**Documentation for DMP Project**

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For my project I decided to implement some sort of a smart alarm clock, which can show the temperature, count the time using timer interrupts and countdown using normal interrupts. I have implemented this project because I wanted to be able to use a lot of the things which we have studied during the labs in this semester.

For the hardware components, I used the Arduino Mega 2560, with the LCD shield to be able to display all the things which are being done. To be able to measure the temperature I used the temperature sensor from the labs, the LM50. To know what to be displayed I used some push buttons, more specifically the button block from the lab.

In the implementation, I also created some chars to be able to display an hourglass to show how the seconds from the countdown are passing by. I also have the blinker from the board working when the timer interrupt is active, with it blinking every time a second passes by. To be able to synchronize all the buttons so that the functions work one at a time and they don’t remain active when another button is pressed, I have used Boolean variables and if clauses which are present in the loop. Almost all the variables which are used are declared globally and volatile, so that they can be accessed in all the functions and change their value. For the actual reading of the temperature I have used the function from the lab, which returns the float that is needed to be displayed.

I have created a sketch of the actual project using Wokwi, which is present on the following page. The actual implementation of the project was using different buttons, but these were the only ones available on Wokwi, but they have the exact same role. The code of the project is uploaded on GitHub, on the link:

https://github.com/HoreaMarcu/DMP-Project

