Microprocessor Techniques and Embedded Systems

PROJECT PRESENTATION
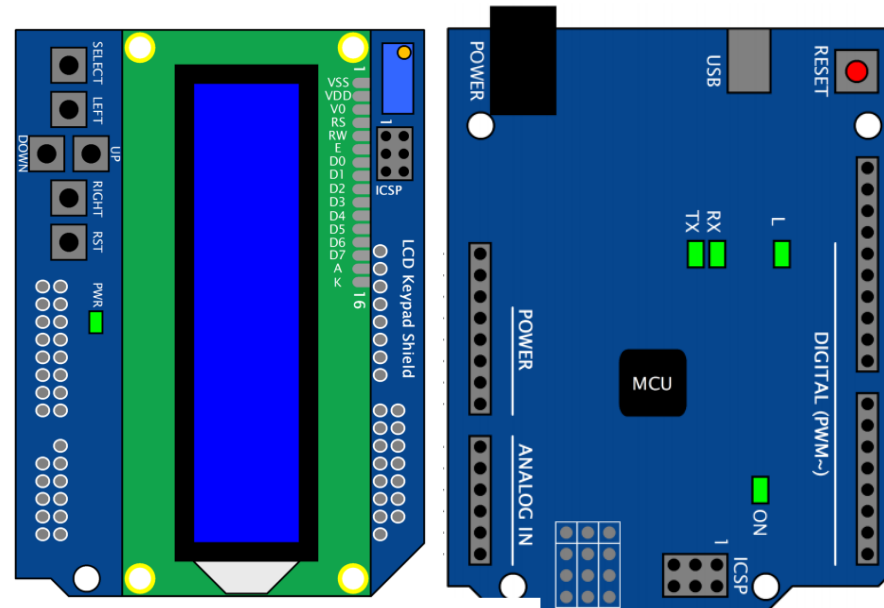
Project itself

The project goal is to make an application with:

- Time
- Date
- Alarms
- Chronometer
- Timer

Material used

▶ Arduino Uno target board with ATmega328/P microcontroller

▶ LCD Keypad Shield

▶ DS3231 RTC clock


Cesmeli, Dussol

# Material used

▶ DS3231 RTC clock

I2C address : 0x68

ADDRESS	BIT 7 MSB	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0 LSB	FUNCTION	RANGE
00h	0	10 Seconds			Seconds				Seconds	00–59
01h	0	10 Minutes			Minutes				Minutes	00–59
02h	0	12/$\overline{24}$	$\overline{AM}$/PM 20 Hour	10 Hour	Hour				Hours	1–12 + $\overline{AM}$/PM 00–23
03h	0	0	0	0	0	Day			Day	1–7
04h	0	0	10 Date		Date				Date	01–31
05h	Century	0	0	10 Month	Month				Month/ Century	01–12 + Century
06h	10 Year				Year				Year	00–99
07h	A1M1	10 Seconds			Seconds				Alarm 1 Seconds	00–59
08h	A1M2	10 Minutes			Minutes				Alarm 1 Minutes	00–59
09h	A1M3	12/$\overline{24}$	$\overline{AM}$/PM 20 Hour	10 Hour	Hour				Alarm 1 Hours	1–12 + $\overline{AM}$/PM 00–23
0Ah	A1M4	DY/DT	10 Date		Day				Alarm 1 Day	1–7
					Date				Alarm 1 Date	1–31
0Bh	A2M2	10 Minutes			Minutes				Alarm 2 Minutes	00–59
0Ch	A2M3	12/$\overline{24}$	$\overline{AM}$/PM 20 Hour	10 Hour	Hour				Alarm 2 Hours	1–12 + $\overline{AM}$/PM 00–23
0Dh	A2M4	DY/$\overline{DT}$	10 Date		Day				Alarm 2 Day	1–7
					Date				Alarm 2 Date	1–31

