```
#include <ezButton.h>

//limit switch set up
ezButton upSwitch (7);  // create ezButton object
that attach to pin 7;
ezButton downSwitch (6);  // create ezButton object
that attach to pin 6;

//motor set up
int directionPin = 12;
int pwmPin = 3;
int brakePin = 9;

// catalyst button (down)
// constants won't change. They're used here to set
pin numbers:
const int buttonPinC = 10;     // the number of the
pushbutton pin for catalyst

// no catalyst button (up)
const int buttonPinNC = 11;     // the number of the
pushbutton pin for no catalyst

// button tests for status
int buttonStateC = 0;         // variable for
reading the pushbutton status
int buttonStateNC = 0;         // variable for
reading the pushbutton status

bool directionState;
```

```
void setup()
{
  //catalyst
  // initialize the pushbutton pin as an input:
  pinMode(buttonPinC, INPUT);

  Serial.begin(9600);
  upSwitch.setDebounceTime(50); // set debounce time
to 50 milliseconds

  //define pins for button
  pinMode(directionPin, OUTPUT);
  pinMode(pwmPin, OUTPUT);
  pinMode(brakePin, OUTPUT);

  //no catalyst
  // initialize the pushbutton pin as an input:
  pinMode(buttonPinNC, INPUT);

  Serial.begin(9600);
  downSwitch.setDebounceTime(50); // set debounce
time to 50 milliseconds

  //motor is set to normally off
  digitalWrite(brakePin, HIGH);
  analogWrite(pwmPin, 0); //Duty cycle
}


void loop()
{
```

```
  upSwitch.loop();
  downSwitch.loop();

  //moving the wall down, indicating a catalyst has
been added
  // read the state of the pushbutton value:
  buttonStateC = digitalRead(buttonPinC); //Read pin
10
  buttonStateNC = digitalRead(buttonPinNC); //Read
pin 11

  if (buttonStateC == HIGH)
  {
    // digitalWrite(ledPinNC, HIGH);
    Serial.println("down button pressed");
    //write a low state to the direction pin (13)
    digitalWrite(directionPin, LOW);
  }

  int stateC = downSwitch.getState();
  if ( (stateC == HIGH) && (buttonStateC == HIGH))
  {
    digitalWrite(brakePin, LOW);
    analogWrite(pwmPin, 100); //Duty cycle
  }
  else if(stateC == LOW)
  {
    digitalWrite(brakePin, HIGH);
    analogWrite(pwmPin, 0); //Duty cycle
  }
```

```
  //moving the wall up, indicating no catalyst has
been added

  // read the state of the pushbutton value:
  buttonStateNC = digitalRead(buttonPinNC); //Read
pin 10

  if (buttonStateNC == HIGH)
  {
    // digitalWrite(ledPinNC, HIGH);
    Serial.println("up button pressed");
    //write a low state to the direction pin (13)
    digitalWrite(directionPin, HIGH);
  }

  int stateNC = upSwitch.getState();
  if ( (stateNC == HIGH) && (buttonStateNC == HIGH))
  {
    digitalWrite(brakePin, LOW);
    analogWrite(pwmPin, 100); //Duty cycle
  }
  else if(stateNC == LOW)
  {
    digitalWrite(brakePin, HIGH);
    analogWrite(pwmPin, 0); //Duty cycle
  }

}
```