EE322: Embedded Systems Design - Project

Laser Communication System

Project Progress Report - 1

08/07/2021
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Progress from 16th June 2021 to 08th July 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

In Industrial applications, transmitting and receiving signals with higher precision and accuracy is the prime goal. For the embedded system project, we have designed a model to approach this using a laser beam. The system can transmit 4-bit simplex signals efficiently with a low-cost setup and display the received signal. To approach this, a transmitter and a receiver will be designed separately. For demonstration purposes, the transmitter is input with a 4-bit digital signal and the receiver displays the relevant signal. We aim to achieve this goal using two PIC16F84A microcontrollers for the hardware and Assembly language for scripting.

In this case, UML diagrams were used to launch our project. We have generated the overall vision of the project using the use case diagram, class diagram and sequential diagram.

We created the Proteus Simulation Circuit Diagram and PCB Layout to get a strong idea of the final outcome.

Progress for the period from 16th June 2021 to 08th July 2021

Project proposal

At the initial stage, we did a comprehensive study of our product, then studied its basic features and created the layout. All the relevant facts were included in the project proposal. (https://feels.pdn.ac.lk/pluginfile.php/60474/mod_data/content/11084/G18_Project_Proposal_EE322.pdf)

UML diagrams

Use case diagrams, class diagrams, and sequential diagrams will give you a clear idea of the project functionality we are undertaking.
It also provided an opportunity for anyone who is studying this project and related projects to make use of these resources.

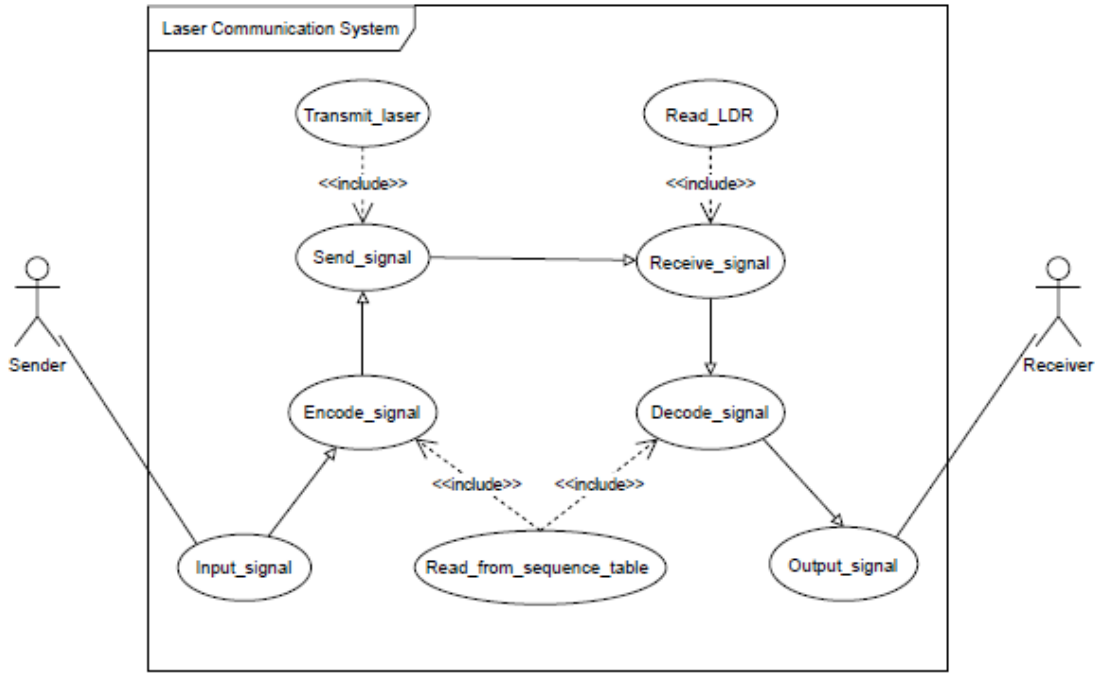

Figure 1: UML - Use Case Diagram
(https://feels.pdn.ac.lk/pluginfile.php/60474/mod_data/content/11088/G18_UML_Use_Case_Diagram_EE322.pdf)

