Arduino washing machine

Process report

ProC++

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Introduction

As part of the requirements of the Proc++ module, we as a group had a project work to make a washing machine simulator. Not only did we have to do the coding aspect of the project but also to make the tests, design documents and finally a Process Report. This document being the process report, will elaborate on success and challenges faced during our participation in this project.

This document will give a brief overview of decisions made concerning the project with state diagrams. The document will also give an overview of choices we made and also problems we encountered and how we were able to solve them ourselves as a group and also our Proc++ lecturer. It also includes our class diagram.

Overview of the progress

During the Block, we had a meeting once a week on Wednesday with Mr. Lambooij. Below are the progress of each week.

Week 1

This was an introduction meeting, the forming stage of the group. Where the group members interacted with each other to get to know each other more and also know where each of our areas of expertise lies. We also had a short discussion with Mr. Lambooij about the project about the requirements of the software, etc.

Week 2

We had the demo of Basic Washing Machine tested and everyone was still trying to get familiar with the Lab Manual.

Week 3

We decided to work by Github and made our repositories. We had some Implementation of buttons such as keySelect and the first version of the class diagram was made.

Week 4

The state diagram was made. Implementation on CoinWallet, ICoin, IMotor, IBuzzer, IWater, IProgram, ITemperature, ILock and ISoap.

Week 5

Modified the hardware layer. Implementation on IMotor and IWater. Some tests implementation on IMotor and ITemperature.

Week 6

During this week, we were still working on implementing the tests. We had a meeting with the teacher when we showed him our progress and he has a few remarks for us. We discussed whether to change the class diagram and state machine.

- We as a group, reviewed our work with the teacher and we came up with some notes of which functionality we have to implement.
- Also, we received feedback on how to improve the GitHub activities.

Week 7/8

We improved everything we had already and also revised the class diagram and state diagram of program A, B and C. We kept making the tests. The Button State and Switch State.

Explanation of Choices

We had quite few important choices to make such as:

- architecting the software class diagrams and coming up with a right approach for running the program executors.

- About the test, although that the initial idea was to not use the Gtest but we ended up learning it and deploying it properly.

- We decided to use GitHub as our workspace, C++ language to program, Arduino, GNU/make and Gtest. The methods from Gtest that we used were TEST, ASSERT_EQ, EXPECT_EQ, etc.

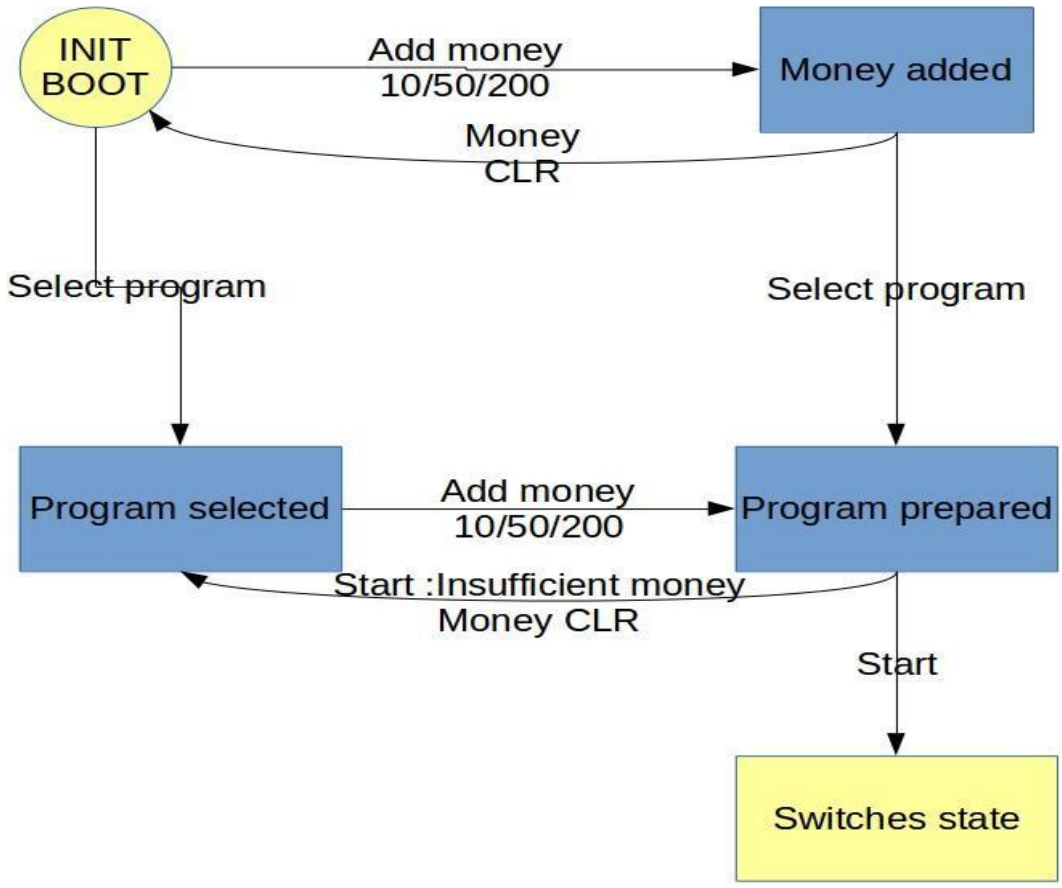
Problems Encountered and their solutions

We encountered a few problems during the entire project, this section will give an overview of them and how they were solved.

