Assignment 02

Embedded Systems & Internet-Of-Things

Andrea Zammarchi - andrea.zammarchi3@studio.unibo.it - matr.0000914652

May 11, 2022

1 Introduction

The project consist of an embedded system simulating a smart coffee machine. The system is composed of three tactile buttons $B_{up}, B_{down}, B_{make}$, a potentiometer Pot_{sugar}, a display D connected to the board through I2C, a pir P, a sonar S, a servo motor M and an analog temperature sensor T. The system is connected to a PC through a serial line. On the PC there is a simple application that interacts with the system.

2 Schema

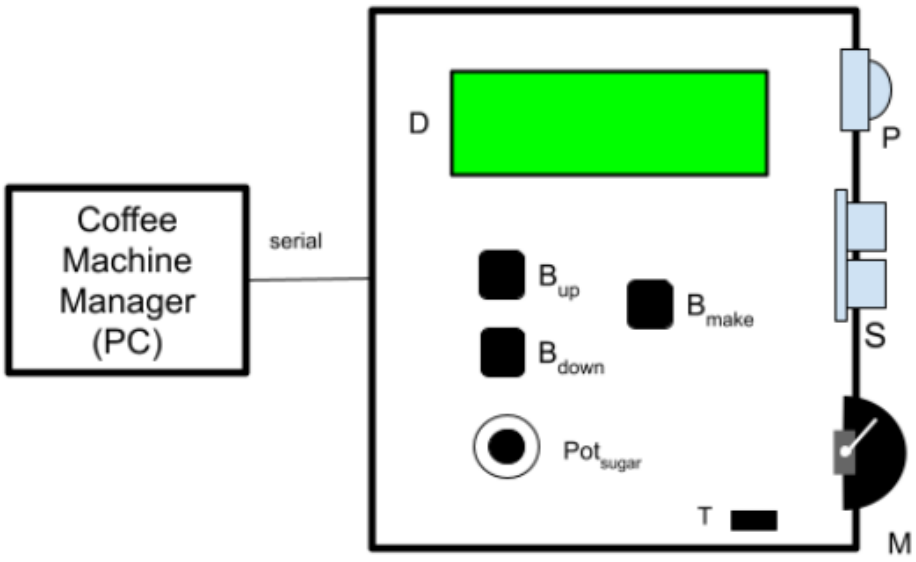

Figure 1: Sketch

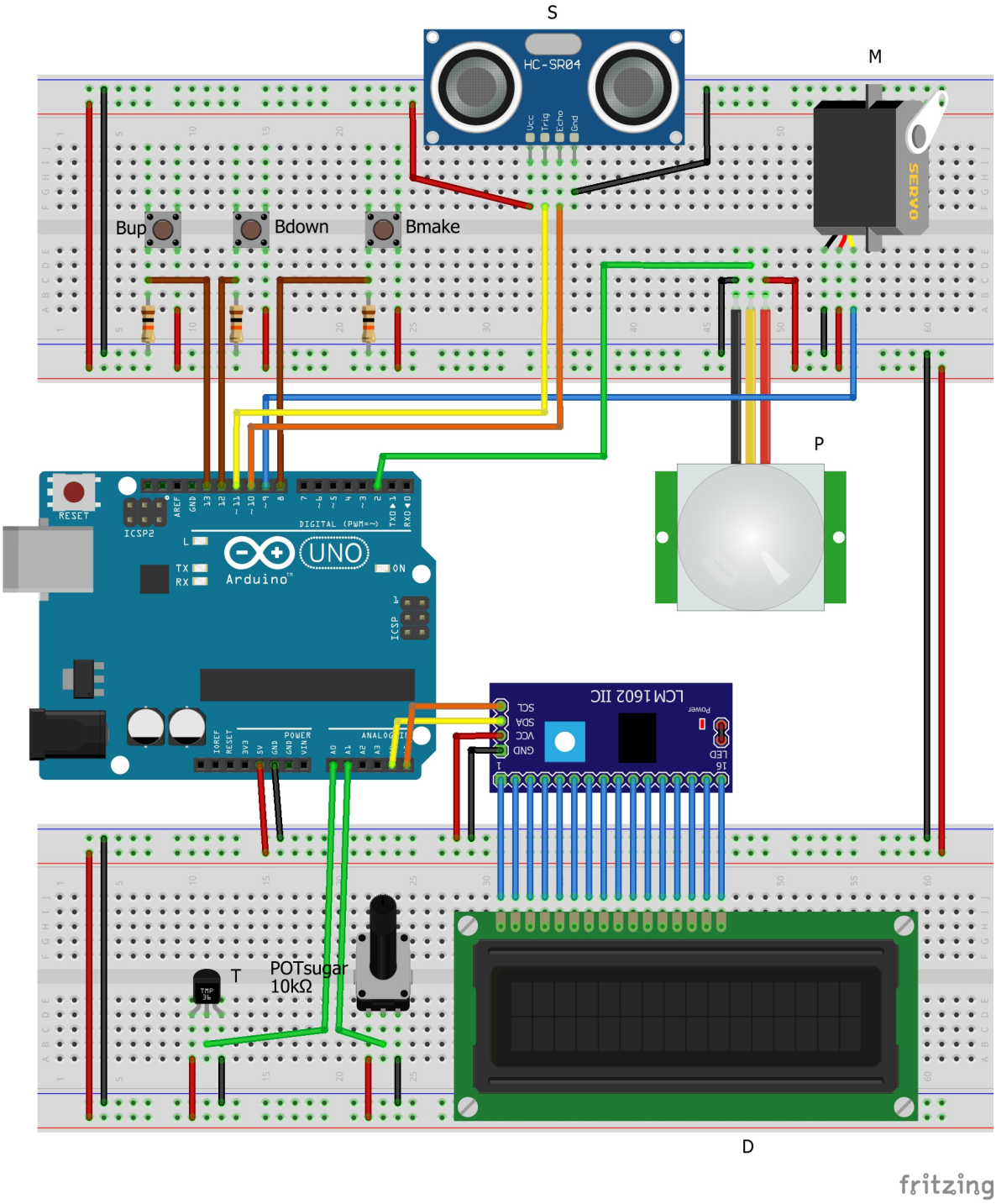

Figure 2: Schema

3 Final State Machine Diagram

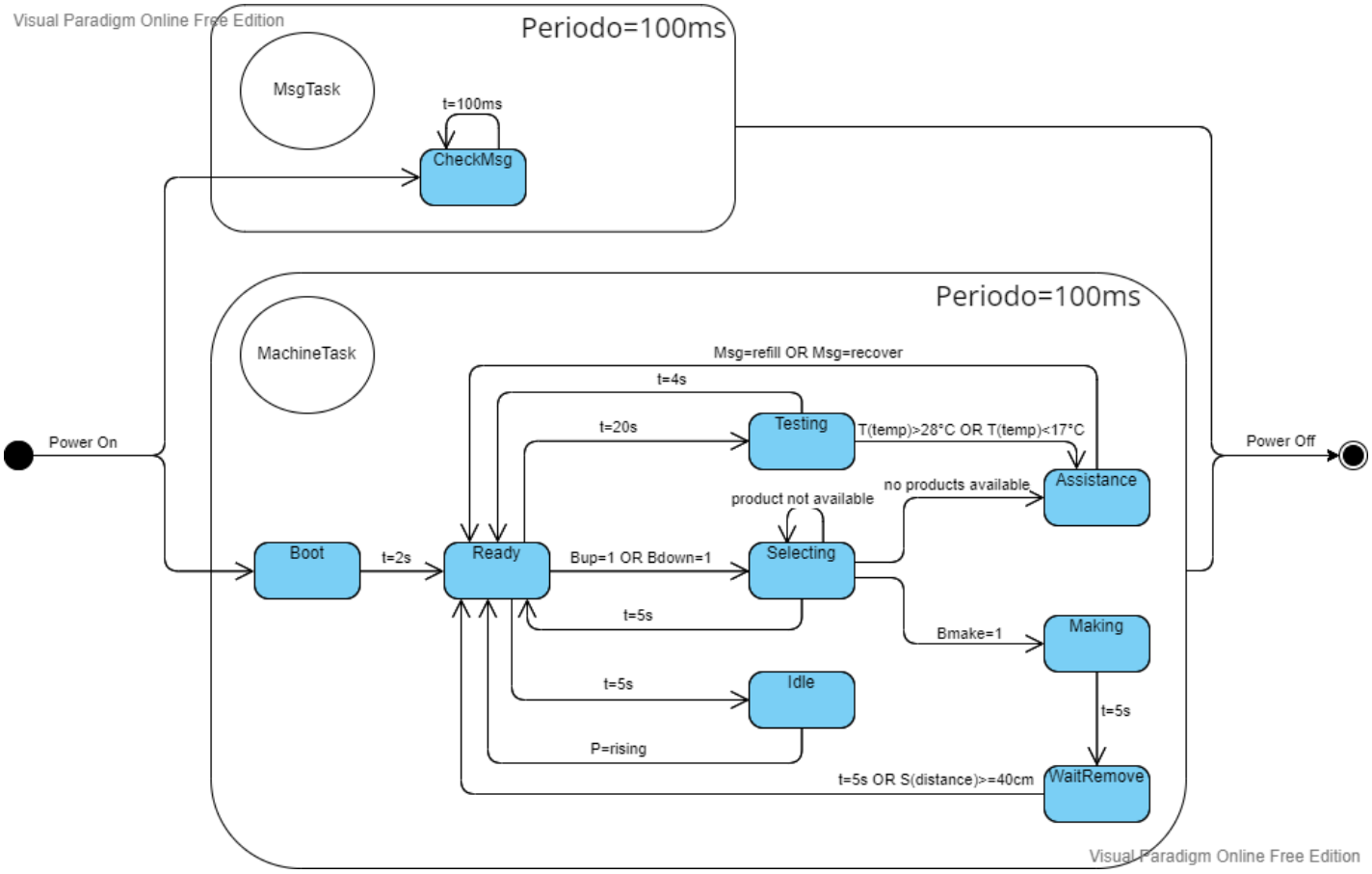

Figure 3: Schema

3.1 Output table for each state

States	Output peripheral	
	D	M
Boot	"Welcome to the Coffee Machine!"	0°
Ready	"Ready"	0°
Selecting	The current selected product	-
Making	"Making ..." and the selected product	0° -> 180°
Assistance	"Assistance required"	-