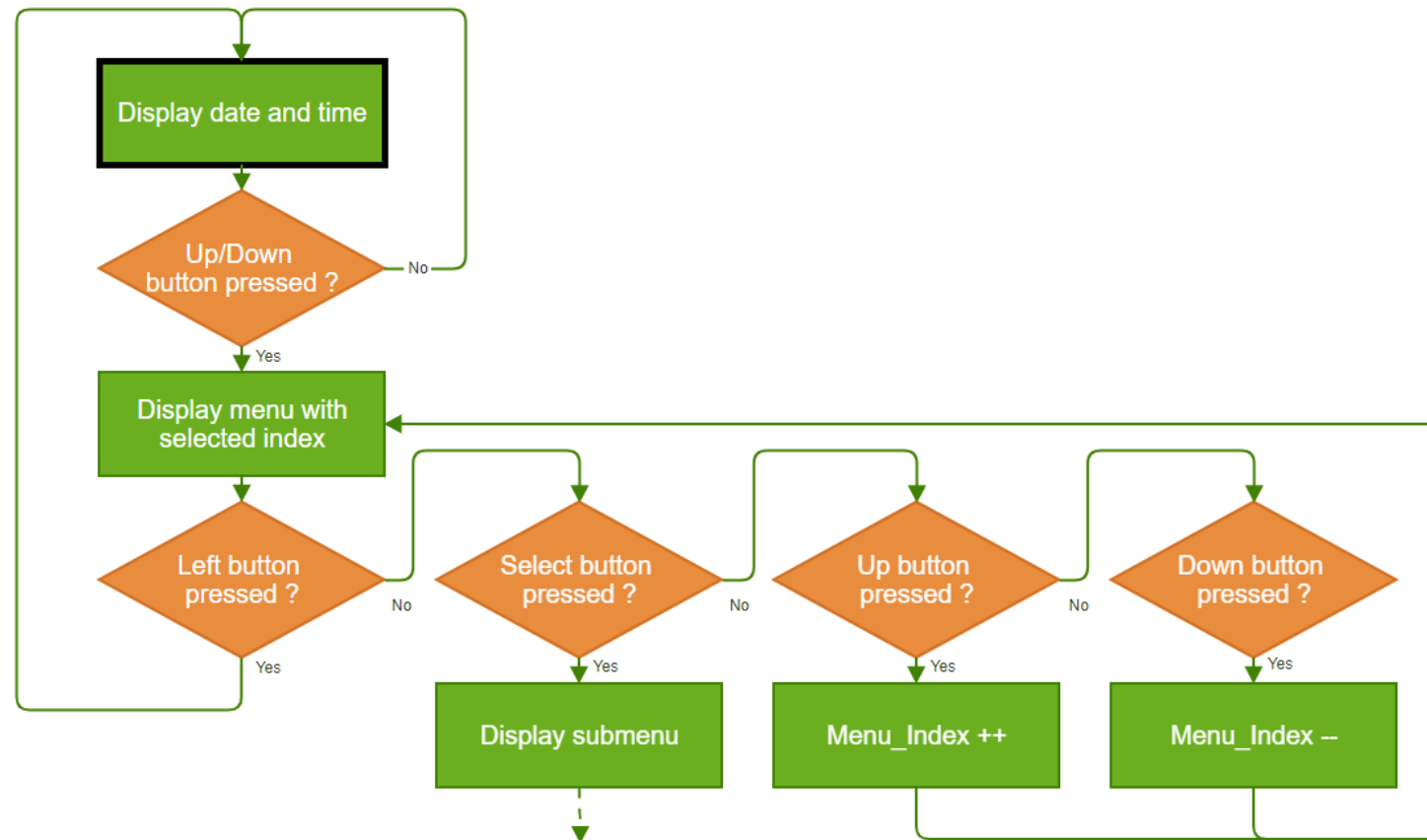# Current state of the project

▶ Get and display date and time

▶ Interactive menu
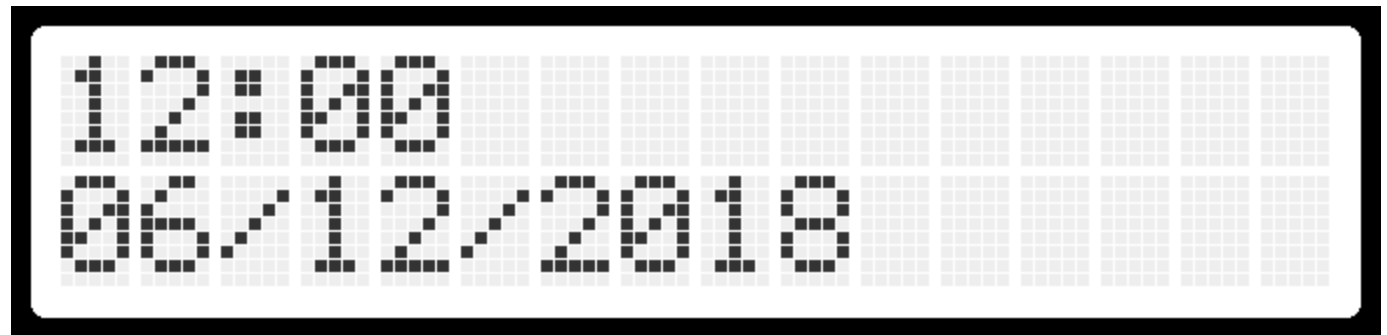
