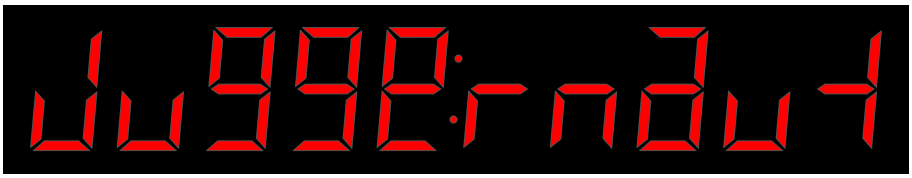

装置名	enJoyStick
装置番号	#002-006
作問者	Norimasa TAKANA
作問日	2024-09-14
制限時間	00:15:00

1. 作問者より一言

ジョイスティックを使った問題です．楽しんで！

2. 回路

回路の写真を 図 2 に示す．

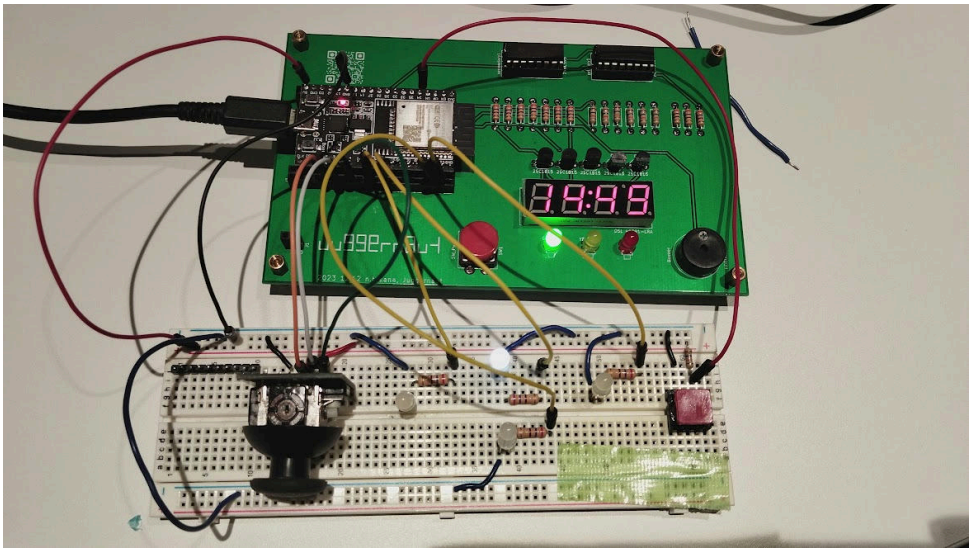

図 2: 回路の写真

回路を構成する部品を 表 2 に示す．

表 2: 部品一覧

部品名	個数	データシート
KY-023	1	https://naylampmechatronics.com/img/cms/Datasheets/000036%20-%20datasheet%20KY-023-Joy-IT.pdf
LED	4	

3. ソースコード

装置に書き込まれたプログラムを以下に示す．

```
struct Challenge EnJoy = {
    .gaming = enjoy,
    .setup_pin = setup_ej,
    .time_limit = 900,
};

// giver pin assgin
const uint8_t VRx = 15;
```

```
 9 const uint8_t VRy = 2;
10 const uint8_t SW = 4;
11 const uint8_t LED_UP = 18;
12 const uint8_t LED_RIGHT = 23;
13 const uint8_t LED_DOWN = 22;
14 const uint8_t LED_LEFT = 17;
15
16 const uint8_t LED_NUM = 5;
17 const uint8_t STAGE_NUM = 5;
18 const uint8_t MISS_NUM = 5;
19
20 enum direction {
21     Up,
22     Right,
23     Down,
24     Left,
25     Neutral,
26 };
27
28 uint8_t led_pin_assign[LED_NUM] = {LED_UP, LED_RIGHT, LED_DOWN, LED_LEFT};
29 bool led_map[STAGE_NUM][LED_NUM] = {
30     {true, false, false, false},
31     {false, true, false, false},
32     {false, false, false, true},
33     {false, false, true, false},
34     {true, false, false, false},
35 };
36
37 void setup_ej(void) {
38     pinMode(VRx, ANALOG);
39     pinMode(VRy, ANALOG);
40     pinMode(SW, INPUT_PULLUP);
41     pinMode(LED_UP, OUTPUT);
42     pinMode(LED_DOWN, OUTPUT);
43     pinMode(LED_RIGHT, OUTPUT);
44     pinMode(LED_LEFT, OUTPUT);
45 }
46
47
48 void enjoy(void *pvParameters) {
49     uint16_t x = 0;
50     uint16_t y = 0;
51     uint8_t stage = 0;
52     uint8_t miss = 0;
53     enum direction dir = Neutral;
54
55     while(1) {
56         for (int i = 0; i < LED_NUM; i++) {
57             if (led_map[stage][i]) digitalWrite(led_pin_assign[i], HIGH);
58             else digitalWrite(led_pin_assign[i], LOW);
59         }
60
61         x = analogRead(VRx);
62         y = analogRead(VRy);
63
64         dir = Neutral;
65         if (x >= 3500) dir = Up;
66         if (y >= 3500) dir = Right;
67         if (x <= 500) dir = Down;
68         if (y <= 500) dir = Left;
69
70         if (dir != Neutral) {
71             if (led_map[stage][dir]) {
72                 stage++;
73                 delay(500);
```

```
74              } else {
75                  miss++;
76                  delay(500);
77              }
78          }
79
80          // succeeded
81          if(stage == STAGE_NUM) {
82              succeeded();
83          }
84
85          // failed
86          if(miss == MISS_NUM) {
87              failed();
88          }
89      }
90  }
```