In The Name of God

Homework #6 – I2C

One of the challenges in embedded systems is setting a communication line between multiple sensors and the microcontroller specially when the number of devices increases. **Device addressing**, **data integrity checking**, and **synchronization** can be mentioned as some of these challenges.

I2C Bus was introduced by Philips Semiconductors in 1982 to address the mentioned issues (details of this protocol are mentioned in the slides).

In this experiment, you should connect a DS1307 RTC IC to an Arduino Uno and display the current time and date on a 16x2 LCD. A predefined date and time (Date: 6/3/2021 Time: 9:36AM) should be set on the IC each time the Arduino boots and after that current date and time should be pulled from the IC using I2C protocol and be displayed in a proper manner to the user. Information such as the address of the IC on I2C bus, how to set the initial date and time, and how to pull data from the IC can be found on the device's datasheet. Please note that using any library to communicate with the RTC IC is forbidden. You should directly work with the registers.

Proteus components:

SIMULINO UNO, LM016L, DS1307, CRYSTAL

Good Luck

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