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Honor Code: *I have adhered to the Duke Community Standard in completing this assignment.*
-Shaan Yadav

Deliverable 1

```
#include <Servo.h>                          // Include servo library

Servo servoLeft;                            // Declare left and right servos
Servo servoRight;
void setup()                                // Built-in initialization block
{
 tone(4, 3000, 1000);                      // Play tone for 1 second
 delay(5000);                              // Delay to finish tone

 servoLeft.attach(12);                     // Attach left signal to P13
 servoRight.attach(11);                    // Attach right signal to P12
  // Turn left in place
 servoLeft.writeMicroseconds(1300);        // Left wheel clockwise
 servoRight.writeMicroseconds(1300);       // Right wheel clockwise
 delay(605);                               // ...for 0.6 seconds

 // Turn right in place
 servoLeft.writeMicroseconds(1700);        // Left wheel counterclockwise
 servoRight.writeMicroseconds(1700);       // Right wheel counterclockwise
 delay(550);

 // Full speed forward
 servoLeft.writeMicroseconds(1625);        // Left wheel counterclockwise
 servoRight.writeMicroseconds(1300);       // Right wheel clockwise
 delay(10500);                              // ...for 2 seconds

 servoLeft.detach();                       // Stop sending servo signals
 servoRight.detach();
}

void loop()                                 // Main loop auto-repeats
{                                           // Empty, nothing needs repeating
}
```

Deliverable 2

```
const int buttonPin = 3;  // the number of the pushbutton pin
const int ledPin = 13;    // the number of the LED pin

int buttonState = 0;  // variable for reading the pushbutton status

void setup() {
 Serial.begin(9600); // initialize serial monitor
 Serial2.begin(9600); // initialize Xbee Tx/Rx

 // initialize the LED pin as an output:
 pinMode(ledPin, OUTPUT);
 // initialize the pushbutton pin as an input:
 pinMode(buttonPin, INPUT);

 delay(500);
}

void loop() {

 buttonState = digitalRead(buttonPin);

 // check if the pushbutton is pressed. If it is, the buttonState is HIGH:
 if (buttonState == HIGH) {
   Serial.println(buttonState);
   // turn LED on:
   digitalWrite(ledPin, HIGH);

   char outgoing = 'q'; // Read character
   Serial2.print(outgoing); // Send to XBee
 } else {

   // turn LED off:
   digitalWrite(ledPin, LOW);
 }

 // if(Serial2.available()) { // Is XBee data available?
 // char incoming = Serial2.read(); // Read
 // char Serial.println(incoming); // Send to serial monitor
 // }

delay(50);
}
```

Deliverable 3

```
// Define pins for built-in RGB LED
#define redpin 45
#define greenpin 46
#define bluepin 44

void setup() {
 Serial.begin(9600); // initialize serial monitor
 Serial2.begin(9600); // initialize Xbee Tx/Rx
 // Set pin modes
 pinMode(redpin, OUTPUT);
 pinMode(greenpin, OUTPUT);
 pinMode(bluepin, OUTPUT);

 // start with light off
 analogWrite(redpin, 255);
 analogWrite(greenpin, 255);
 analogWrite(bluepin, 255);

 delay(500);
}

void loop() {

 if(Serial2.available()) { // Is XBee data available?
   char incoming = Serial2.read(); // Read character
   Serial.println(incoming); // Send to serial monitor

   delay(100);

   // Make bright red
   analogWrite(redpin, 0);
   analogWrite(greenpin, 0);
   analogWrite(bluepin, 0);

   delay(100);

   // Turn all off
   analogWrite(redpin, 255);
   analogWrite(greenpin, 255);
   analogWrite(bluepin, 255);
 }

 delay(50);
}
```

Deliverable 4

```
// Define pins for built-in RGB LED
#define redpin 45
#define greenpin 46
#define bluepin 44

void setup() {
 Serial.begin(9600); // initialize serial monitor
 Serial2.begin(9600); // initialize Xbee Tx/Rx
 // Set pin modes
 pinMode(redpin, OUTPUT);
 pinMode(greenpin, OUTPUT);
 pinMode(bluepin, OUTPUT);

 // start with light off
 analogWrite(redpin, 255);
 analogWrite(greenpin, 255);
 analogWrite(bluepin, 255);

 delay(500);
}

void loop() {

 if(Serial2.available()) { // Is XBee data available?
   char incoming = Serial2.read(); // Read character
   Serial.println(incoming); // Send to serial monitor

   if (incoming == 65 || incoming == 69 || incoming == 73 || incoming == 79 || incoming ==
85) {
     delay(100);
     // Make bright red
     analogWrite(redpin, 255);
     analogWrite(greenpin, 0);
     analogWrite(bluepin, 255);

     delay(1000);

     // Turn all off
     analogWrite(redpin, 255);
     analogWrite(greenpin, 255);
     analogWrite(bluepin, 255);

   } else if (incoming == 89) {

     delay(100);
     // Make bright blue
     analogWrite(redpin, 255);
     analogWrite(greenpin, 255);
     analogWrite(bluepin, 0);
```

```
    delay(1000);

    // Turn all off
    analogWrite(redpin, 255);
    analogWrite(greenpin, 255);
    analogWrite(bluepin, 255);

  } else {
    delay(100);
    // Make bright red
    analogWrite(redpin, 0);
    analogWrite(greenpin, 255);
    analogWrite(bluepin, 255);

    delay(1000);

    // Turn all off
    analogWrite(redpin, 255);
    analogWrite(greenpin, 255);
    analogWrite(bluepin, 255);
  }


 }

 delay(50);
}
```