AMERICAN INTERNATIONAL UNIVERSITY BANGLADESH

Faculty of Engineering

Laboratory Report Cover Sheet

Students must complete all details except the faculty use part.

Please submit all reports to your subject supervisor or the office of the concerned faculty.

Laboratory Title: **Familiarization with Visual Designer for Arduino™ AVR and implementation of a temperature sensing and control system using Drag - Drop - Play.**
Experiment Number: **04** Due Date: **05 - 07 -2021** Semester: **Summer 2020-21**

Subject Code: **EEE 4103** Subject Name: **Microprocessor and Embedded Systems.**
Section: **O** Course Instructor: Dr. Nadia Anam

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Group Number (if applicable): **F** **Group Submission**

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Title: - Familiarization with Visual Designer for Arduino™ AVR and implementation of a temperature sensing and control system using Drag - Drop - Play.

Introduction: -

The objective of this experiment is to get familiarized with Proteus Visual Designer.

- Implementation of temperature sensing and control system using Drag - Drop – Play method.
- Harness the power of Proteus VSM and design our own hardware on the schematic.

Theory and Methodology:-

Often the trickiest part of embedded development is the hardware design. The Arduino™ ecosystem goes a long way to solving this problem with lots of ready-made shields. Visual Designer takes this into the software domain, using proteus professional schematic capture and Proteus VSM simulation engine to make simulation of complete Arduino systems possible. The Peripheral Gallery in Visual Designer then simplifies the whole process as it will auto place and auto connect the electronics on the schematic for you. Finally, Visual Designer provides high level methods to enable the control of the embedded system from a flowchart editor.

Apparatus:

- Arduino Uno.
- DC motor.
- Battery.
- Diode.
- Ground.
- Resistor.
- Transistor.
- I/O port.
- Connecting wires.

Simulation Setup: -

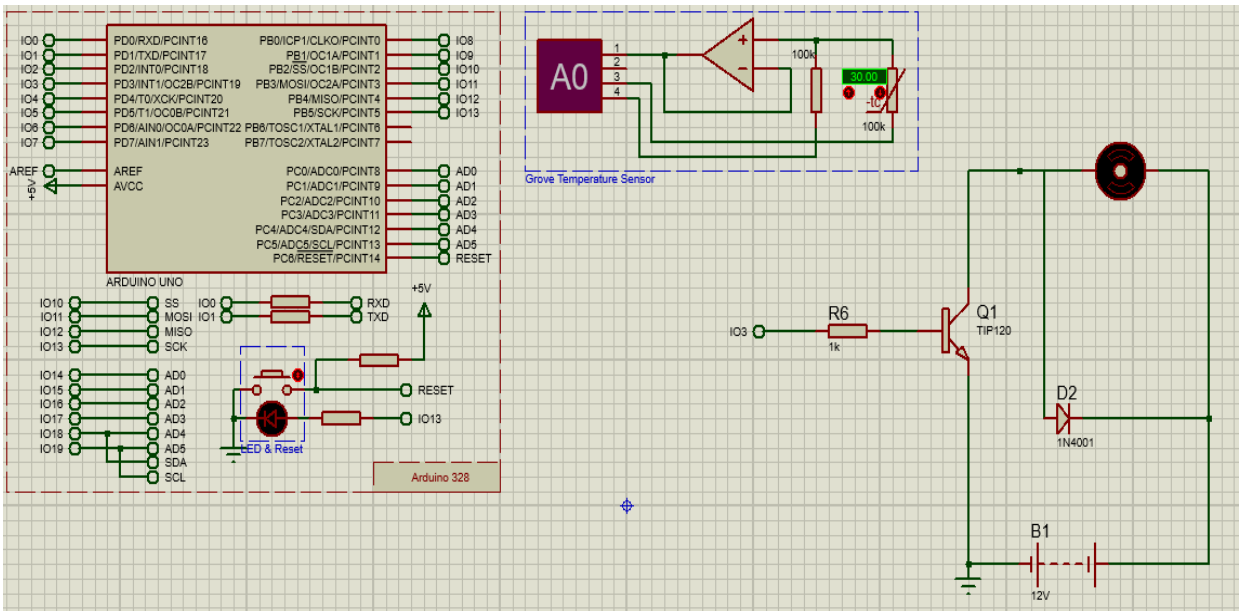

Figure 1: Connection on Proteus among the components.

