

code

```
#include <Wire.h>
```

```
#include <LiquidCrystal_I2C.h>
```

```
LiquidCrystal_I2C lcd(0x27, 20, 4); // set the LCD address to 0x27 for a 16  
chars and 2 line display
```

```
int mode = 5;
```

```
int mod = 0;
```

```
boolean onn = 1;
```

```
int relay_mode = 3;
```

```
int calibrate = 4;
```

```
int relay_calibrate = 2;
```

```
void setup() {
```

```
    Serial.begin(9600);
```

```
    lcd.init(); // initialize the lcd
```

```
    lcd.init();
```

```
    lcd.backlight();
```

```
    lcd.setCursor(0, 0);
```

```
    lcd.print("GRADUATION PROJECT");
```

```
    lcd.setCursor(2, 1);
```

```
    lcd.print("wall scanner");
```

```
    pinMode(mode, INPUT_PULLUP);
```

code

```
pinMode(calibrate, INPUT_PULLUP);
```

```
pinMode(relay_mode, OUTPUT);
```

```
pinMode(relay_calibrate, OUTPUT);
```

```
digitalWrite(relay_calibrate, 1);
```

```
digitalWrite(relay_mode, 1);
```

```
}
```

```
void loop() {
```

```
if (digitalRead(calibrate) == 0) {
```

```
    digitalWrite(relay_calibrate, 0);
```

```
    delay(400);
```

```
    digitalWrite(relay_calibrate, 1);
```

```
    lcd.clear();
```

```
    lcd.setCursor(0, 0);
```

```
    lcd.print("calibrating");
```

```
    for (int i = 0; i < 16; i++) {
```

```
        lcd.setCursor(i, 1);
```

```
        lcd.print(">");
```

```
        delay(230);
```

```
    }
```

code

```
lcd.clear();  
lcd.setCursor(0, 0);  
lcd.print("done calibrating");  
delay(1000);  
}
```

```
if (digitalRead(mode) == 0 && onn == 1) {  
    mod++;  
    Serial.println(mod);  
    onn = 0;  
}
```

```
if (mod == 1 && onn == 0) {  
    digitalWrite(relay_mode, 0);  
    delay(400);  
    digitalWrite(relay_mode, 1);  
}
```

```
lcd.clear();  
lcd.setCursor(0, 0);  
lcd.print("put on the wall");  
lcd.setCursor(0, 1);  
lcd.print("to calibrate");  
delay(2000);
```

code

```
lcd.clear();

lcd.setCursor(0, 0);

lcd.print("mode stud finder");

lcd.setCursor(1, 1);

lcd.print("distance 1.5cm");


onn = 1;
}

if (mod == 2 && onn == 0) {
    digitalWrite(relay_mode, 0);
    delay(400);
    digitalWrite(relay_mode, 1);

    lcd.clear();

    lcd.setCursor(0, 0);

    lcd.print("put on the wall");

    lcd.setCursor(0, 1);

    lcd.print("to calibrate");

    delay(2000);

    lcd.clear();

    lcd.setCursor(0, 0);

    lcd.print("mode stud finder");

    lcd.setCursor(1, 1);

    lcd.print("distance 2.5cm");
```

code

```
onn = 1;
}

if (mod == 3 && onn == 0) {
    digitalWrite(relay_mode, 0);
    delay(400);
    digitalWrite(relay_mode, 1);

    lcd.clear();
    lcd.setCursor(0, 0);
    lcd.print("put on the wall");
    lcd.setCursor(0, 1);
    lcd.print("to calibrate");
    delay(2000);
    lcd.clear();
    lcd.setCursor(0, 0);
    lcd.print("mode stud finder");
    lcd.setCursor(1, 1);
    lcd.print("distance 4 cm");
    onn = 1;
}

if (mod == 4 && onn == 0) {
    digitalWrite(relay_mode, 0);
```

code

```
delay(400);  
digitalWrite(relay_mode, 1);  
  
lcd.clear();  
lcd.setCursor(0, 0);  
lcd.print("put on metal");  
lcd.setCursor(0, 1);  
lcd.print("to  calibrate");  
delay(2000);  
lcd.clear();  
lcd.clear();  
lcd.setCursor(6, 0);  
lcd.print("mode ");  
lcd.setCursor(2, 1);  
lcd.print("metal detect");  
onn = 1;  
}  
  
if (mod == 5 && onn == 0) {  
    digitalWrite(relay_mode, 0);  
    delay(400);  
    digitalWrite(relay_mode, 1);  
  
    lcd.clear();
```

code

```
lcd.setCursor(0, 0);  
lcd.print("put on wall");  
lcd.setCursor(0, 1);  
lcd.print("to  calibrate");  
delay(2000);  
lcd.clear();  
lcd.clear();  
lcd.setCursor(6, 0);  
lcd.print("mode ");  
lcd.setCursor(2, 1);  
lcd.print("wire detect");  
onn = 1;  
}  
  
if (mod == 6 && onn == 0) {  
  
    mod = 0;  
    onn = 1;  
}  
}
```