▶ Set time / date

Interactive menu
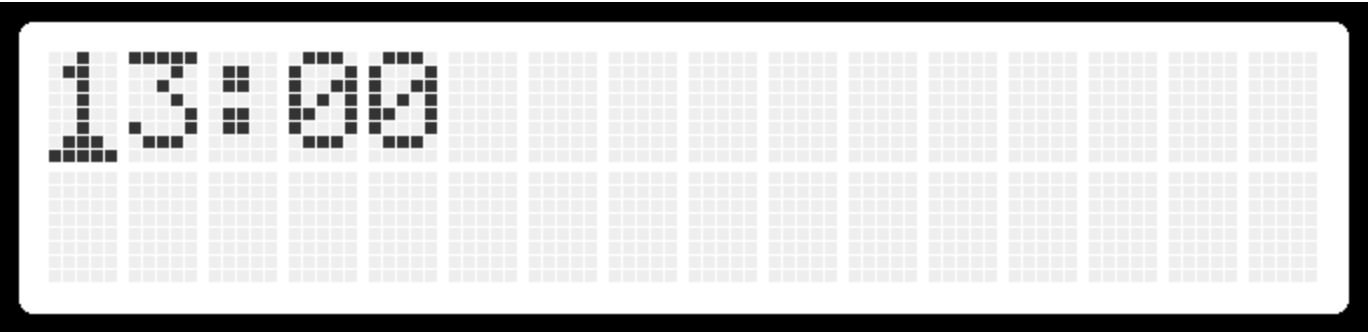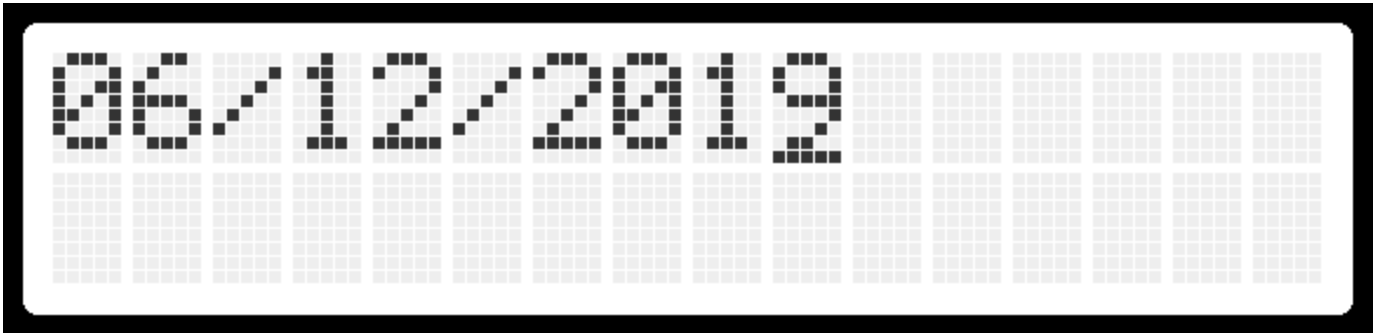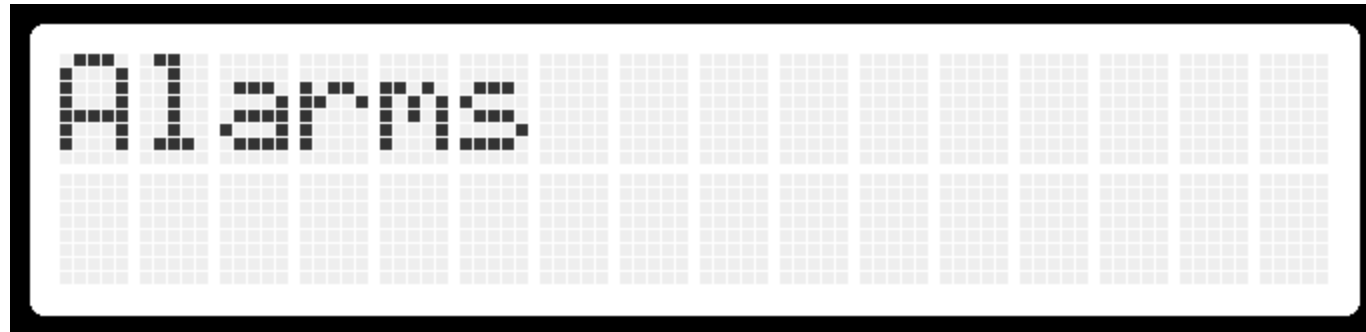
Interactive menu