Flowchart: -

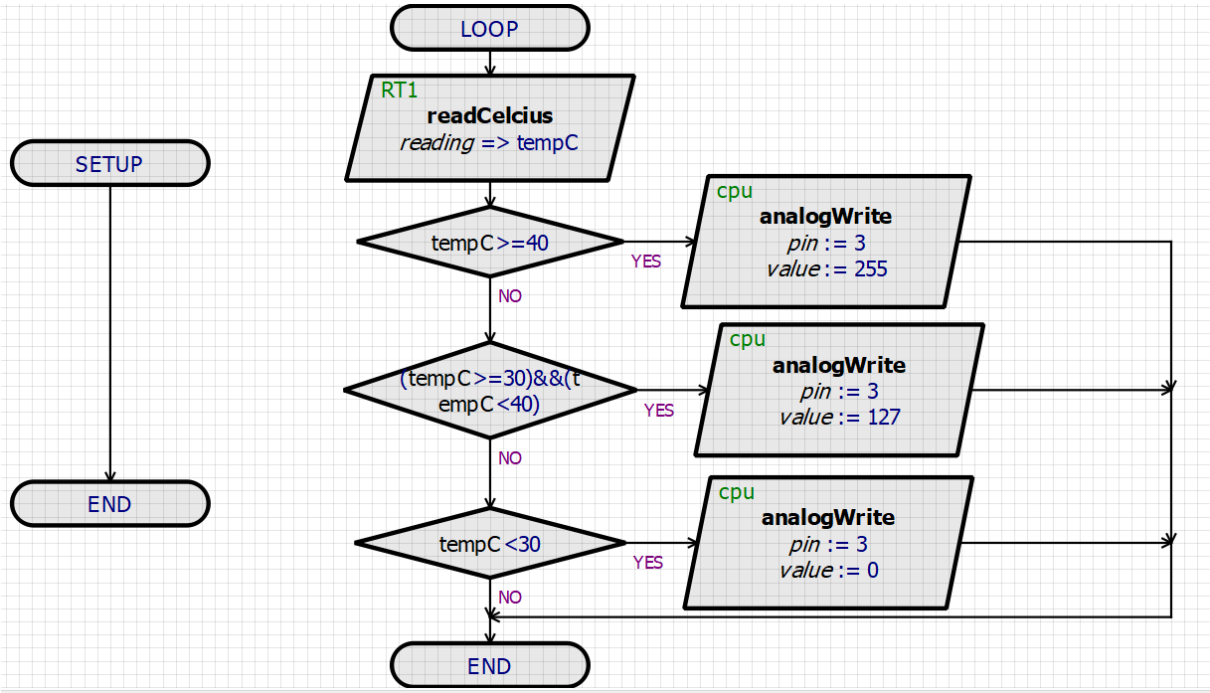

Figure 2: Project flowchart.

Work Explanation: -

In temperature sensing and control system, the fan will start moving if the temperature is above 30 degree Celsius. Below 30 degree it will stop. When the temperature is in between 30 to 40 degree the fan will move with its half speed. If the temperature is above 40 degree it will be moving with its maximum speed. We will read the temperature from "Grove temperature sensor". From the sensor's value the flowchart will operate. Every logic is implemented in the flowchart.

