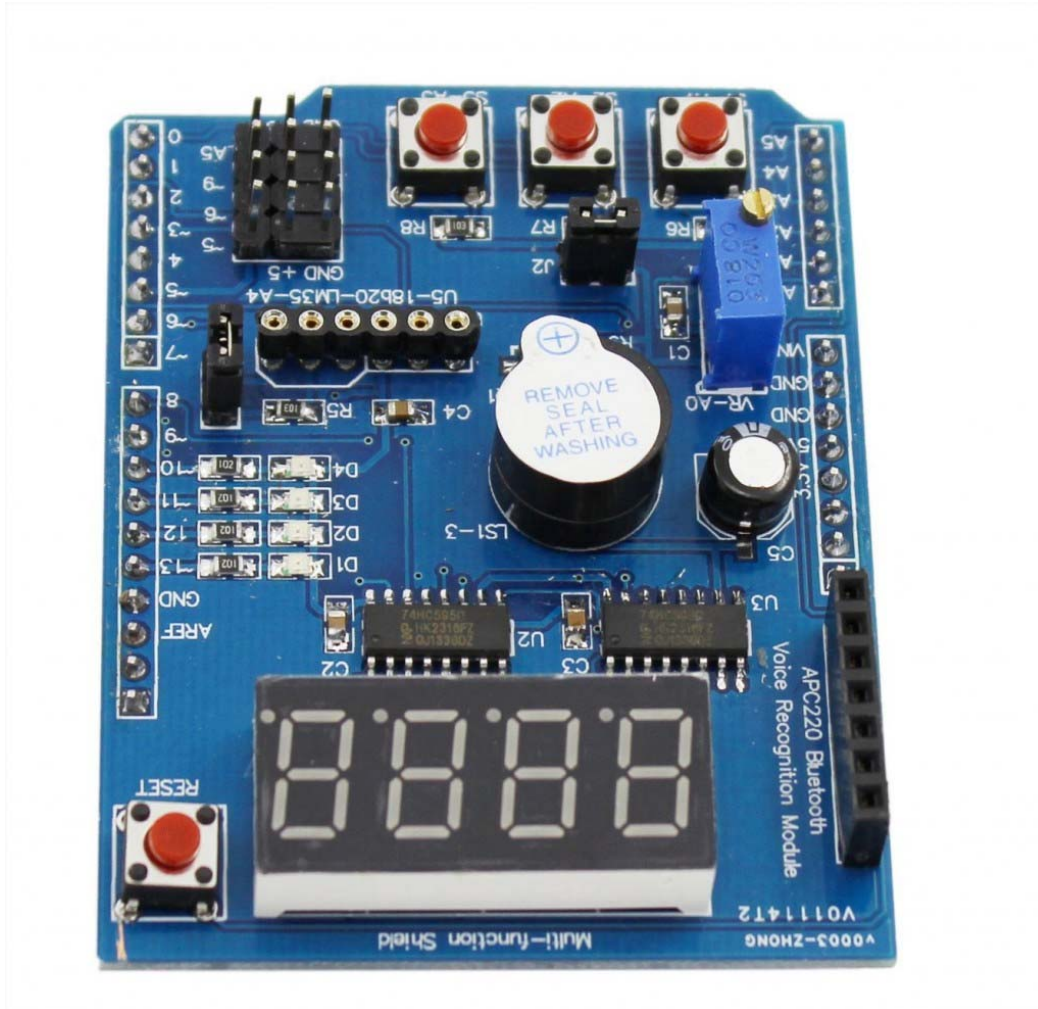


multi function shield examples

This shield got my attention as it looked like a nice beginners learning type shield with which you could get up and running with an Arduino

Here is a picture of the board, a few code examples are available later on in the article.



multi function shield

Features

- 4 digit 7-segment LED display module driven by two serial 74HC595's
- 4 LED's
- 10K potentiometer
- 3 x push buttons
- Piezo buzzer
- DS18B20 temperature sensor interface (not included)
- Infrared receiver interface
- Serial interface header for connection to serial modules

