## Controller.H

```h
// Controller.h

#ifndef CONTROLLER_H
#define CONTROLLER_H

#include <Arduino.h>

class Controller {
public:
    Controller();

    void ReadController();
    void _read_state();
    void _read_speed();
    void begin();

    int leftMotorSpeedTarget;
    int rightMotorSpeedTarget;
    bool ProgramMode;

private:
    char leftSpeedChars[5];
    char rightSpeedChars[5];

};

#endif // CONTROLLER_H
```

## Controller.CPP

```cpp
#include "Controller.h"

Controller::Controller(){}

void Controller::begin()
{
    Serial3.begin(115200);
    ProgramMode = 0;
    leftMotorSpeedTarget = 1500;
    rightMotorSpeedTarget = 1500;
}

void Controller::_read_state()
{
    char data = Serial3.read();

    if (Serial3.read() == 'E')
    {
        if (data == '0')
        {
            ProgramMode = 0;

            //Serial.println("Switched to autonomous mode.");
        }
        else if (data == '1')
        {
            ProgramMode = 1;

            //Serial.println("Switched to remote control mode.");
        }
    }
}

void Controller::_read_speed()
{
    uint8_t numPackets = Serial3.available();

    while(numPackets < 8)
    {
        numPackets = Serial3.available();
        delay(10);
    }

    for (int i = 0; i < 4; i++)
    {
        leftSpeedChars[i] = Serial3.read();
    }
    leftSpeedChars[4] = '\0';

    for (int i = 0; i < 4; i++)
    {
        rightSpeedChars[i] = Serial3.read();
    }
    rightSpeedChars[4] = '\0';

    if (Serial3.read() == 'E')
    {
        leftMotorSpeedTarget = atoi(leftSpeedChars);
        rightMotorSpeedTarget = atoi(rightSpeedChars);

        if (leftMotorSpeedTarget < 1100)
            leftMotorSpeedTarget = 1100;
        if (leftMotorSpeedTarget > 1900)
            leftMotorSpeedTarget = 1900;

        if (rightMotorSpeedTarget < 1100)
            rightMotorSpeedTarget = 1100;
        if (rightMotorSpeedTarget > 1900)
            rightMotorSpeedTarget = 1900;

    }
}

void Controller::ReadController()
{
  while (Serial3.available())
  {
      char start = Serial3.read();
      if (start == 'S')
      {
          _read_speed();
      }
      else if (start == 'M')
      {
          _read_state();
      }
  }
}
```

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