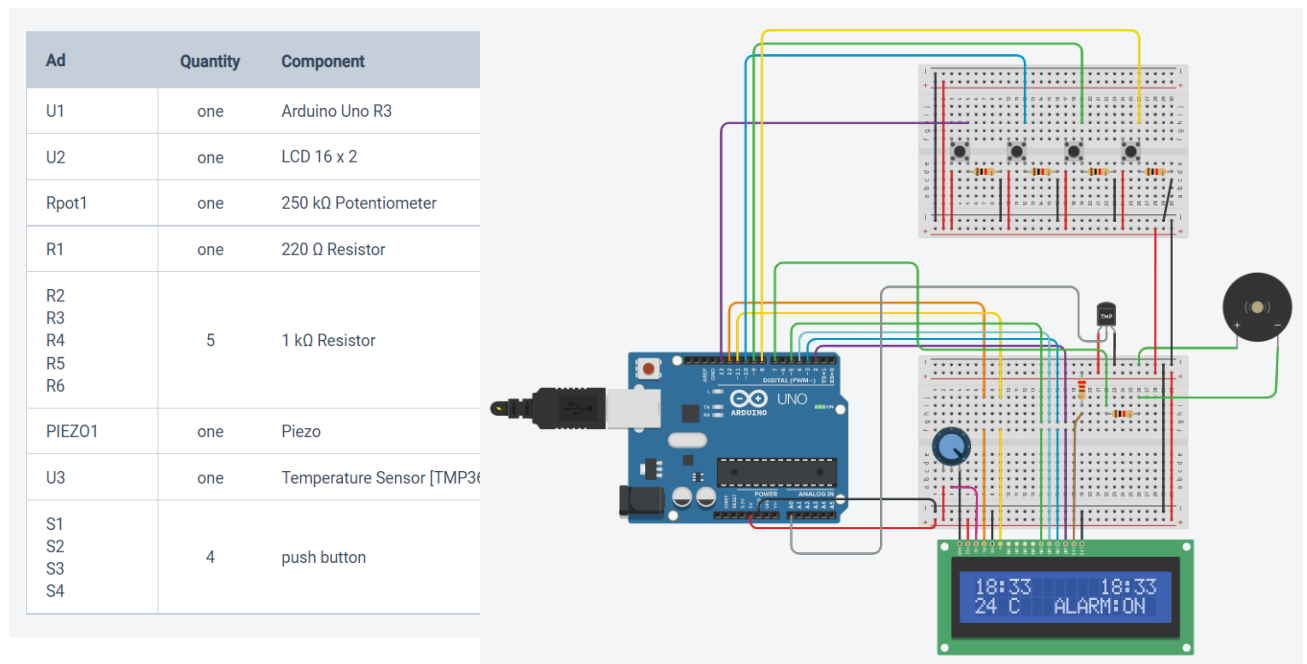


PROJECT: Build a Digital Alarm Clock Using Arduino on Tinkercad

CMP3006 Embedded System Programming Spring Term Project



Introduction

In this project, it is basically planned to make an **Digital Alarm Clock**. In addition, it has the features of turning the alarm on and off, setting the alarm, displaying the time in am pm, displaying the 24-hour zone, setting the clock, displaying the temperature in both Celsius and Fahrenheit.

Buttons

The buttons in the circuit are as follows from left to right; button 1, button 2, button 3, button 4.

- Button 1-> Switch time modes (AM/PM) (Hold 3 seconds to setup time *clock Minute will blink -B3 to raise value- Hour will blink -B3 raise value- end setup)
- Button 2-> Set Alarm On/Off (Hold 3 seconds to setup alarm time *alarm Minute will blink -B3 raise value- Hour will blink -B3 raise value- end setup)
- Button 3-> Switch temperature Fahrenheit/Celcius (In setup, acting as "raise value ^")
- Button 4-> It stops the alarm for 5 minutes when it rings.

Code Part

- pinMode(13,INPUT); ->Button 1
- pinMode(10,INPUT);->Button 2
- pinMode(9,INPUT); ->Button 3
- pinMode(8,INPUT); -> Button 4

TF = Twenty Four hour

****Code line 213-225 shows how Timing works on arduino.**

****Code line 111-155 and 339-355 shows how to setup Clock on arduino.**

****Code line 158-193 and 365-506 shows how to setup Alarm on arduino.**

****Code line 458-473 shows how to “ON”, “OFF” the alarm on arduino.**

```
110 //-----
111
112
113 if(button3State==1&& button2Prev==0){
114   pressedTime2 = millis();
115   isPressing2=true;
116   isLongDetected2 = false;
117 }
118 else if(button2Prev==1 && button3State==0){
119   isPressing2=false;
120 }
121
122
123
124 if(isPressing2==true&&isLongDetected2==false){
125   pressDuration2 = millis() - pressedTime2;
126 }
127
128
129 if(pressDuration1>8000){
130   degree=false;
131   blinkMode=true;
132   blinkMinute=true;
133   Serial.println("State0");
134 }
135
136 else if(blinkMode==true && blinkMinute==true &&button1State==0 &&button1Prev==1){
137   blinkMinute=false;
138   blinkHour=true;
139   Serial.println("State1");
140 }
141
142 else if(blinkStop==false&&blinkMode==true && blinkMinute==false &&button1State==0 &&button1Prev==1){
143   blinkStop=true;
144   blinkHour=false;
145   Serial.println("State2");
146   degree=true;
147 }
148
149 else if(blinkStop==true&&blinkMode==true && blinkMinute==false &&blinkHour==false && button1State==0 &&button1Prev==1){
150   blinkMinute=false;
151   blinkHour=false;
152   blinkMode=false;
153   blinkStop=false;
154   pressDuration1=0;
155 }
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• When the clock setup mode is activated, first the minute lights up and can be increased with button 3, then when the 1st button is pressed, the hour will light up and it can be increased with the button 3, and lastly when the 1st button is pressed, the setup end.

• Setup the alarm on the arduino is nearly similar with that.

****Code line 304-333 shows how “00-12 AM/PM” and “00:00-24:00” works on arduino.**

• If the current time is greater than 12 code will subtract 12 from the clock. Then make it ‘PM’.

• If the current time is not greater than 12 code will just display the current time with ‘AM’.

****Code line 511-549 shows how to switch Celcius to Fahrenheit on arduino.**

****Code line 497-593 shows how to stops the alarm for 5 minutes when it rings on arduino.**

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Tinkercad Link: <https://www.tinkercad.com/things/5elfTfulRD5-swanky-umelo/editel?tenant=circuits>