Project Name	TimeKeeper - Real-Time Clock with Alarm (Embedded)	Project code	1-05-01

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Introduction

Overview of Embedded Systems

- The TimeKeeper project focuses on designing and building a real-time clock using an Arduino microcontroller, DS3231 RTC module, i2c LCD display, and a 5-button keypad.

Importance and Applications

- The project will allow users to set and adjust the time and date through a user-friendly menu interface and configure alarms that alert at specified times.

Challenges and Solutions

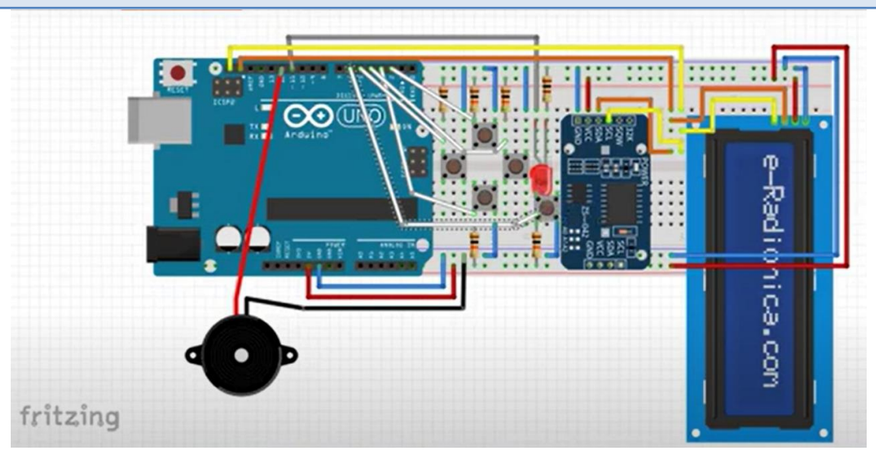
- Initially, button presses were not reliably detected. This was solved by implementing software debouncing.

Project objective

- Develop a real-time clock system that displays time and date on an i2c LCD and an alarm that is triggered at certain times.
- Implement a user interface using a 5-button keypad to navigate menus for setting time, date, and alarms.
- Utilize the DS3231 real-time clock module for maintaining accurate timekeeping
- Create software in the Arduino environment to handle user inputs, display updates, and alarm functionality.

Applications and Use Cases

- The project will allow users to set and adjust the time and date. In addition to, configuring alarms that alert at specified times.
- We used that the RTC DS3231 module to maintain accurate timekeeping even when an electricity source is not available.



Conclusion & Future Work

- We successfully utilized both software components and hardware components to make a RTC clock that accurately keep time and allows the user to set and adjust time in addition to an alarm mode that can be configured by the user that alert at specified times.
- Stop-Watch mode can be added which will make the project more-sufficient.

Software Components:

ARDUINO

Hardware components:

- Arduino UNO
- LCD i2c
- RTC DS 3231
- Push Buttons