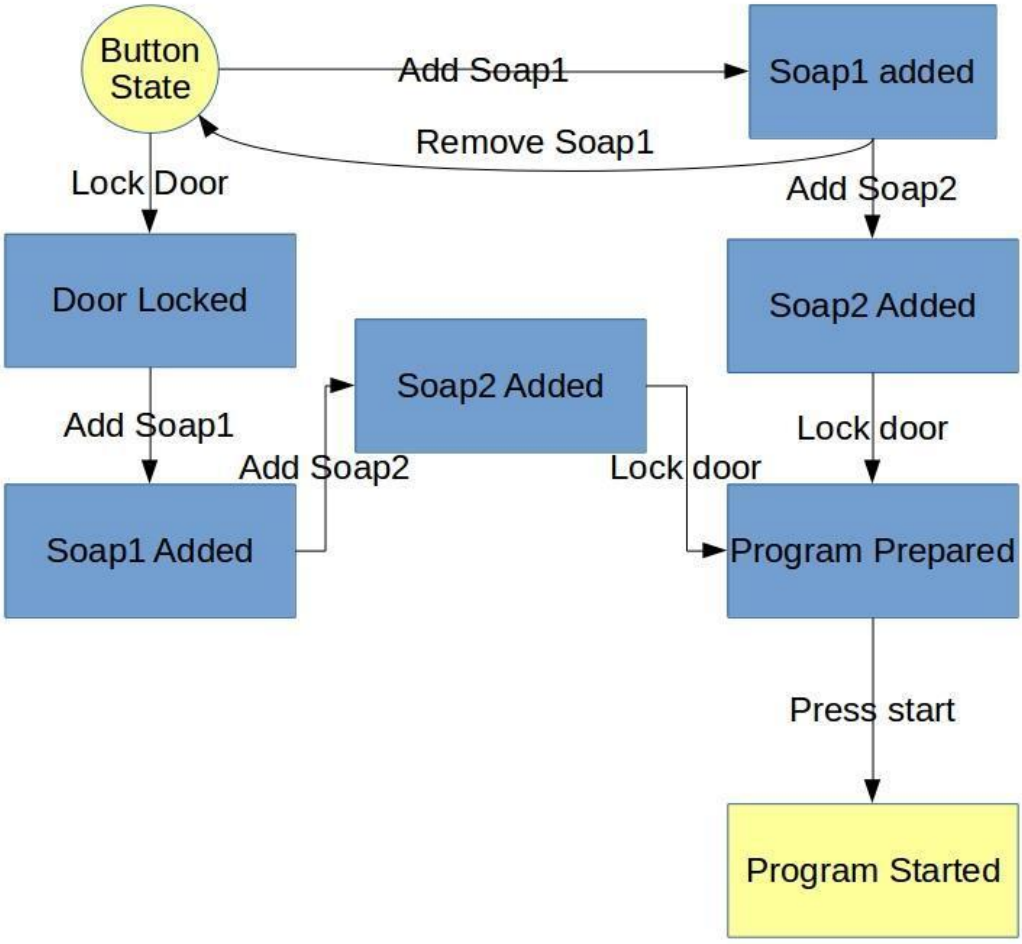
- We had a challenge to get our state diagrams right.
- The coin LEDs were not functioning properly.
- Setting up the keySelect was a bit challenging.
- The hardware we had was not working at some point.

