



PROGRESS REPORT 4

Group Members			
Name and Signature	Section	Contact number	E-mail address
 GARCIA, Celina Francine I.	B11	0945 977 2608	cfigarcia@mymail.mapua.edu.ph
 LARANANG, Kriszel C.	B11	09673265749	laranangkriszel@gmail.com
Project Title			
Earthquake Simulator			
		Engr. Febus Reidj Cruz	
		Adviser	

I. PROTOTYPE DESIGN

- We are done with our first plan of having four buttons and an LCD; however, we only used two servo motors instead of four since we are only going to simulate the horizontal movement of the platform.
- We bought an ADXL345 digital accelerometer to determine the position and movement of the platform and compare it to the sample data given by our adviser. We are still configuring how we will add this to the output on our LCD.



II. ARDUINO CODES

A. Servo Motor with Four Buttons and LCD

a. Code

```
#include <Servo.h>
#include <Wire.h> // Library for I2C communication
#include <LiquidCrystal_I2C.h> // Library for LCD

LiquidCrystal_I2C lcd = LiquidCrystal_I2C(0x27, 20, 4); // Change to (0x27,20,4) for 20x4 LCD.
Servo myservo;
Servo myservo2; // create servo object to control a servo
#define servoPin 12 //~
#define servoPin2 11 //~
#define pushButtonPin1 8
#define pushButtonPin2 9
#define pushButtonPin3 10

int angle =95;    // initial angle  for servo (beteen 1 and 179)
int angle2 =95;

int buttonPushed =0;
int buttonPushed2 =0;
int buttonPushed3 =0;

void setup() {
  // Servo button demo by Robojax.com
  Serial.begin(9600);          // setup serial
  myservo.attach(servoPin);    // attaches the servo on pin 3 to the servo object
  myservo2.attach(servoPin2);
  pinMode(pushButtonPin1, INPUT_PULLUP);
  pinMode(pushButtonPin2, INPUT_PULLUP);
  pinMode(pushButtonPin3, INPUT_PULLUP);
  Serial.println("Robojax Servo Button ");
  myservo.write(angle); //initial position
  myservo2.write(angle2); //initial position
  // Initiate the LCD:
  lcd.init();
  lcd.backlight();
  // Print 'Hello World!' on the first line of the LCD:
  lcd.setCursor(0, 0); // Set the cursor on the third column and first row.
  lcd.print("Welcome to our");
```

```
    lcd.setCursor(0, 0); // Set the cursor on the third column and first row.
    lcd.print("Welcome to our");
    lcd.setCursor(0, 1);
    lcd.print("Earthquake Simulator");
    lcd.setCursor(0, 2); // Set the cursor on the third column and first row.
    lcd.print("Yellow I1,Blue I2");
    lcd.setCursor(0, 3); // Set the cursor on the third column and first row.
    lcd.print("Black I3,Red RESET");
}

void loop() {
    if(digitalRead(pushButtonPin1) == LOW){
        buttonPushed = 1;
        lcd.init();
        lcd.backlight();
        lcd.setCursor(0, 0); // Set the cursor on the third column and first row.
        lcd.print("Welcome to our");
        lcd.setCursor(0, 1);
        lcd.print("Earthquake Simulator");
        lcd.setCursor(0, 2);
        lcd.print("INTENSITY 1!");
        lcd.setCursor(0, 3); // Set the cursor on the third column and first row.
        lcd.print("Press RED to RESET");
    }
    if( buttonPushed ){
        // change the angle for next time through the loop:
        for(angle = 90; angle < 120; angle++){
            {
                myservo.write(angle);
            }
            for(angle2 = 120; angle2 > 90; angle2--){
                {
                    myservo2.write(angle);
                    delay(15);
                }
                // now scan back from 180 to 0 degrees
            }
            for(angle = 120; angle > 90; angle--){
                {
```

```
    for(angle2 = 120; angle2 > 90; angle2--)  
    {  
        myservo2.write(angle);  
        delay(15);  
    }  
    // now scan back from 180 to 0 degrees  
    for(angle = 120; angle > 90; angle--)  
    {  
        myservo.write(angle);  
    }  
  
    for(angle2 = 90; angle2 < 120; angle2++)  
    {  
        myservo2.write(angle);  
        delay(15);  
    }  
}  
  
if(digitalRead(pushButtonPin2) == LOW){  
    buttonPushed2 = 1;  
    lcd.init();  
    lcd.backlight();  
    lcd.setCursor(0, 0); // Set the cursor on the third column and first row.  
    lcd.print("Welcome to our");  
    lcd.setCursor(0, 1);  
    lcd.print("Earthquake Simulator");  
    lcd.setCursor(0, 2);  
    lcd.print("INTENSITY 2!");  
    lcd.setCursor(0, 3); // Set the cursor on the third column and first row.  
    lcd.print("Press RED to RESET");  
}  
if( buttonPushed2 ){  
    for(angle = 90; angle < 120; angle++)  
    {  
        myservo.write(angle);  
    }  
    for(angle2 = 120; angle2 > 90; angle2--)
```

```
    }
    for(angle2 = 120; angle2 > 90; angle2--)
    {
        myservo2.write(angle2);
        delay(10);
    }
    for(angle = 120; angle > 90; angle--)
    {
        myservo.write(angle);
    }

    for(angle2 = 90; angle2 < 120; angle2++)
    {
        myservo2.write(angle2);
        delay(10);
    }
}

if(digitalRead(pushButtonPin3) == LOW){
    buttonPushed3 = 1;
    lcd.init();
    lcd.backlight();
    lcd.setCursor(0, 0); // Set the cursor on the third column and first row.
    lcd.print("Welcome to our");
    lcd.setCursor(0, 1);
    lcd.print("Earthquake Simulator");
    lcd.setCursor(0, 2);
    lcd.print("INTENSITY 3!");
    lcd.setCursor(0, 3); // Set the cursor on the third column and first row.
    lcd.print("Press RED to RESET");
}
if( buttonPushed3 ){
    for(angle = 90; angle < 120; angle++)
    {
        myservo.write(angle);
    }
    for(angle2 = 120; angle2 > 90; angle2--)
    {
```