WaitRemove	The selected product and "... is ready"	-
Idle	"idle"	-
Testing	"testing"	0° -> 180°-> 0°

Figure 4: Output table for each state. D is the LCD I2C display and M is the servo motor.

4 GUI

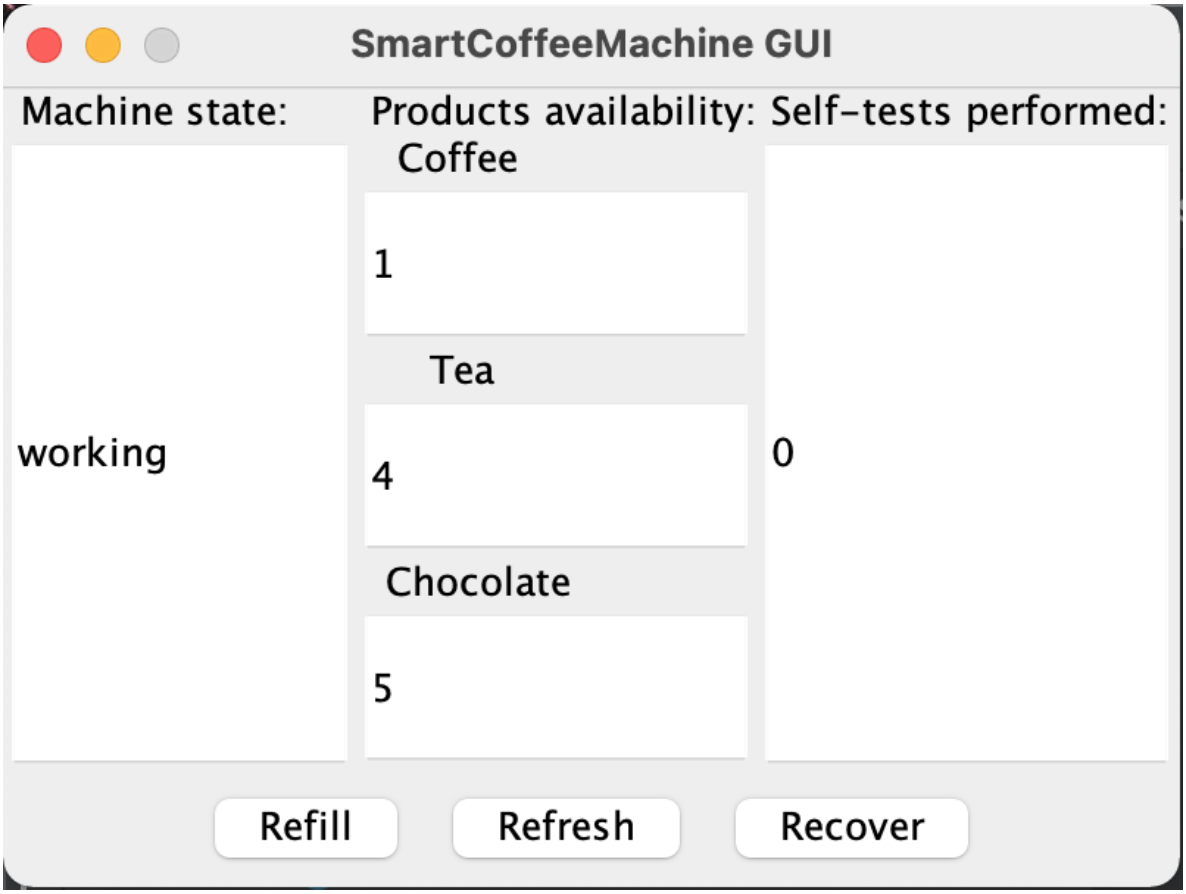

Figure 5: GUI

Button actions:

- *Refill* → refill the machine and exit from *assistance* state when no more products are avilable.
- *Refresh* → get all new values from the machine and update the GUI.
- *Recover* → exit from *assistance* state when a self test of the machine fails.