Code Examples

Blinking LED

```
1 | int led = 13;
2 |
3 | void setup()
4 | {
5 |     // initialize the digital pin as an output.
6 |     pinMode(led, OUTPUT);
```

```

7   }
8
9   void loop()
10  {
11    digitalWrite(led, HIGH);
12    delay(1000);
13    digitalWrite(led, LOW);
14    delay(1000);
15  }

```

All LEDS blinking

```

1   int led1 = 13;
2   int led2 = 12;
3   int led3 = 11;
4   int led4 = 10;
5
6   void setup()
7   {
8     // initialize the digital pin as an output.
9     pinMode(led1, OUTPUT);
10    pinMode(led2, OUTPUT);
11    pinMode(led3, OUTPUT);
12    pinMode(led4, OUTPUT);
13  }
14
15  void loop()
16  {
17    digitalWrite(led1, HIGH);
18    digitalWrite(led2, HIGH);
19    digitalWrite(led3, HIGH);
20    digitalWrite(led4, HIGH);
21    delay(1000);
22    digitalWrite(led1, LOW);
23    digitalWrite(led2, LOW);
24    digitalWrite(led3, LOW);
25    digitalWrite(led4, LOW);
26    delay(1000);
27  }

```

Switches example

```

1   const byte LED[] = {13,12,11,10};
2
3   #define BUTTON1 A1
4   #define BUTTON2 A2
5
6   void setup()
7   {
8     // initialize the digital pin as an output.
9     /* Set each pin to outputs */
10    pinMode(LED[0], OUTPUT);
11    pinMode(LED[1], OUTPUT);
12    pinMode(LED[2], OUTPUT);
13    pinMode(LED[3], OUTPUT);
14  }
15
16  void loop()
17  {
18    if(!digitalRead(BUTTON1))
19    {
20      digitalWrite(LED[0], HIGH);
21      digitalWrite(LED[1], HIGH);
22      digitalWrite(LED[2], HIGH);
23      digitalWrite(LED[3], HIGH);
24    }
25
26    if(!digitalRead(BUTTON2))
27    {
28      digitalWrite(LED[0], LOW);
29
30      digitalWrite(LED[1], LOW);
31      digitalWrite(LED[2], LOW);
32      digitalWrite(LED[3], LOW);

```

```

31 | digitalWrite(LED[3], LOW);
32 | }
33 | }

```

Potentiometer 1

```

1 | #define Pot1 0
2 |
3 | void setup()
4 | {
5 |   Serial.begin(9600);
6 | }
7 |
8 | /* Main Program */
9 | void loop()
10 | {
11 |
12 |   Serial.print("Potentiometer reading: ");
13 |   Serial.println(analogRead(Pot1));
14 |   /* Wait 0.5 seconds before reading again */
15 |   delay(500);
16 | }

```

Pot and led

```

1 | const byte LED[] = {13,12,11,10};
2 | #define Pot1 0
3 |
4 | void setup()
5 | {
6 |   Serial.begin(9600);
7 |   // initialize the digital pin as an output.
8 |   /* Set each pin to outputs */
9 |   pinMode(LED[0], OUTPUT);
10 |  pinMode(LED[1], OUTPUT);
11 |  pinMode(LED[2], OUTPUT);
12 |  pinMode(LED[3], OUTPUT);
13 | }
14 |
15 | /* Main Program */
16 | void loop()
17 | {
18 |   int PotValue;
19 |   //Serial.print("Potentiometer reading: ");
20 |   PotValue = analogRead(Pot1);
21 |   /* Wait 0.5 seconds before reading again */
22 |   if(PotValue < 400)
23 |   {
24 |     digitalWrite(LED[0], LOW);
25 |     digitalWrite(LED[1], LOW);
26 |     digitalWrite(LED[2], LOW);
27 |     digitalWrite(LED[3], LOW);
28 |     Serial.print("Potentiometer: ");
29 |     Serial.println(PotValue);
30 |   }
31 |   else
32 |   {
33 |     digitalWrite(LED[0], HIGH);
34 |     digitalWrite(LED[1], HIGH);
35 |     digitalWrite(LED[2], HIGH);
36 |     digitalWrite(LED[3], HIGH);
37 |     Serial.print("Potentiometer: ");
38 |     Serial.println(PotValue);
39 |   }
40 |   delay(500);
41 | }