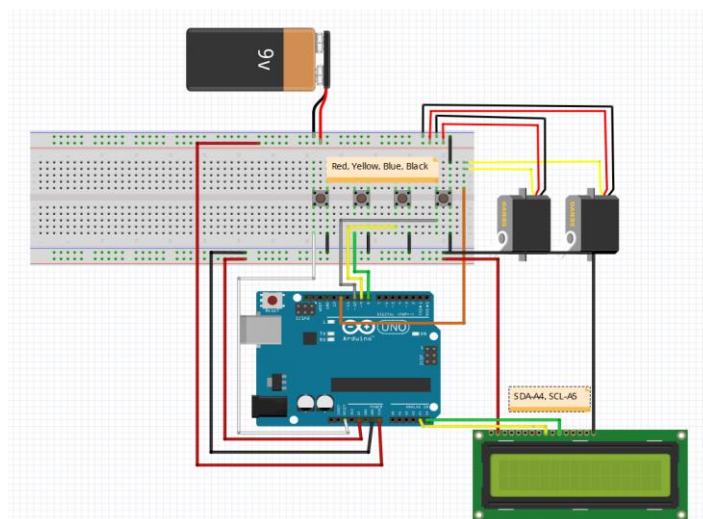
```
    buttonPushed3 = 1;
    lcd.init();
    lcd.backlight();
    lcd.setCursor(0, 0); // Set the cursor on the third column and first row.
    lcd.print("Welcome to our");
    lcd.setCursor(0, 1);
    lcd.print("Earthquake Simulator");
    lcd.setCursor(0, 2);
    lcd.print("INTENSITY 3!");
    lcd.setCursor(0, 3); // Set the cursor on the third column and first row.
    lcd.print("Press RED to RESET");
}

if( buttonPushed3 ){
    for(angle = 90; angle < 120; angle++)
    {
        myservo.write(angle);
    }
    for(angle2 = 120; angle2 > 90; angle2--)
    {
        myservo2.write(angle2);
        delay(5);
    }

    for(angle = 120; angle > 90; angle--)
    {
        myservo.write(angle);
    }
    for(angle2 = 90; angle2 < 120; angle2++)
    {
        myservo2.write(angle2);
        delay(5);
    }
}

}
```

b. Schematic Diagram



c. Actual photo

