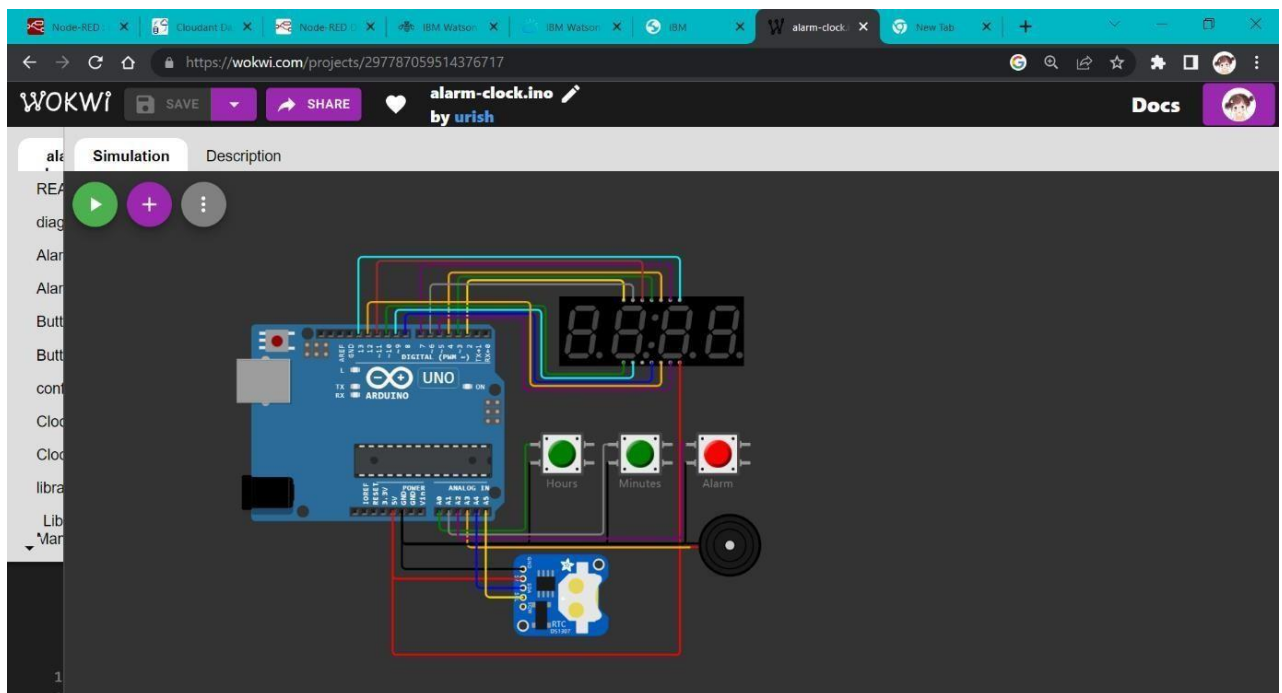


SPRINT-1

Date	15 November 2022
Team ID	PNT2022TMID49911
Project Name	Personal Assistance for Seniors Who are Self Reliant

TASK:

To simulate Arduino using python code.