```

segment display

```

1 | /* Define shift register pins used for seven segment display */
2 | #define LATCH_PIN 4

```

```

4  #define LATCH_DIO 4
3  #define CLK_DIO 7
4  #define DATA_DIO 8
5
6  /* Segment byte maps for numbers 0 to 9 */
7  const byte SEGMENT_MAP[] = {0xC0,0xF9,0xA4,0xB0,0x99,0x92,0x82,0xF8,0X80,0X90};
8  /* Byte maps to select digit 1 to 4 */
9  const byte SEGMENT_SELECT[] = {0xF1,0xF2,0xF4,0xF8};
10
11 void setup ()
12 {
13  /* Set DIO pins to outputs */
14  pinMode(LATCH_DIO,OUTPUT);
15  pinMode(CLK_DIO,OUTPUT);
16  pinMode(DATA_DIO,OUTPUT);
17  }
18
19  /* Main program */
20 void loop()
21 {
22
23  /* Update the display with the current counter value */
24  WriteNumberToSegment(0 , 0);
25  WriteNumberToSegment(1 , 1);
26  WriteNumberToSegment(2 , 2);
27  WriteNumberToSegment(3 , 3);
28  }
29
30  /* Write a decimal number between 0 and 9 to one of the 4 digits of the display */
31 void WriteNumberToSegment(byte Segment, byte Value)
32 {
33  digitalWrite(LATCH_DIO,LOW);
34  shiftOut(DATA_DIO, CLK_DIO, MSBFIRST, SEGMENT_MAP[Value]);
35  shiftOut(DATA_DIO, CLK_DIO, MSBFIRST, SEGMENT_SELECT[Segment] );
36  digitalWrite(LATCH_DIO,HIGH);
37  }

```

Read pot and display value on display

```

1  /* Define shift register pins used for seven segment display */
2  #define LATCH_DIO 4
3  #define CLK_DIO 7
4  #define DATA_DIO 8
5
6  #define Pot1 0
7
8  /* Segment byte maps for numbers 0 to 9 */
9  const byte SEGMENT_MAP[] = {0xC0,0xF9,0xA4,0xB0,0x99,0x92,0x82,0xF8,0X80,0X90};
10 /* Byte maps to select digit 1 to 4 */
11 const byte SEGMENT_SELECT[] = {0xF1,0xF2,0xF4,0xF8};
12
13 void setup ()
14 {
15  Serial.begin(9600);
16  /* Set DIO pins to outputs */
17  pinMode(LATCH_DIO,OUTPUT);
18  pinMode(CLK_DIO,OUTPUT);
19  pinMode(DATA_DIO,OUTPUT);
20  }
21
22  /* Main program */
23 void loop()
24 {
25  int PotValue;
26  PotValue = analogRead(Pot1);
27  Serial.print("Potentiometer: ");
28  Serial.println(PotValue);
29  /* Update the display with the current counter value */
30  WriteNumberToSegment(0 , PotValue / 1000);
31  WriteNumberToSegment(1 , (PotValue / 100) % 10);
32
33  WriteNumberToSegment(2 , (PotValue / 10) % 10);
34  WriteNumberToSegment(3 , PotValue % 10);
35  }
36  /* Write a decimal number between 0 and 9 to one of the 4 digits of the display */

```

```
36  // write a decimal number between 0 and 9 to one of the 4 digits of the display /
37  void WriteNumberToSegment(byte Segment, byte Value)
38  {
39    digitalWrite(LATCH_DIO,LOW);
40    shiftOut(DATA_DIO, CLK_DIO, MSBFIRST, SEGMENT_MAP[Value]);
41    shiftOut(DATA_DIO, CLK_DIO, MSBFIRST, SEGMENT_SELECT[Segment] );
42    digitalWrite(LATCH_DIO,HIGH);
43  }
```

Resources

Multifunctional Expansion Board Shield Kit



Related Posts:

1. [HC-SR04 Ultrasonic Sensor example](#)
2. [Basic voltmeter](#)
3. [Infrared receiver example](#)
4. [Arduino and Tm1638 button example](#)

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