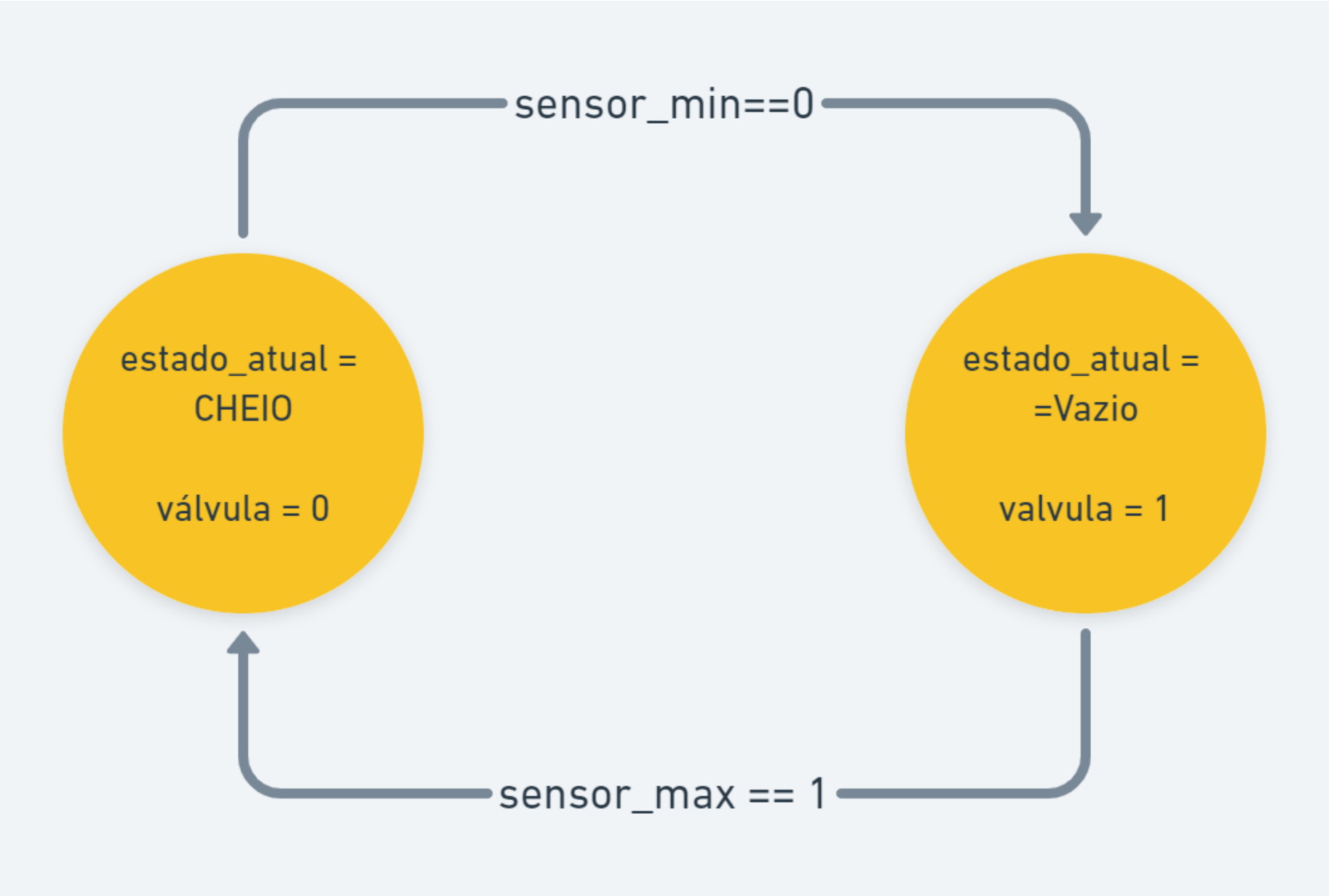
