```
//Reversing DC Motor using Button Controls
//Using Arduino Motor Shield R3

//Buttons
const int Button1 = 2;  //Left Trigger
const int Button2 = 4;  //RIght Trigger
const int Button3 = 5;  //Main Trigger

//Lights
//LED1 will be "leds 0"
//LED2 will be "leds 1"

//Steering motor. Channel A on motor Shield
const int DCMotor = 12; //Direction Control for DC Motor
const int DCBreak = 9; //Break Control for DC Motor
const int PWMA = 3; //Power Channel A

//Main motors
const int PWM1 = 10;
const int PWM2 = 11;

//Shift Register
int latchPin = 6;
int clockPin = 7;
int dataPin = 8;

//Initializing "leds" as bytes
byte leds = 0;
```

```
//Initializing button states as "0"
int Button1State = 0;
int Button2State = 0;
int Button3State = 0;

void setup() {

//Button inputs
pinMode(Button1, INPUT);
pinMode(Button2, INPUT);
pinMode(Button3, INPUT);

//Shift Register
pinMode(latchPin, OUTPUT);
pinMode(dataPin, OUTPUT);
pinMode(clockPin, OUTPUT);

//Steering Motor outputs. Channel A
pinMode(DCMotor, OUTPUT);
pinMode(DCBreak, OUTPUT);
pinMode(PWMA, OUTPUT);

//Main motor outputs
//Main motor 1:
//IN1 will be "leds" 4
//IN2 will be "leds" 5
//Main motor 2:
//IN3 will be "leds" 6
//IN4 will be "leds" 7
```

```
pinMode(PWM1, OUTPUT);
pinMode(PWM2, OUTPUT);



}



void loop(){

//Reading button states
Button1State = digitalRead(Button1);
Button2State = digitalRead(Button2);
Button3State = digitalRead(Button3);

//Pressing button 1
if (Button1State == HIGH) {

  bitSet(leds,0); //LED1 will turn on
  updateShiftRegister();
  digitalWrite(DCMotor,HIGH); //Spins steering motor
  digitalWrite(DCBreak, LOW); //Break off
  analogWrite(PWMA, 255); //Max = 255. Speed control

  delay(10);
}

else{
  digitalWrite(DCBreak, HIGH);  //Break on
  bitClear(leds,0);
```

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  updateShiftRegister();
}

//Pressing button 2
if(Button2State == HIGH) {

  bitSet(leds,1); //LED2 will turn on
  updateShiftRegister();
  digitalWrite(DCMotor, LOW); //Spins steering motor in reverse
  digitalWrite(DCBreak, LOW); //Break off
  analogWrite(PWMA, 255); //Max = 255. Speed control

  delay(10);
}

else {
  bitClear(leds,1);
  updateShiftRegister();
}

//Pressing button 3
if (Button3State == HIGH){

  bitSet(leds,4);
  updateShiftRegister();
  bitClear(leds,5);
  updateShiftRegister();
  bitSet(leds,6);
  updateShiftRegister();
```

```
  bitClear(leds,7);
  updateShiftRegister();
  analogWrite(PWM1,120);  // 120 or 255
  analogWrite(PWM2,120);

  delay(10);
}

else{

  bitClear(leds,4);
  updateShiftRegister();
  bitClear(leds,5);
  updateShiftRegister();
  bitClear(leds,6);
  updateShiftRegister();
  bitClear(leds,7);
  updateShiftRegister();
  analogWrite(PWM1,0);
  analogWrite(PWM2,0);
}

}
//Setting up Shift Register
void updateShiftRegister() {
digitalWrite(latchPin, LOW);
shiftOut(dataPin, clockPin, LSBFIRST, leds);
digitalWrite(latchPin, HIGH);
}
```