Diagrams

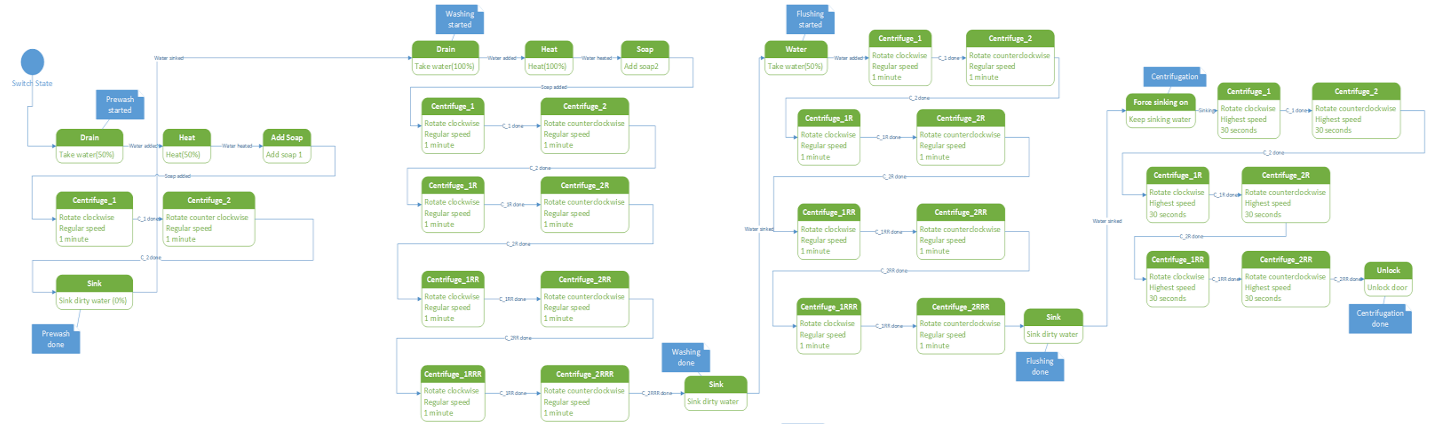
Button State



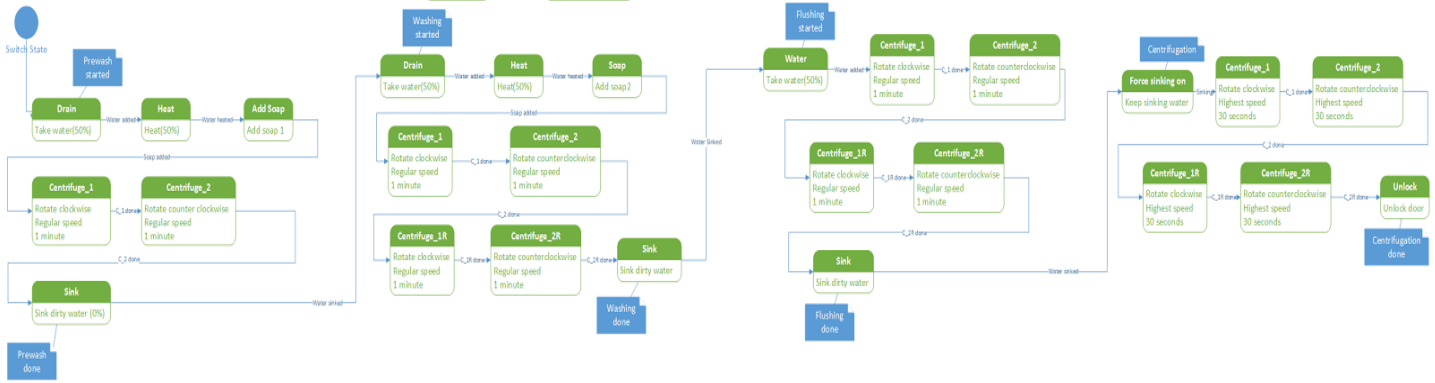
Switch State



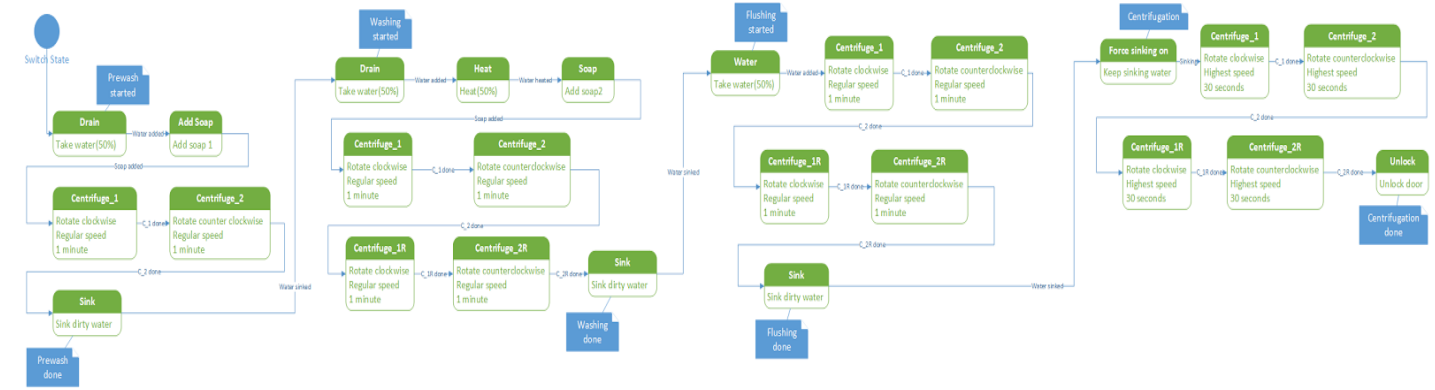
Program C



Program B



Program A



Class diagram