EE322: Embedded Systems Design - Project

Coin Sorter and Calculator

Project Progress Report 2

Date of submission : 30/07/2021
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Progress From 10/07/2021 to 30/07/2021

Overall percentage progress

0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
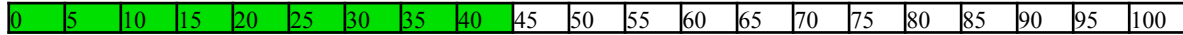
Introduction

This report covers the progress of this project for the period from 10/07/2021 to 30/07/2021. During the earlier days within this period, the team was unable to make much progress on the project. However, activity on the project resumed in the latter part of the period. During this time, the team took meetings to discuss the project and work on the required documents, as well as gather some of the required apparatus. Majority of the discussions were done via Google Meet while using Google Jamboard to collaboratively brainstorm and present ideas. GitHub was used to host and update assembly code.

Brief of past progress

Initially, a Google Jamboard and Google Drive folder were created to make collaboration and sharing of resources easier. After deciding on "Coin Sorter and Calculator" as the topic for the project, the mechanical components and the structure of the product were discussed. Experimental measurements of coin weights were taken to get an idea of input ranges. A PICkit 3 Microchip Programmer, a PIC16F84A microcontroller, a load cell for sensing input, and 0.47 mm steel sheet shaping for the body were purchased during this period. Furthermore, the UML class diagram and use case diagram were developed, and the development of the sequence diagram had begun. Submission of the project proposal and the first progress report was also done during this time.

Progress for the period from 10/07/2021 to 30/07/2021

10/07/2021

> An experiment was carried out to test the hardware implementation of the PIC16F84A microchip and the PICkit 3 Programmer. For this, a simple LED blink circuit was used and the experiment was successful.

Figure 01: Experimental PIC circuit

28/07/2021

Meeting 10: 1700h - 1930h

The State Diagram was prepared and was submitted to FEeLS at 2130h. In addition, a GitHub repository was created in order to work on the assembly code collaboratively.