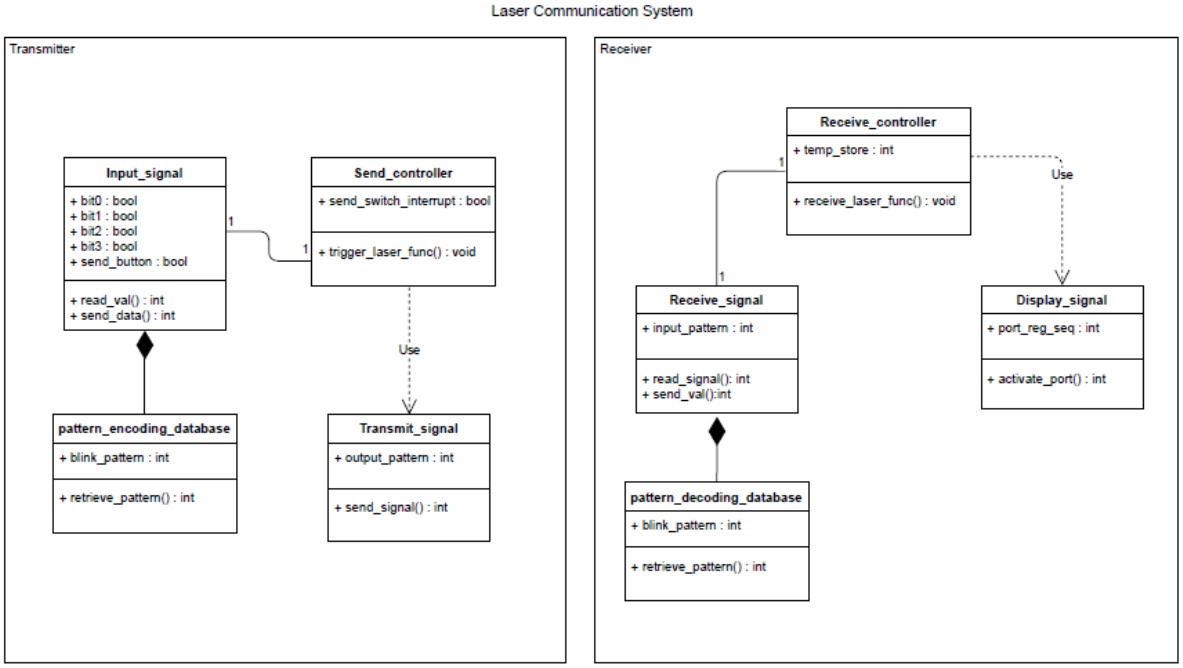

Figure 2 : UML - Class Diagram
(https://feels.pdn.ac.lk/pluginfile.php/60474/mod_data/content/11089/G18_UML_Class_Diagram_EE322.pdf)

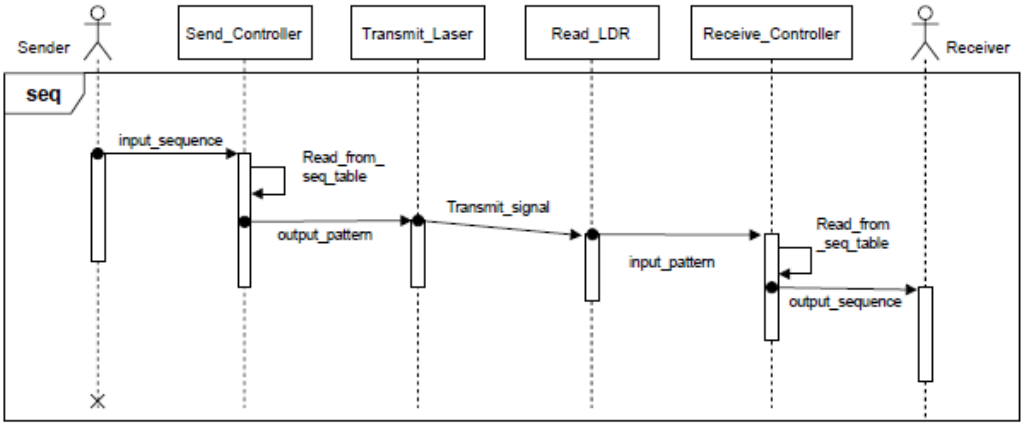

Figure 3: UML - Sequence Diagram
(https://feels.pdn.ac.lk/pluginfile.php/60474/mod_data/content/11090/G18_UML_Sequence_Diagram_EE322.pdf)

Layout Designs

The Proteus simulation circuit diagram (Figure 4) was designed to facilitate assembly scripting and software simulation.
The schematic diagram for the Transmitter module was finalized (Figure 5) up to now. Schematic for the Receiver and the two PCB designs will be completed in the later steps.

