

Dec 2023
Wesley
2024

Writing a Controller Library

143

Controller.h

```
1 // Controller.h
2
3 #ifndef CONTROLLER_H
4 #define CONTROLLER_H
5
6 #include <Arduino.h>
7
8 class Controller {
9 public:
10     Controller();
11
12     void ReadController();
13     void _read_state();
14     void _read_speed();
15     void begin();
16
17     int leftMotorSpeedTarget;
18     int rightMotorSpeedTarget;
19     bool ProgramMode;
20
21 private:
22     char leftSpeedChars[5];
23     char rightSpeedChars[5];
24 };
25
26
27 #endif // CONTROLLER_H
28
```

```
1 #include "Controller.h"
2
3 Controller::Controller(){}
4
5 void Controller::begin()
6 {
7     Serial3.begin(115200);
8     ProgramMode = 0;
9     leftMotorSpeedTarget = 1500;
10    rightMotorSpeedTarget = 1500;
11 }
12
13 void Controller::_read_state()
14 {
15     char data = Serial3.read();
16
17     if (Serial3.read() == 'E')
18     {
19         if (data == '0')
20         {
21             ProgramMode = 0;
22             //Serial.println("Switched to autonomous mode.");
23         }
24         else if (data == '1')
25         {
26             ProgramMode = 1;
27             //Serial.println("Switched to remote control mode.");
28         }
29     }
30 }
31
32 }
```

Controller.cpp

```
34 void Controller::_read_speed()
35 {
36     uint8_t numPackets = Serial3.available();
37
38     while(numPackets < 8)
39     {
40         numPackets = Serial3.available();
41         delay(10);
42     }
43
44     for (int i = 0; i < 4; i++)
45     {
46         leftSpeedChars[i] = Serial3.read();
47     }
48     leftSpeedChars[4] = '\0';
49
50     for (int i = 0; i < 4; i++)
51     {
52         rightSpeedChars[i] = Serial3.read();
53     }
54     rightSpeedChars[4] = '\0';
55
56     if (Serial3.read() == 'E')
57     {
58         leftMotorSpeedTarget = atoi(leftSpeedChars);
59         rightMotorSpeedTarget = atoi(rightSpeedChars);
60
61         if (leftMotorSpeedTarget < 1100)
62             leftMotorSpeedTarget = 1100;
63         if (leftMotorSpeedTarget > 1900)
64             leftMotorSpeedTarget = 1900;
65
66         if (rightMotorSpeedTarget < 1100)
67             rightMotorSpeedTarget = 1100;
68         if (rightMotorSpeedTarget > 1900)
69             rightMotorSpeedTarget = 1900;
70     }
71 }
72
73
74 void Controller::ReadController()
75 {
76     while (Serial3.available())
77     {
78         char start = Serial3.read();
79         if (start == 'S')
80         {
81             _read_speed();
82         }
83         else if (start == 'M')
84         {
85             _read_state();
86         }
87     }
88 }
89
```

Code from page 108 + 109, but formatted as a library.