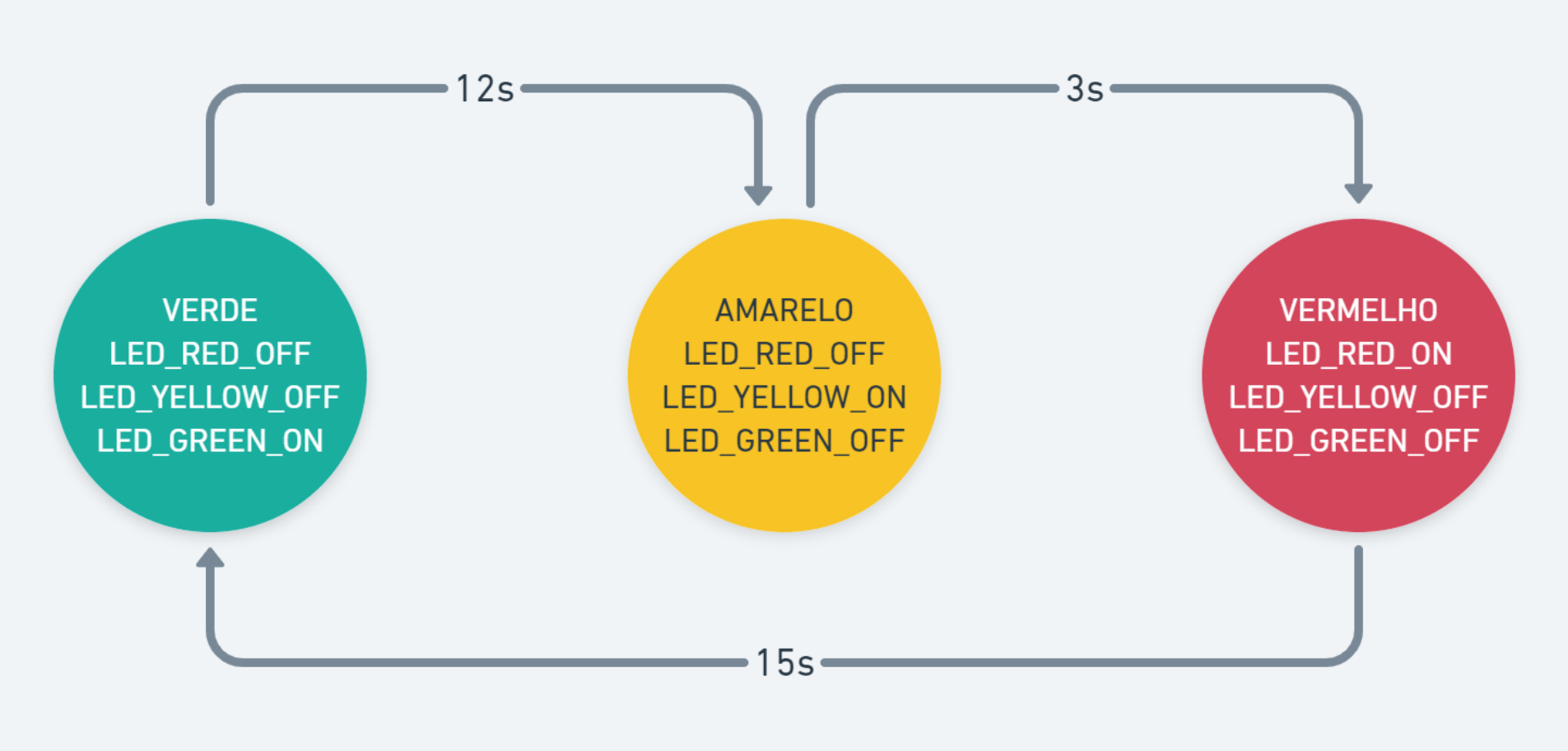
Questão 1