Figure 02: Jamboard session from meeting 10

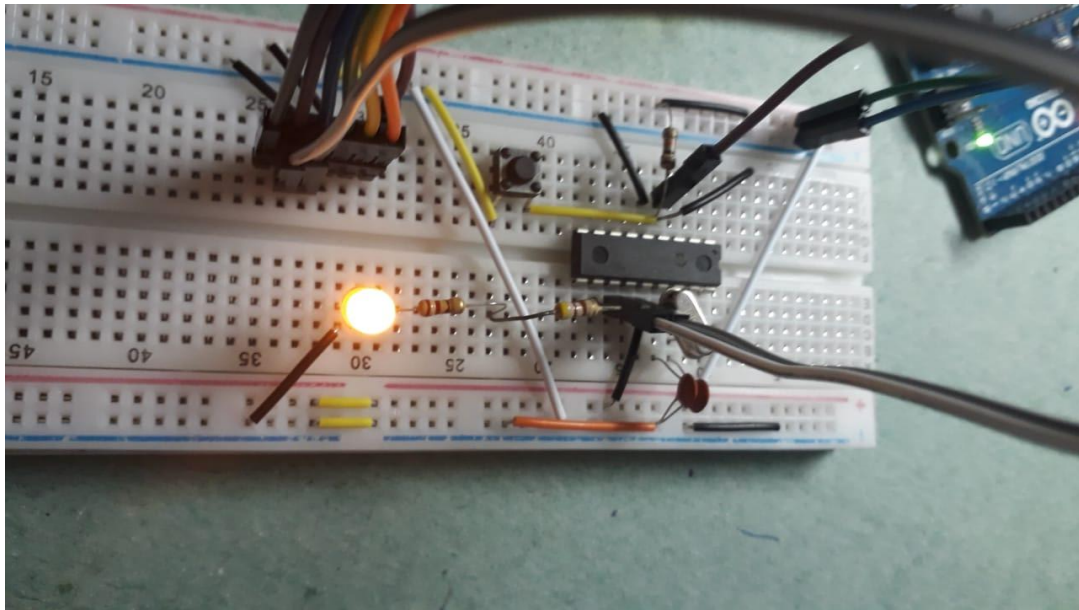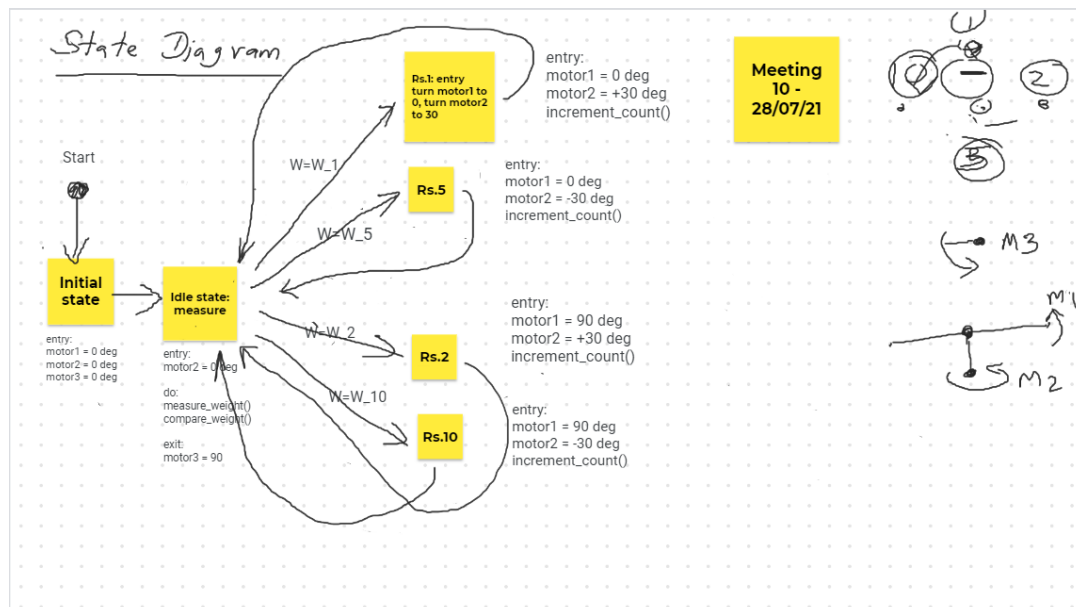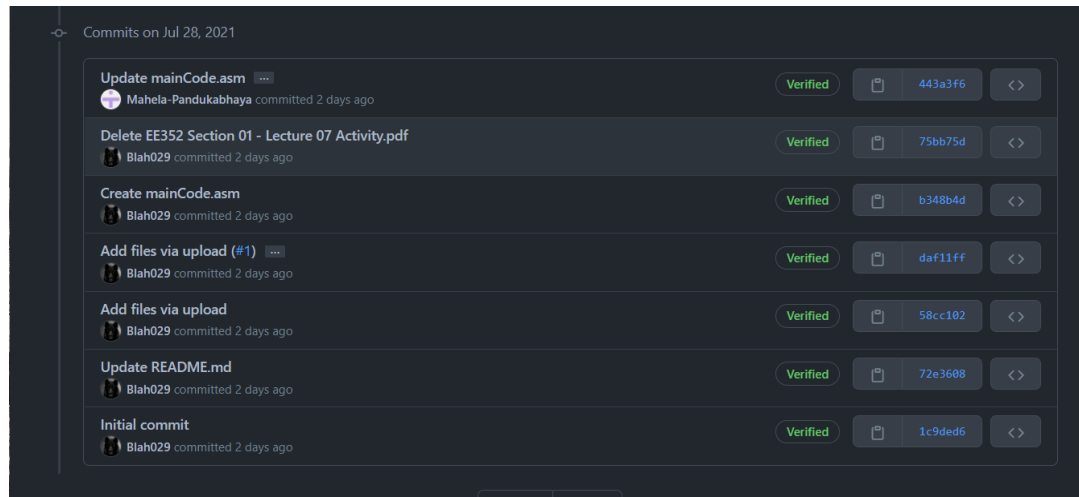Figure 03: Commits made to the project repository during meeting 10

29/07/2021

Meeting 11: 1700h - 1945h

A pseudocode to model the assembly code was written, and was shared by uploading it to the GitHub repository. With the help of the pseudocode, the UML sequence diagram for the device was prepared using draw.io, and the group members worked collaboratively on this through draw.io Online. The sequence diagram was submitted to FEeLS at 2000h.

Also, work on the simulation of the device was started. A template Proteus file was created, and it was uploaded to the GitHub repository. In addition, preparation of the progress report 2 (this document) was started.
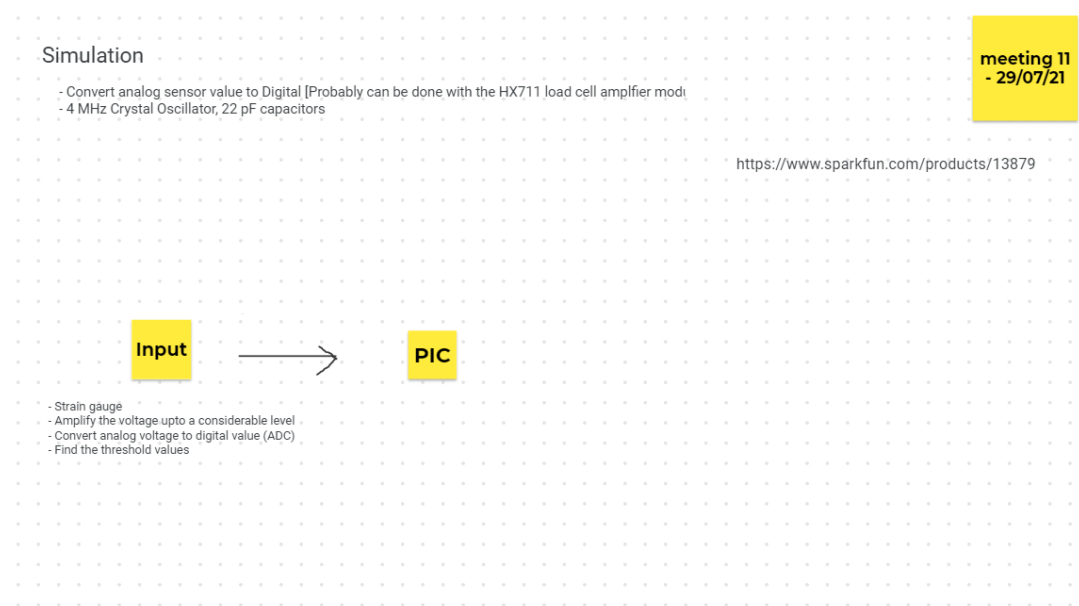