Set time / date

13:00

06/12/2019
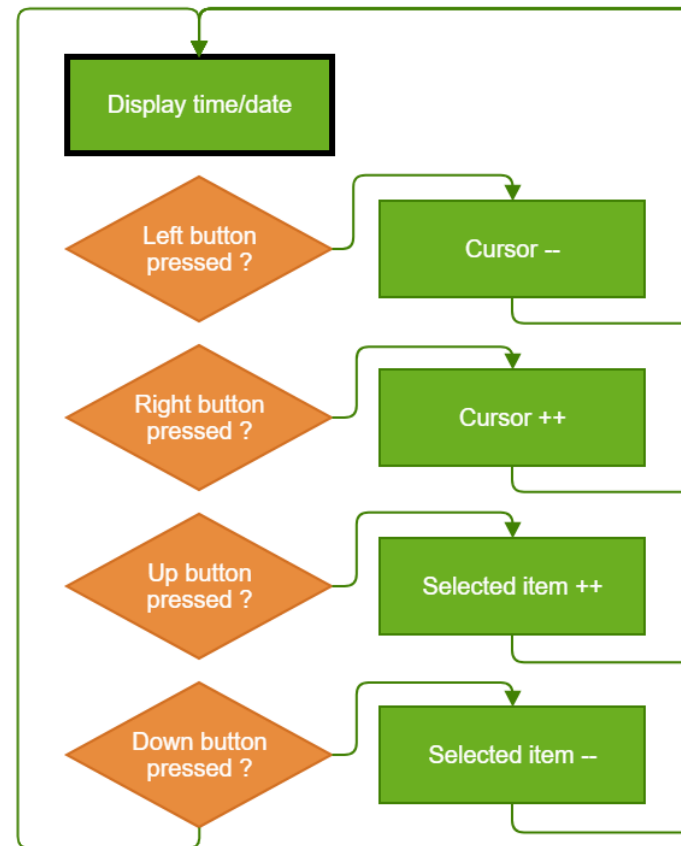
Set time / date

Problems encountered

- Wrong I²C address

- Random reset of RTC clock

What we would like to do

- ▶ Use EEPROM to store and load date, time and alarms

- ▶ Alarms

- ▶ Chronometer

- ▶ Timer

Thanks for your attention