Timeline (Gantt chart)

Table 1 :Timeline

Task	JUNE		JULY				AUGUST			
	3rd Week	4th Week	1st Week	2nd Week	3rd Week	4th Week	1st Week	2nd Week	3rd Week	4th Week
Creating project groups										
Registering the project Title										
Preparing the project proposal										
Simulation and coding UML Diagram										
Hardware prototype (Progress Report 1)										
Prototype development and testing (Progress Report 2)										
Progress Report 3 and Final project submission										

Planned execution time of the task as of the initial proposal
Actual execution time of the task due to delays etc.

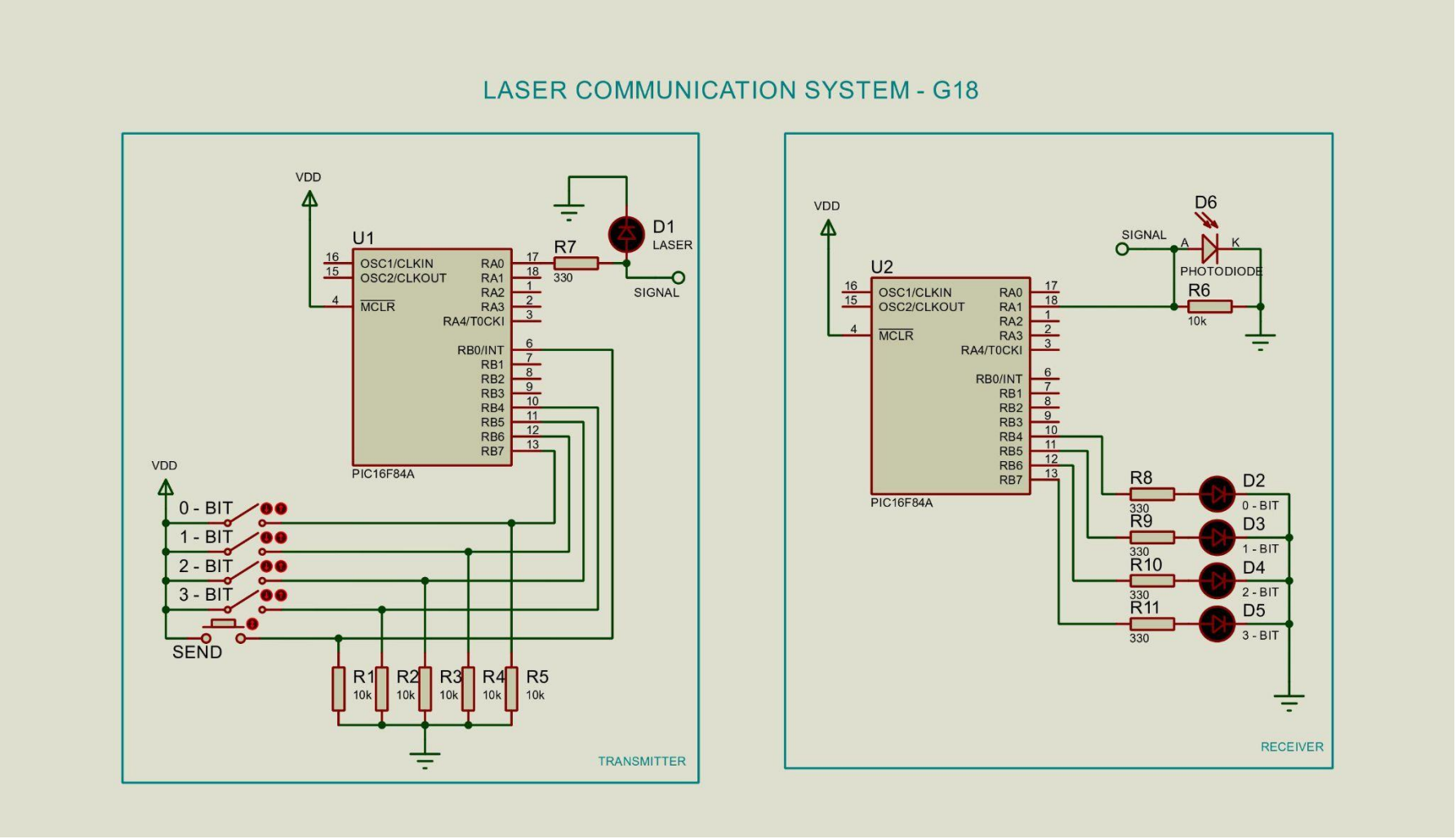

Figure 4 : Proteus Simulation Circuit Diagram

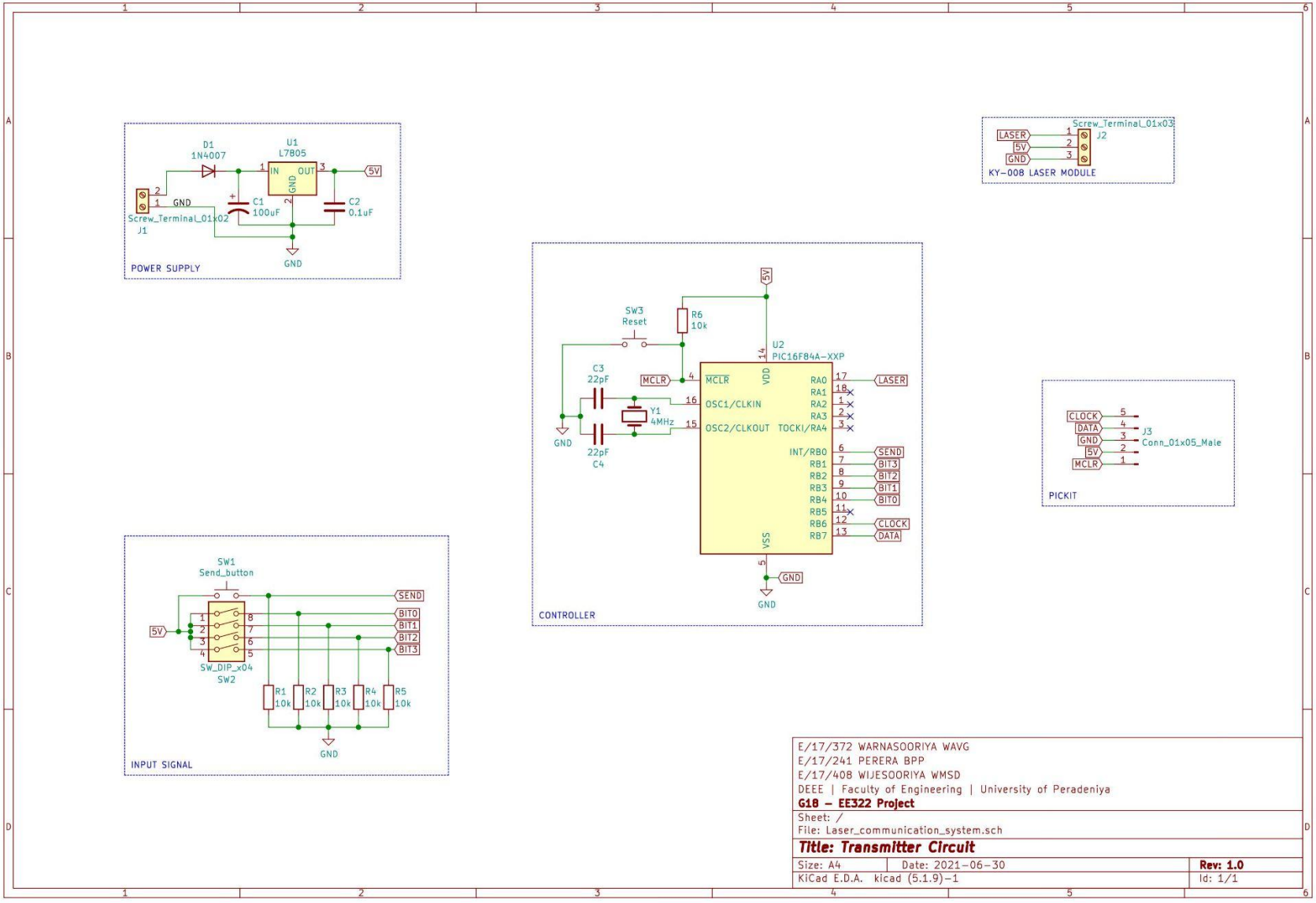

Figure 5 : Transmitter Schematic Layout