GAZİ UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING

EEE306 / CENG318 - MICROPROCESSOR PROJECT

ELECTRICAL ELECTRONICS ENGINNERING - COMPUTER ENGINEERING DEPARTMENTS INTERDISCIPLINARY WORK

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1.2ND REPORT CIRCUIT DIAGRAM AND HARDWARE OF THE PROJECT

Some changes have been made to the circuit established as the estimation in the first report and the flowchart used as the estimation. Based on hardware, the use of analog pins as digital pins has been tested and digital pins {2,3,4,5} are used for the first 4 LEDs, while it has been decided to use analog pins {A0,A1,A2 and A3} for the last 4 LEDs.

In Figure 1 and Figure 2, the circuit and diagram used in the first report were arranged and the circuit was designed as in Figures 3 and 4 in order to obtain a more meaningful image, and the circuit took its final shape.

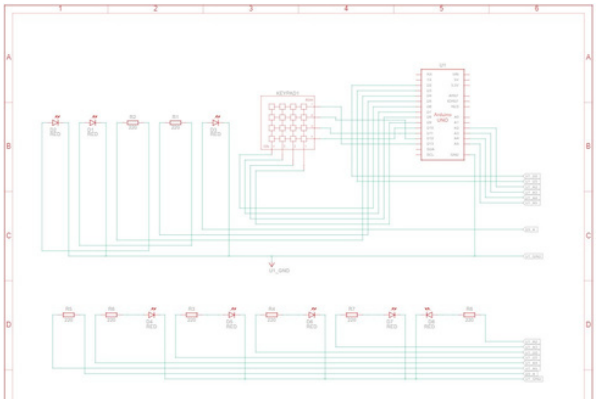


Figure 1 - Previous Circuit Diagram

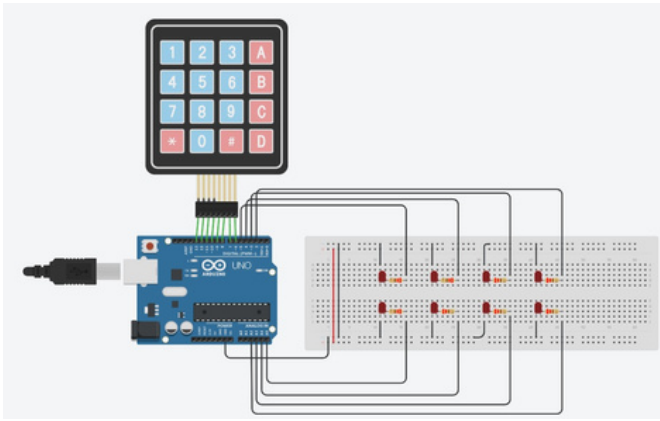


Figure 2 - Previous Circuit Schematic

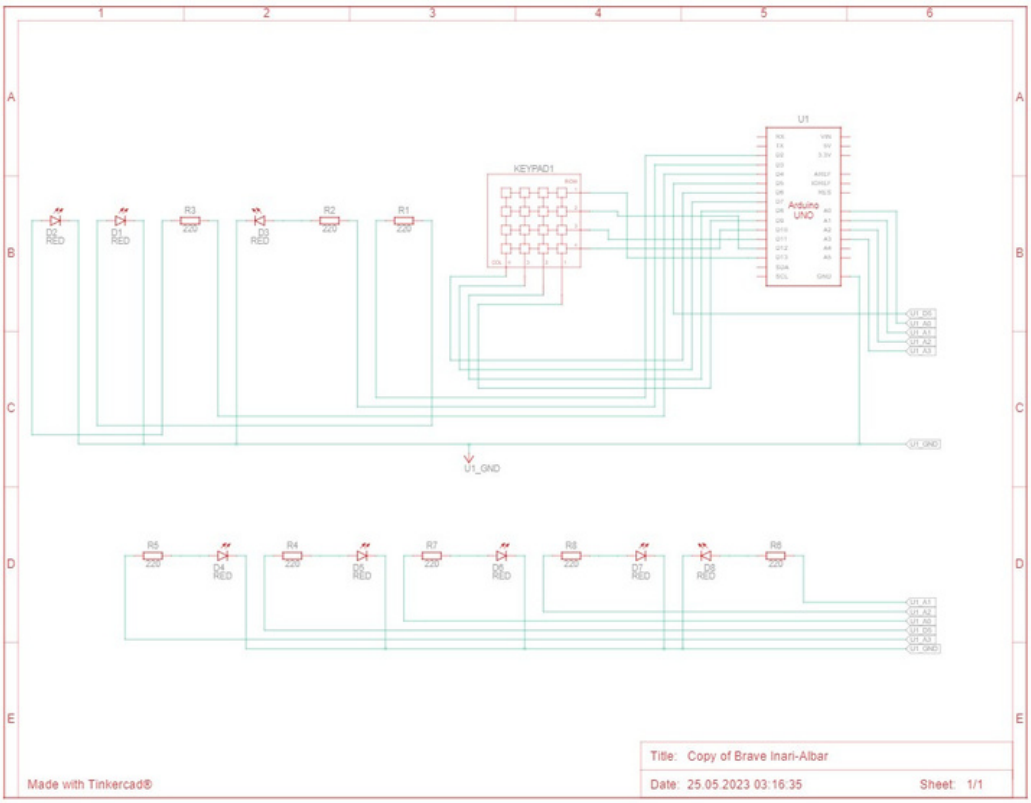


Figure 3 - Current Circuit Diagram

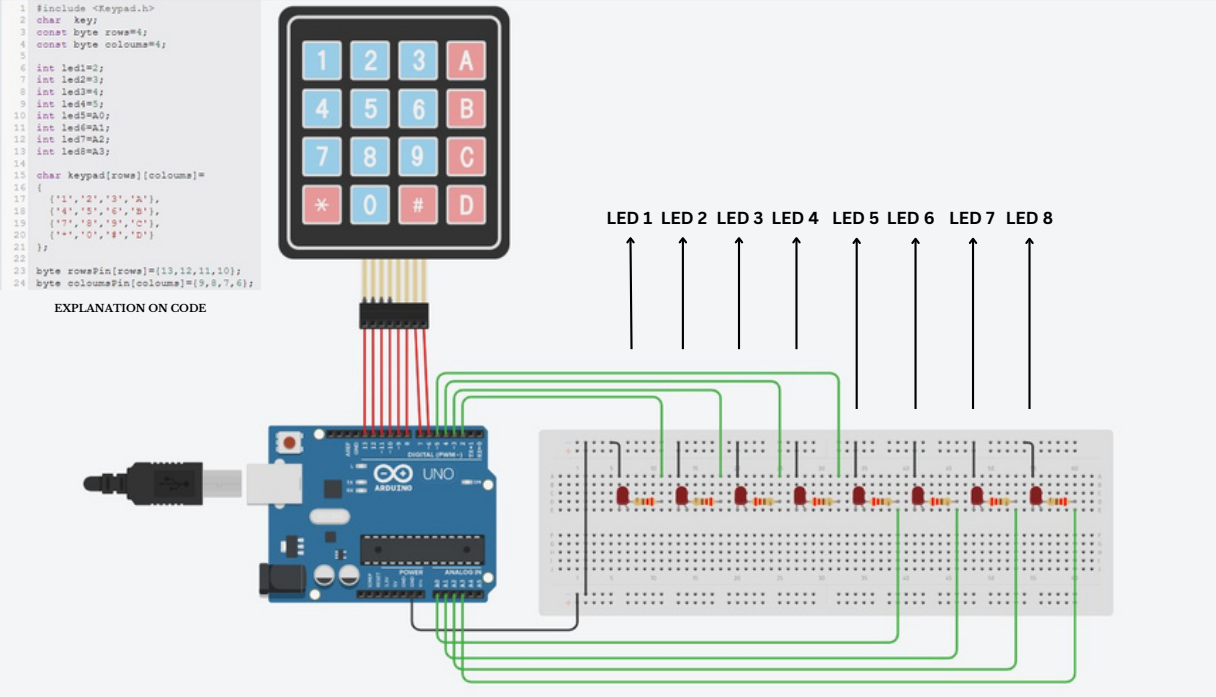


Figure 4 - Current Circuit Schematic

In the currently installed circuit, the row and column connections of the keypad are provided with digital pins between 6 and 13.

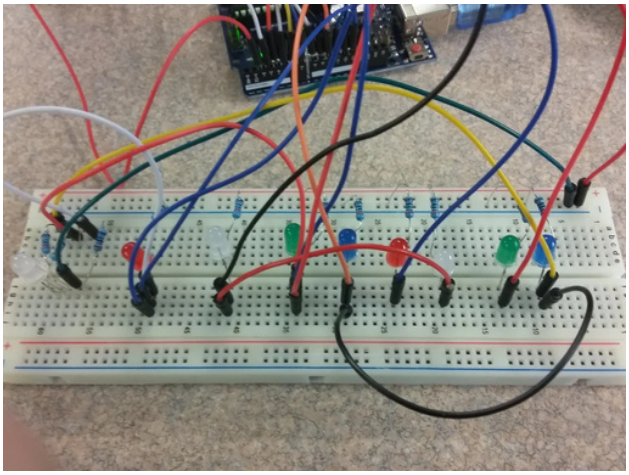
The links of Keypad are as follows;