CODING PART:

```
/**  
    Arduino Digital Alarm Clock  
*/
```

```
include <SevSeg.h>  
#include "Button.h"  
#include "AlarmTone.h"  
#include "Clock.h"  
#include "config.h"
```

```
const int COLON_PIN = 13;  
const int SPEAKER_PIN = A3;
```

```
Button hourButton(A0);  
Button minuteButton(A1);  
Button alarmButton(A2);
```

```
AlarmTone alarmTone;  
Clock clock;  
SevSeg sevseg;
```

```
enum DisplayState {  
    DisplayClock,  
    DisplayAlarmStatus,  
    DisplayAlarmTime,  
    DisplayAlarmActive,  
    DisplaySnooze,  
};
```

```
DisplayState displayState = DisplayClock;
```

```
long lastStateChange = 0;
```

```
void changeDisplayState(DisplayState newValue) {
```

```
    displayState = newValue;
```

```
    lastStateChange = millis();
```

```
}
```

```
long millisSinceStateChange() {
```

```
    return millis() - lastStateChange;
```

```
}
```

```
void setColon(bool value) {
```

```
    digitalWrite(COLON_PIN, value ? LOW : HIGH);
```

```
}
```

```
void displayTime() {
```

```
    DateTime now = clock.now();
```

```
    bool blinkState = now.second() % 2 == 0;
```

```
    sevseg.setNumber(now.hour() * 100 + now.minute());
```

```
    setColon(blinkState);
```

```
}
```

```
void clockState() {
```

```
    displayTime();
```

```
    if (alarmButton.read() == Button::RELEASED && clock.alarmActive()) {
```

```
        // Read alarmButton has_changed() to clear its state
```

```
        alarmButton.has_changed();
```

```
        changeDisplayState(DisplayAlarmActive);
```

```
    return;
```

```

    }

    if (hourButton.pressed()) {
        clock.incrementHour();
    }

    if (minuteButton.pressed()) {
        clock.incrementMinute();
    }

    if (alarmButton.pressed()) {
        clock.toggleAlarm();
        changeDisplayState(DisplayAlarmStatus);
    }
}

void alarmStatusState() {
    setColon(false);
    sevseg.setChars(clock.alarmEnabled() ? " on" : " off");
    if (millisSinceStateChange() > ALARM_STATUS_DISPLAY_TIME) {
        changeDisplayState(clock.alarmEnabled() ? DisplayAlarmTime : DisplayClock);
        return;
    }
}

void alarmTimeState() {
    DateTime alarm = clock.alarmTime();
    sevseg.setNumber(alarm.hour() * 100 + alarm.minute(), -1);

    if (millisSinceStateChange() > ALARM_HOUR_DISPLAY_TIME || alarmButton.pressed()) {
        changeDisplayState(DisplayClock);
        return;
    }
}

```

```
if (hourButton.pressed()) {
    clock.incrementAlarmHour();
    lastStateChange = millis();
}

if (minuteButton.pressed()) {
    clock.incrementAlarmMinute();
    lastStateChange = millis();
}

if (alarmButton.pressed()) {
    changeDisplayState(DisplayClock);
}
}

void alarmState() {
    displayTime();

    if (alarmButton.read() == Button::RELEASED) {
        alarmTone.play();
    }

    if (alarmButton.pressed()) {
        alarmTone.stop();
    }

    if (alarmButton.released()) {
        alarmTone.stop();

        bool longPress = alarmButton.repeat_count() > 0;

        if (longPress) {
            clock.stopAlarm();
            changeDisplayState(DisplayClock);
        } else {
            clock.snooze();
        }
    }
}
```

```
        changeDisplayState(DisplaySnooze);
    }
}

void snoozeState() {
    sevseg.setChars("****");
    if (millisSinceStateChange() > SNOOZE_DISPLAY_TIME) {
        changeDisplayState(DisplayClock);
        return;
    }
}

void setup() {
    Serial.begin(115200);

    clock.begin();

    hourButton.begin();
    hourButton.set_repeat(500, 200);

    minuteButton.begin();
    minuteButton.set_repeat(500, 200);

    alarmButton.begin();
    alarmButton.set_repeat(1000, -1);

    alarmTone.begin(SPEAKER_PIN);

    pinMode(COLON_PIN, OUTPUT);
```

```
byte digits = 4;
byte digitPins[] = {2, 3, 4, 5};
byte segmentPins[] = {6, 7, 8, 9, 10, 11, 12};
bool resistorsOnSegments = false;
bool updateWithDelays = false;
bool leadingZeros = true;
bool disableDecPoint = true;
sevseg.begin(DISPLAY_TYPE, digits, digitPins, segmentPins, resistorsOnSegments,
             updateWithDelays, leadingZeros, disableDecPoint);
sevseg.setBrightness(90);
}
```

```
void loop() {
    sevseg.refreshDisplay();

    switch (displayState) {
        case DisplayClock:
            clockState();
            break;

        case DisplayAlarmStatus:
            alarmStatusState();
            break;

        case DisplayAlarmTime:
            alarmTimeState();
            break;

        case DisplayAlarmActive:
            alarmState();
            break;
```

case DisplaySnooze:

snoozeState();

break;

}

}

OUTPUT:

