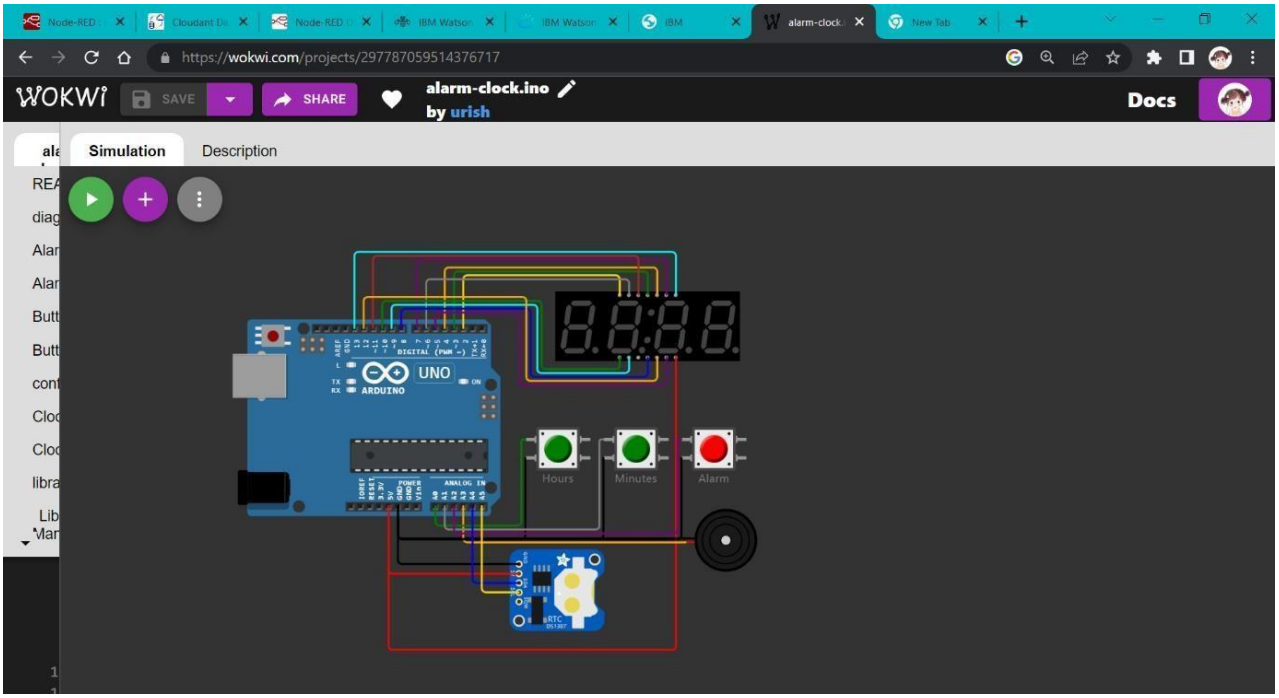
SPRINT-1

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;
  }
```

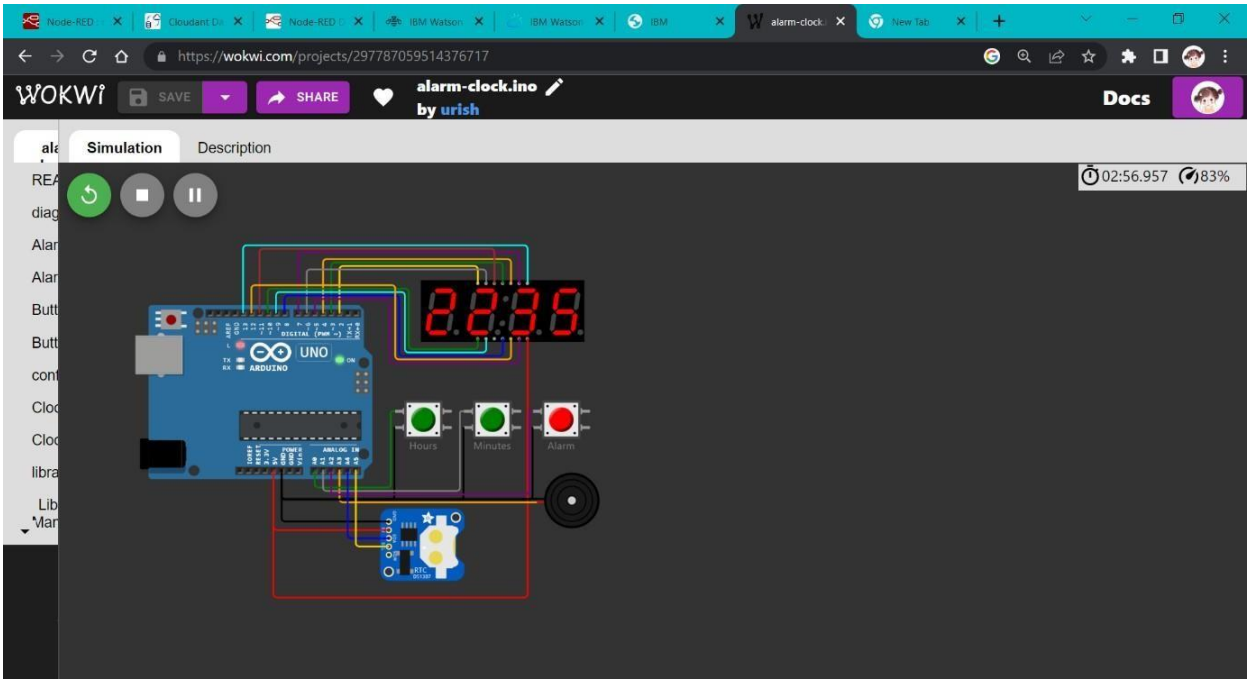
```
  if (hourButton.pressed()) {
    clock.incrementAlarmHour();
    lastStateChange = millis();
  }
  if (minuteButton.pressed()) {
    clock.incrementAlarmMinute();
    lastStateChange = millis();
  }
  if (alarmButton.pressed()) {
    changeDisplayState(DisplayClock);
  }
}

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();
