

Experiment 1: Basics of Arduino

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1 Introduction

In this experiment, you will generate various led patterns that can be created in the figure 1. You can reach the design by clicking [this link](#).

- You can not use digitalWrite and pinMode functions.
- You can not use block programming provided by tinkercard.
- You must only use PORTC and similar registers to complete this experiment.

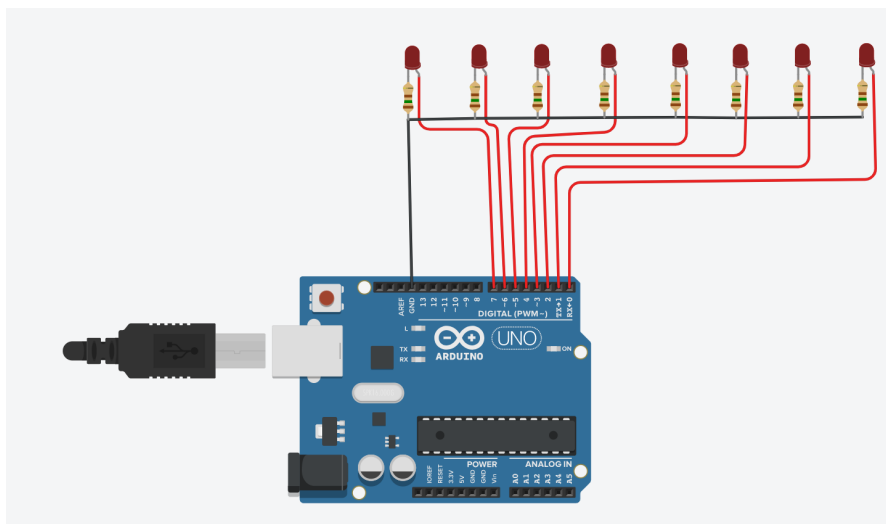


Figure 1: Circuit diagram.

2 Part 1

In this part you will code a simple 8-bit timer that only counts up and if it reaches 255, then it rounds back to 0. An example sequence is given in [1](#).

time	led pattern
n	11111101
n+1	11111110
n+2	11111111
n+3	00000000
n+4	00000001
...	...

Table 1: Example sequence of leds with 1 meaning led is open and 0 meaning led is closed.

3 Part 2

In this part, you will write a code that generates the sequence in table 2.

time	led pattern
0	0000000 1
1	000000 1 0
2	00000 1 00
3	0000 1 000
4	000 1 0000
5	00 1 00000
6	0 1 000000
7	1 0000000
8	0 1 000000
9	00 1 00000
10	000 1 0000
11	0000 1 000
12	00000 1 00
13	000000 1 0
14	0000000 1
15	000000 1 0
16	00000 1 00
...	...

Table 2: Example sequence of leds with 1 meaning led is open and 0 meaning led is closed.

4 Part 3

In this part you will display your names' first letters(using ASCII) in these leds. First letter of each group member's name must be looped over and over again. An example sequence is given in the table 3. You can use [Text to Binary Converter](#).

time	led pattern
n	01110100
n+1	01101111
n+2	01101100
n+3	01100111
n+4	01100001
...	...

Table 3: Example sequence of leds with 1 meaning led is open and 0 meaning led is closed. Displaying "tolga" in ASCII format.

5 Submission

- You should upload your experiment codes and report on Ninova, and please, do not send your experiment files via e-mail.
- You must upload each part's code separately to the ninova.
- Your reports must be written with Latex format. Latex report template is available on Ninova. You can use any Latex editor whichever you want. If you upload your report without Latex file, you directly get 0 as your report grade. You should upload both .pdf and .tex files of your report.
- Finally, please do not forget that late submissions are not accepted.