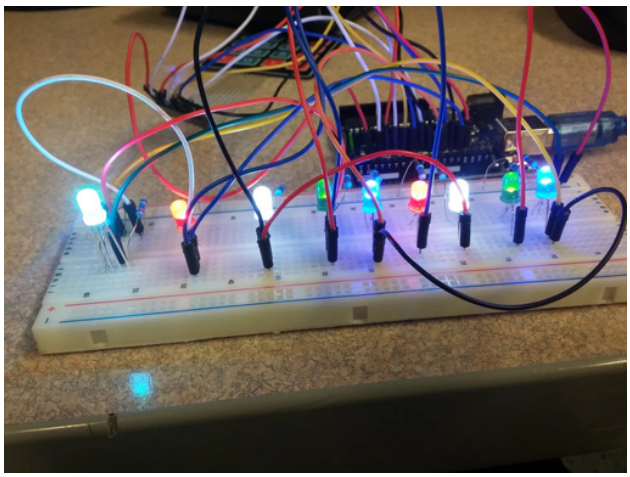
1. The 1st line of the keypad is connected with the 13th digital pin,
2. The 2nd line of the keypad is connected with the 12th digital pin,
3. The 3rd line of the keypad is connected with the 11th digital pin,
4. The 4th line of the keypad is connected with the 10th digital pin,
5. The 1st column of the keypad is connected with the 9th digital pin,
6. The 2nd column of the keypad is connected with the 8th digital pin,
7. The 3rd column of the keypad is connected with the 7th digital pin,
8. The 7th column of the keypad is connected with the 6th digital pin.

The links of LEDs are as follows;

1. The 1st LED is connected to the 5th digital pin.
2. The 2nd LED is connected to the 4th digital pin.
3. The 3rd LED is connected to the 3rd digital pin.
4. The 4th LED is connected to the 2nd digital pin.
5. Tx and Rx pins used for communication are not used. After the 2nd digital pin, Analog pins that can give digital output are used.
6. The 5th LED is connected to analog pin A0.
7. The 6th LED is connected to analog pin A1.
8. The 7th LED is connected with analog pin A2.
9. The 8th LED is connected to analog pin A3.

2.HARDWARE COMPONENTS





The above is the final version of the circuit example with incomplete hardware part, which can present 15 different light models.

1. ARDUINO UNO
2. ARDUINO BREADBOARD
3. JUMPER WIRES
4. 8 x 220 OHM RESISTANCE
5. 8 x LED
6. 4 x 4 KEYPAD

(It has been put on the breadboard so that it can be understood whether the extra LED circuit is working.)

3.LIGHT PATTERNS

The definition of light patterns is completed by considering the LEDs as an 8-bit number. Certain keys on the keypad were assigned specific tasks that were not decided in the previous report. The keys with special purposes and the light patterns represented by the other keys are shown below.