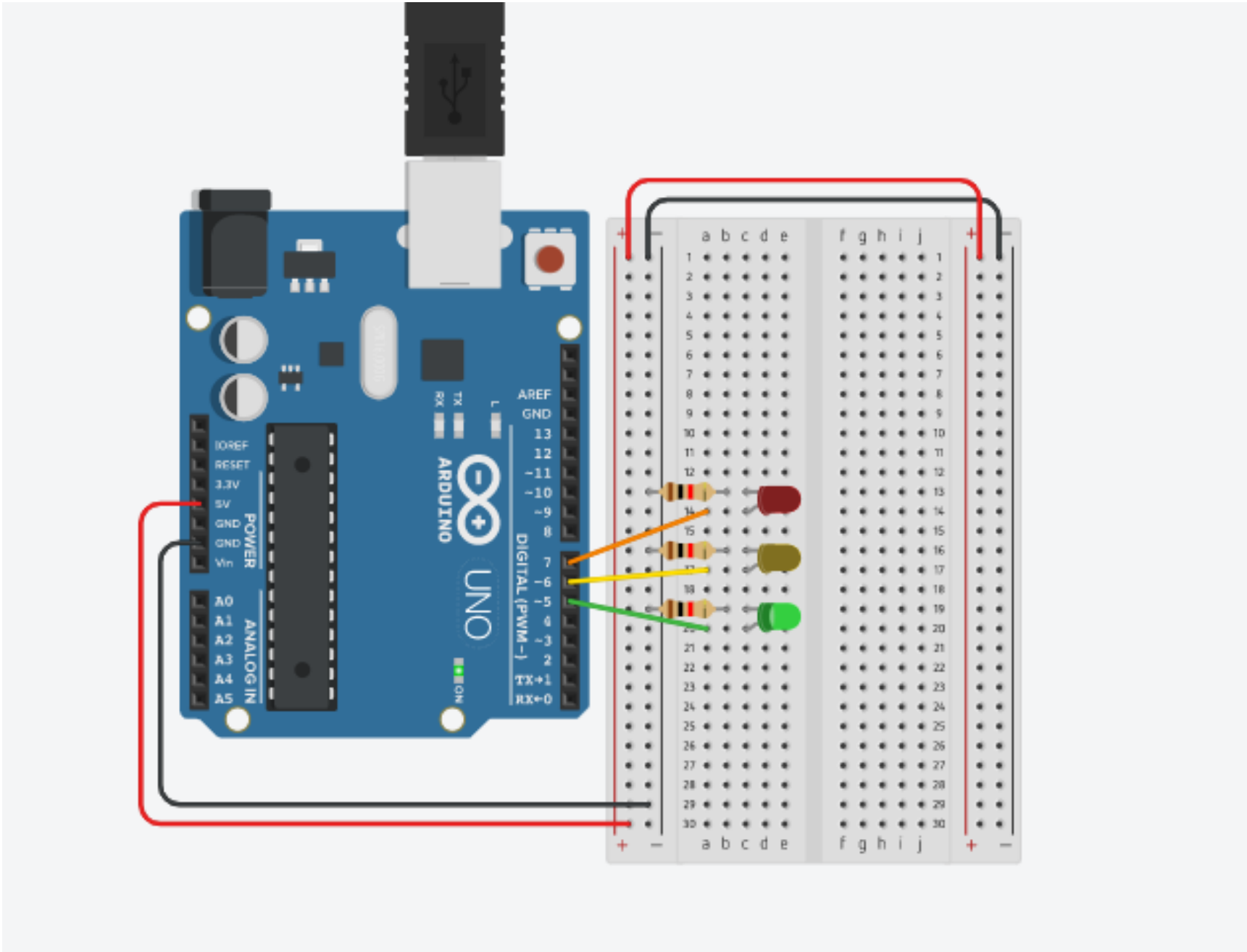

sensor_min==0
estado_atual =
CHEIO
válvula = 0
estado_atual =
=Vazio
valvula = 1
sensor_max == 1