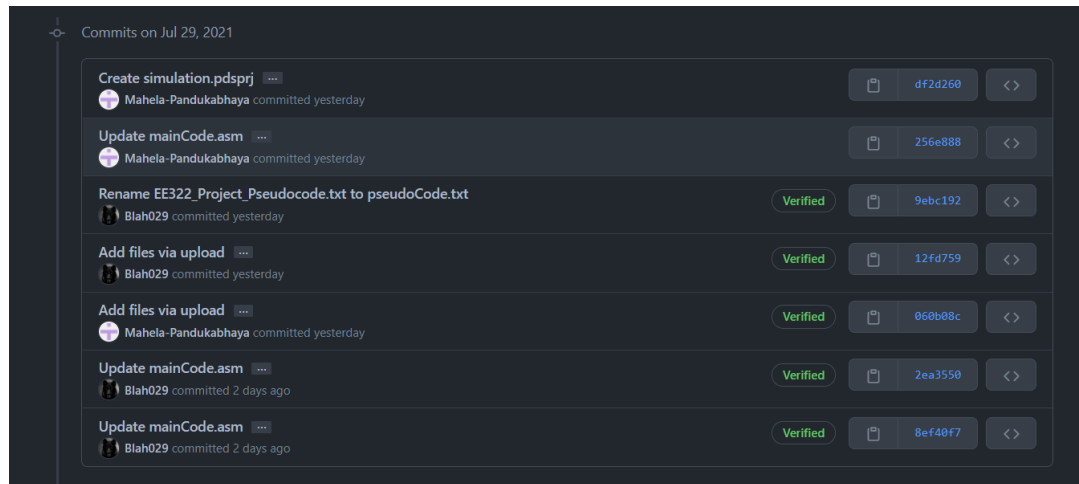Figure 04: Jamboard session from meeting 11

Figure 05: Commits made to the project repository during meeting 11

30/07/2021

Meeting 12: 2000h -2200h

The progress report 2 was completed and is planned to be submitted to the FEeLS. A repository branch was created for the development of the simulation.
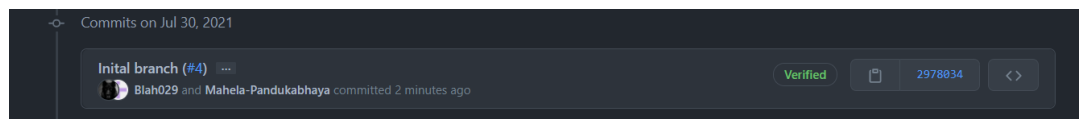

Figure 06: Merges made to the project repository during meeting 12

Cost Analysis

The cost analysis for the period between 10/07/2021 to 30/07/2021 is given in Table 01.

Table 01: Cost analysis for the period between 10/07/2021 to 30/07/2021

Task	Budgeted cost (Rs.)	Expenses from 10/07/2021 to 30/07/2021 (Rs.)	Comments
Purchases			
Servo Motor Plastic Wheel SG90 Full Set Normal	280.00	300.00	A single motor was initially bought for testing purposes
4 MHz Crystal Oscillator	15.00	15.00	
22 pF Electrolytic capacitors	4.00	4.00	
18-pin DIP IC Base 2.54 mm	10.00	10.00	
Circuit wires	90.00	90.00	
Soldering lead	30.00	30.00	
Total		**449.00**	

Timeline: Planned vs. Actual

A comparison between the planned execution time and the actual execution time of each task that was proposed in our project proposal is given in Table 02.

Table 02: Timeline: Planned vs. actual

	Activity	2021											
		June				**July**				**August**			
1.	Project start and submission of the proposal		🟦	🟦									
			🟥	🟥									
2.	Analysis and designing			🟦	🟦	🟦	🟦						
				🟥	🟥	🟥	🟥						
3.	Simulation					🟦	🟦	🟦					
									🟥				
4.	Hardware implementation							🟦	🟦	🟦			
5.	Report writing and project completion										🟦	🟦	
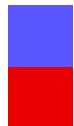
🟦 Planned execution time of the task as of the initial proposal

🟥 Actual execution time of the task due to delays etc.