```

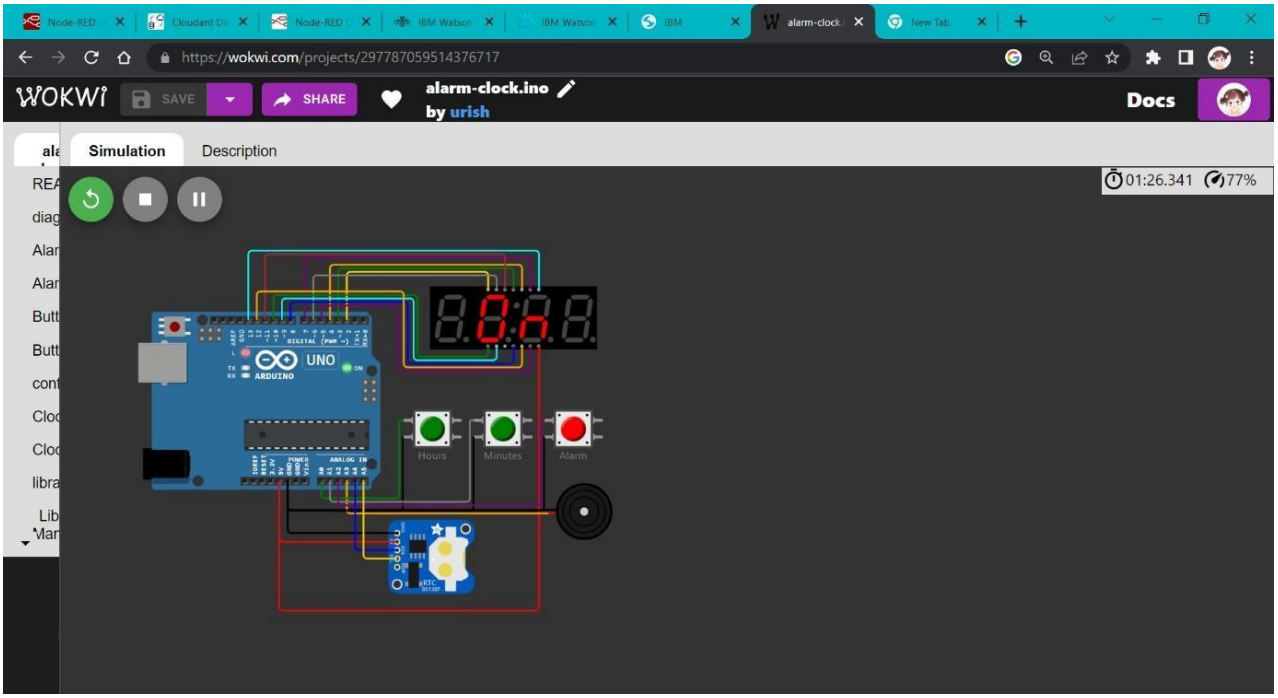
```
      changeDisplayState(DisplaySnooze);
    }
  }
}

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);
```

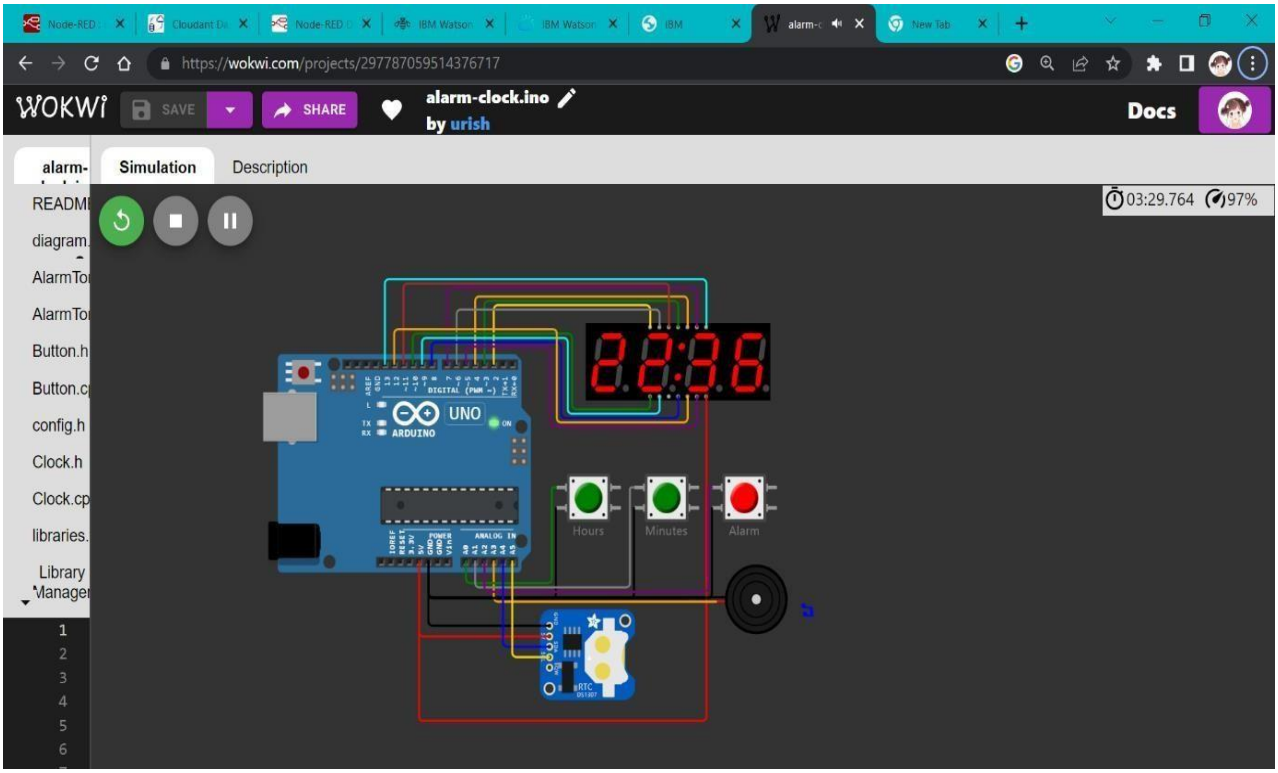
```
  byte digits = 4;
  byte digitPins[] = {2, 3, 4, 5};
  byte segmentPins[] = {6, 7, 8, 9, 10, 11, 12};
  bool resistorsOnSegments = false;
  bool updateWithDelays = false;
  bool leadingZeros = true;
  bool disableDecPoint = true;
  sevseg.begin(DISPLAY_TYPE, digits, digitPins, segmentPins, resistorsOnSegments,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




https://wokwi.com/projects/297787059514376717
WOKWI
SAVE
SHARE
alarm-clock.ino
by urish
Docs
Simulation
Description
01:26.341
77%
UNO
ARDUINO
Hours
Minutes
Alarm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WOKWI
SAVE
SHARE
alarm-clock.ino
by urish
Docs
Simulation
Description
03:29.764
97%
UNO
ARDUINO
Hours
Minutes
Alarm