Questão 2

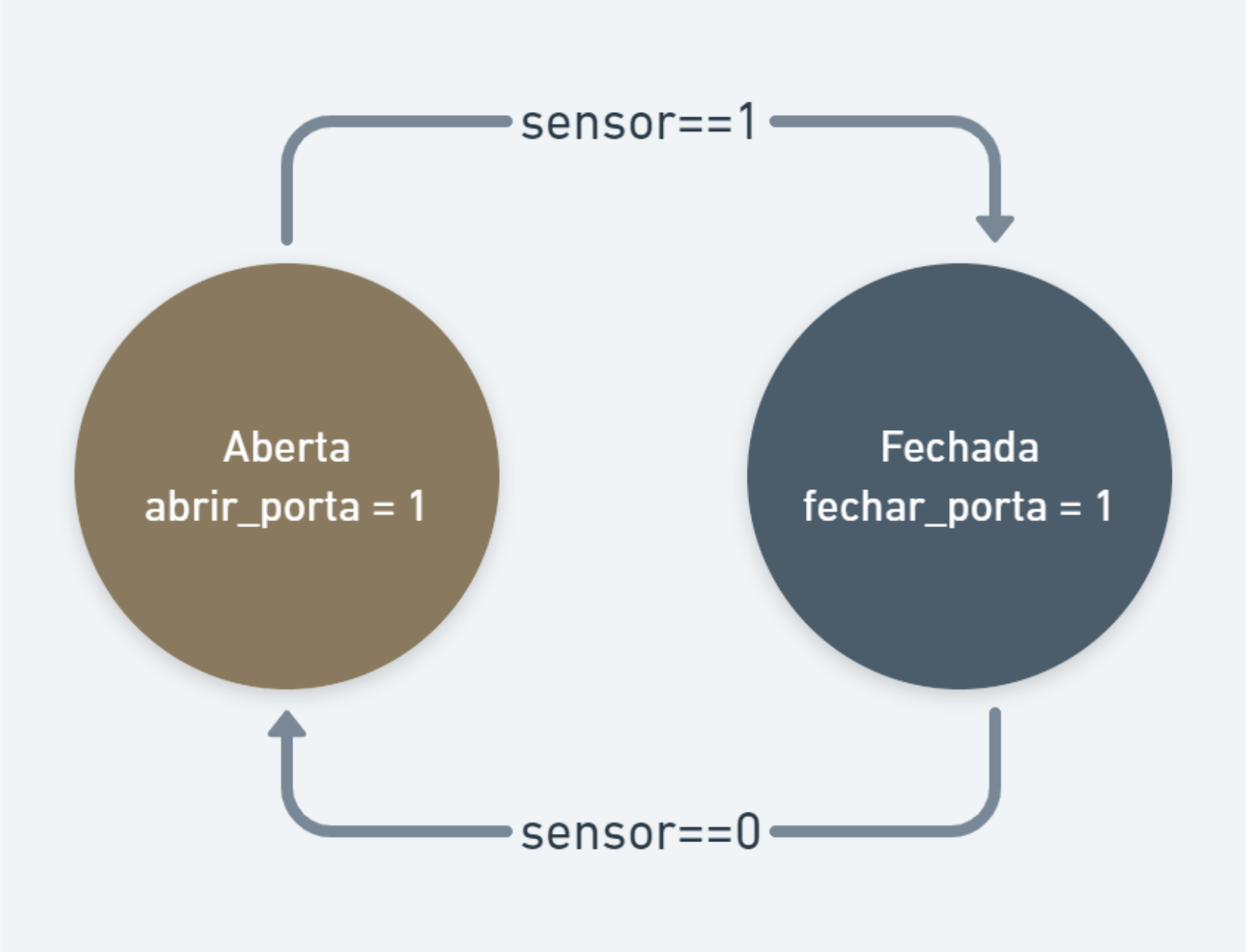

12s
3s
VERDE
LED_RED_OFF
LED_YELLOW_OFF
LED_GREEN_ON
AMARELO
LED_RED_OFF
LED_YELLOW_ON
LED_GREEN_OFF
VERMELHO
LED_RED_ON
LED_YELLOW_OFF
LED_GREEN_OFF
15s

```c
#define LED_RED_ON PORTD = PORTD | 0b10000000
#define LED_RED_OFF PORTD = PORTD & ~(0b10000000)
#define LED_YELLOW_ON PORTD = PORTD | 0b01000000
#define LED_YELLOW_OFF PORTD = PORTD & ~(0b01000000)
#define LED_GREEN_ON PORTD = PORTD | 0b00100000
#define LED_GREEN_OFF PORTD = PORTD & ~(0b00100000)
#define VERDE   0
#define AMARELO 1
#define VERMELHO 2
int estado_atual = VERDE;

int main(void)
{
    DDRD = DDRD | 0b10100000;   // Configurando pino 5 e 7 como saída
    PORTD = PORTD | 0b00010000; // Habilita resistor de PULL-UP
    {
        for(;;) {
            switch (estado_atual)
            {
            case VERDE:
                LED_RED_OFF;   //desliga led do pino 7
                LED_YELLOW_OFF; //desliga led do pino 6
                LED_GREEN_ON; //desliga led do pino 5
                _delay_ms(12000);
                estado_atual = AMARELO;
                break;
            case AMARELO:
                LED_RED_ON;    //desliga led do pino 7
                LED_YELLOW_ON; //liga led pino 6
                LED_GREEN_OFF; //desliga led do pino 5
                _delay_ms(3000);
                estado_atual = VERMELHO;
                break;
            case VERMELHO:
                LED_RED_ON  //liga led do pino 7
                LED_YELLOW_OFF //desliga led do pino 6
                LED_GREEN_ON; //desliga led do pino 5
                _delay_ms(15000)
                estado_atual = VERDE;
                break;
            }
```


ARDUINO
UNO
POWER
ANALOG IN
DIGITAL (PWM~)
IOREF
RESET
3.3V
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5
AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
TX
RX
L
ON
a b c d e
f g h i j

Questão 3


sensor==1
Aberta
abrir_porta = 1
Fechada
fechar_porta = 1
sensor==0