'A'	RESET
'B'	1111 1111
'C'	1010 1010
'D'	0101 0101

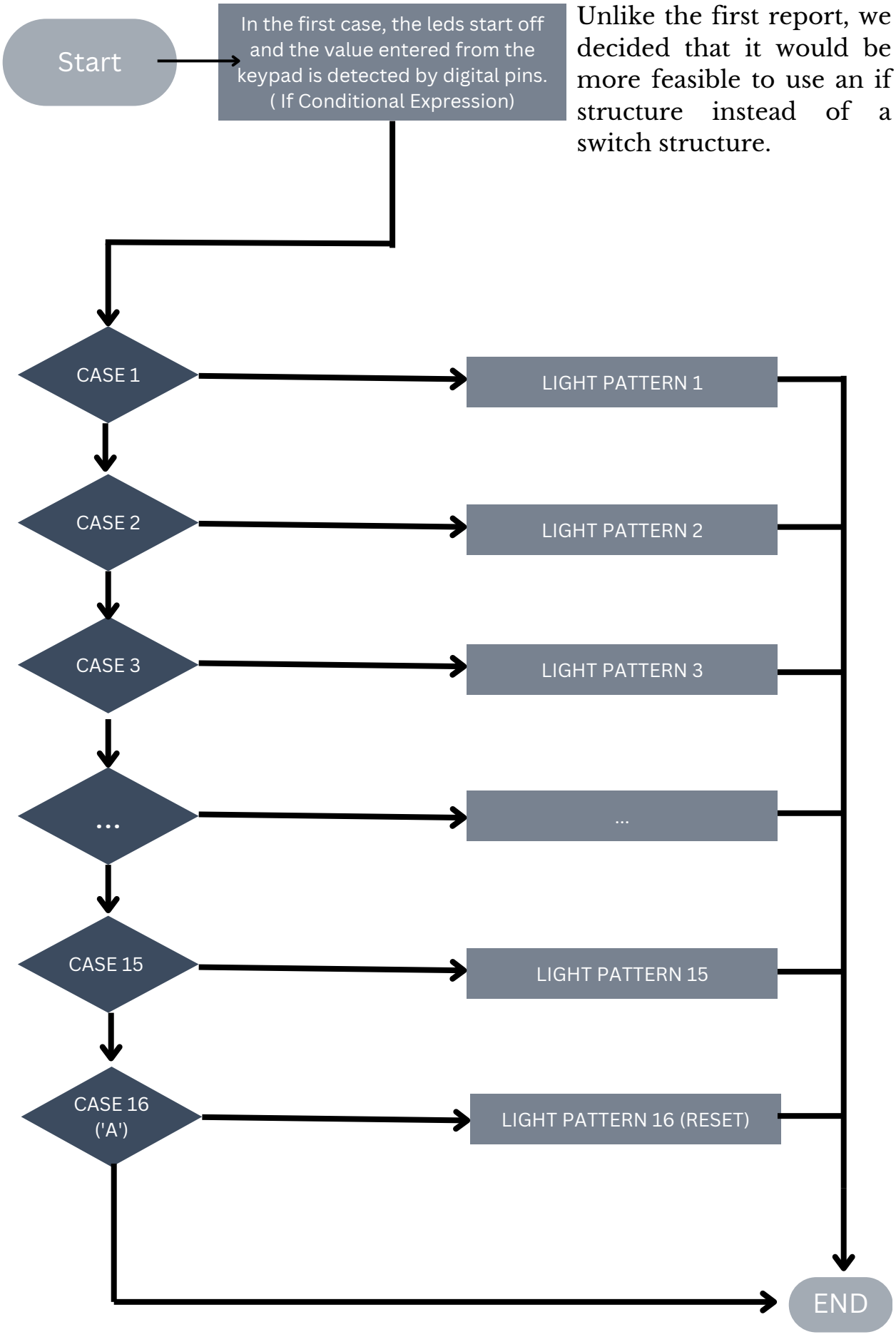
LIGHT PATTERN 1	LIGHT PATTERN 2	LIGHT PATTERN 3
1000 0000	0000 0001	1111 1110
0100 0000	0000 0010	1111 1101
0010 0000	0000 0100	1111 1011
0001 0000	0000 1000	1111 0111
0000 1000	0001 0000	1110 1111
0000 0100	0010 0000	1101 1111
0000 0010	0100 0000	1011 1111
0000 0001	1000 0000	0111 1111

LIGHT PATTERN 5	LIGHT PATTERN 5	LIGHT PATTERN 6
0111 1111	1000 0000	0000 0001
1011 1111	1100 0000	0000 0011
1101 1111	1110 0000	0000 0111
1110 1111	1111 0000	0000 1111
1111 0111	1111 1000	0001 1111
1111 1011	1111 1100	0011 1111
1111 1101	1111 1110	0111 1111
1111 1110	1111 1111	1111 1111

LIGHT PATTERN 7	LIGHT PATTERN 8	LIGHT PATTERN 9
0001 1000	1000 0001	1010 1010
0011 1100	1100 0011	0101 0101
0111 1110	1110 0111	1010 1010
1111 1111	1111 1111	0101 0101
1110 0111	1110 0111	1010 1010
1100 0011	1100 0011	0101 0101
1000 0001	1000 0001	1010 1010
0000 0000	0000 000	0101 0101

LIGHT PATTERN 10	LIGHT PATTERN 11	LIGHT PATTERN 12
0101 0101	0000 0001	1000 0000
1010 1010	0000 0101	1010 0000
0101 0101	0010 0101	1010 1000
1010 1010	0101 0101	1010 1010
0101 0101	1000 0000	0000 0001
1010 1010	1010 0000	0000 0101
0101 0101	1010 1000	0001 0101
1010 1010	1010 1010	0101 0101

4.FLOWCHART



Unlike the first report, we decided that it would be more feasible to use an if structure instead of a switch structure.

5.GAZİ UNIVERSITY ELECTRICAL ELECTRONICS - COMPUTER ENGINEERING DEPARTMENTS INTERDISCIPLINARY WORK MEETING MINUTES

2 nd Meeting of The Project

PROJECT TOPIC : Different Light Pattern

Meeting Date : 21.05.2023

Meeting Agenda : In the second meeting agenda, the hardware part of the project was completed together with the group members. All the light patterns were determined and it was decided to use the if structure instead of the switch structure for the software part, and the final version of the flowchart was used.

Participants
181110059 - Fatma Başak ÖZKASAP [Electrical-Electronics Eng.]
Supply of Required Hardware Components, Preparation of the Circuit

C191130040 - Metehan ERKAN [Electrical-Electronics Eng.]
Preparation of the Circuit, Running Software on the Board

191180005 - Selin Cansu AKBAŞ¸[Computer Eng.]
Determination of Software Requirements, Program Writing

191180006 - Mert AKGÜÇ¸[Computer Eng.]
Debugging, Program Writing