead(2);
  if(x==LOW){
  digitalWrite(9, HIGH);
  delayMicroseconds(10);
  digitalWrite(9, LOW);
  long duration = pulseIn(11, HIGH);
  long distance= (duration*0.034)/2;
  Serial.print("Distance from the Spider = ");
  Serial.print(distance);
  Serial.println(" cm");
  delay(1000);

  itoa(distance, msg, 10);
  if(distance<=500){
  vw_send((uint8_t *)msg, sizeof(distance));
  delay(1000);
  }
  }
}
```

```
//Receiver:
#include <VirtualWire.h>
int i;

void setup()
{
 Serial.begin(9600);
 vw_set_ptt_inverted(true);
 vw_setup(2000);
 vw_set_rx_pin(11);
 vw_rx_start();
}

void loop()
{
 uint8_t sms[VW_MAX_MESSAGE_LEN];
 uint8_t len = VW_MAX_MESSAGE_LEN;
 if (vw_get_message(sms, &len))
 {
 Serial.print("The spider is ");
 for (i = 0; i < len; i++) {
  char c = sms[i];
  Serial.print(c);
  }
  Serial.println(" cm close to me. Help!!");
  }
 }
```