Visual Warning System: -

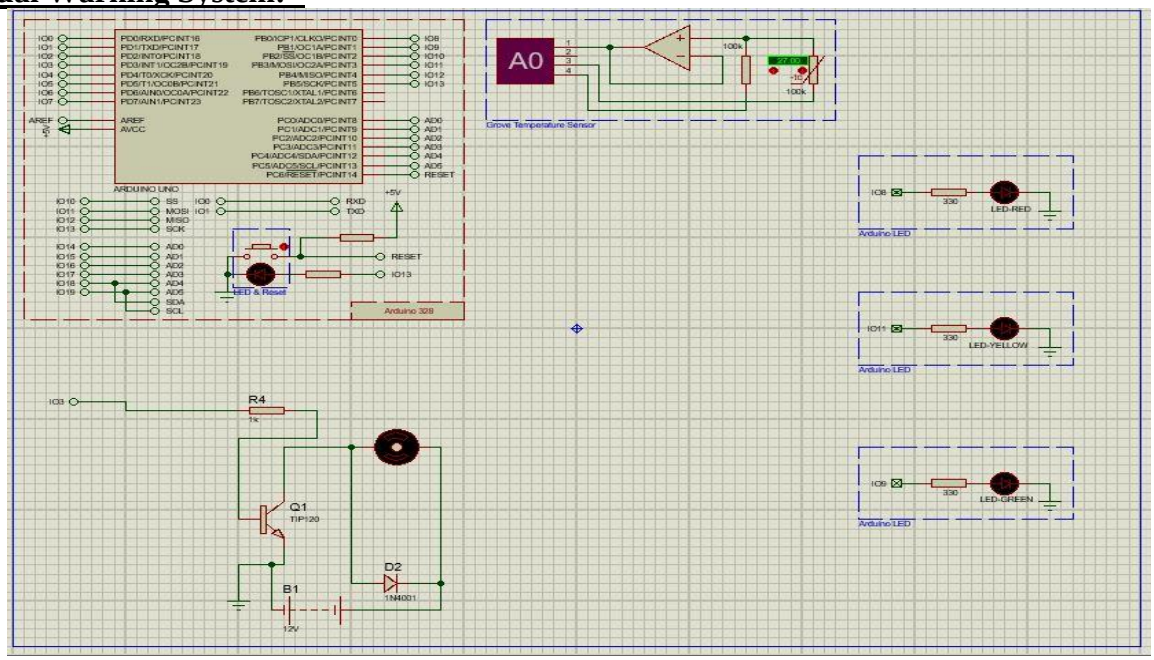

Figure 3: Connection of Visual Warning

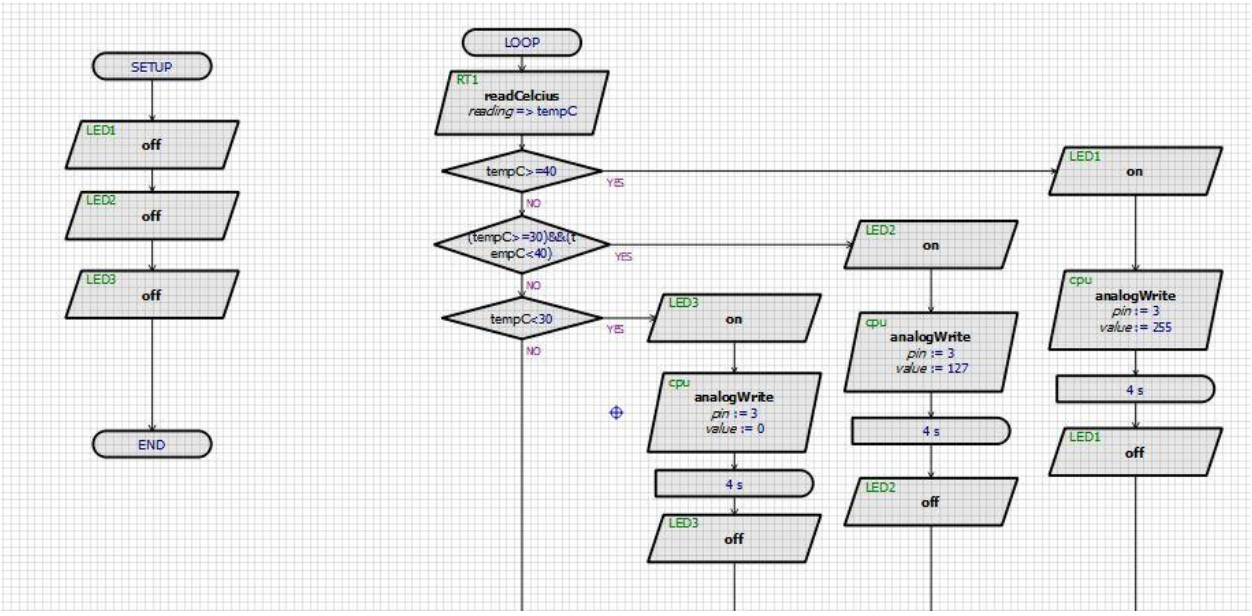

Figure 4: Flowchart

Work Explanation: -

This is almost like the previous one. We added some LEDs to give some visual warning as shown on our lab report.

Discussion: -

For this experiment, we used Proteus Designed Suite 8.6 recommended and provided by our teacher. We used Arduino Uno to complete it. In this experiment we had to implement some logic. We made sure we are writing the logic properly. We were very watchful at connecting circuit. We used the libraries properly. We made sure we are defining the I/O port.

Conclusion: -

The main purpose of this experiment to teach us how make our own projects by using various components of Proteus. We followed our teacher at every steps. And the experiment was quite enjoyable.