SE101 Project Proposal

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GitHub: https://git.uwaterloo.ca/se101-f17/se101-f17-group-36

Idea

We want to create a clock device that would include multiple functionalities. Possible features include date and time, alarm, stopwatch/timer, weather forecaster and temperature gauge, and a reminding function (ie. calendar that reminds you of important events). Since this design is variable and flexible, depending on time and difficulty constraints, we can add more applications later to make this device similar to a smartphone with different apps.

Software Components

Integrated Development Environment (IDE): Arduino IDE 1.8.5
Language: C Language

Experimental Prototype

We do not plan to modify our Arduino very much, simply attach the LCD shield and sound buzzer. However, we plan to code the Arduino mainly with a time keeping function which will be applied as a clock and timer. As well, we will implement some means of weather detection either by internet or by an external thermometer shield (image courtesy of https://hobbystore.com.my/image/cache/data/aduino-uno-r3-52-800x800.jpg)

Hardware Components

Circuit Board: Arduino Uno R3 **Shield**: LCD Shield, Sound Buzzer

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Potential Challenges

Lack of experience

Our group does not have much experience with Arduino boards and programming and will have to learn how to make our programs work along with a busy Software Engineering schedule.

Hardware breakdown

We decided to purchase a cheaper Arduino alternative which is not directly from the Arduino company. So, we need to be careful to program the software properly and take care of our circuit board and shield in case of hardware malfunction or deterioration.

Timing

From past high school experiences, we have found that timing with a circuit boards and its internal ticks (ie. making a clock based on the internal ticks of the Arduino) is a challenge and requires fine tuning in order to properly tell time and count seconds and minutes.

Weather Data

If our device will tell the weather or future weather forecast, we will have to connect our Arduino to the internet or include a shield with a thermometer device (or both!). Again, with the lack of experience, we will have to do extensive research in order to make this happen.