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Automatic Room Temperature-Controller using Arduino Uno

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Abstract: *This project presents the design and implementation of a Automatic Room temperature-controller Using Arduino Uno system powered by a 12-0-12V step-down transformer. The system efficiently regulates the fan speed based on ambient temperature using a DS1820 temperature sensor and an IRF540 MOSFET as a driver for the DC fan. The power supply is constructed using a center-tap rectifier with 1N4007 diodes, a 1000µF capacitor for smoothing, a 7805 voltage regulator for stable 5V output, and another 1000µF capacitor to counteract the loading effect.*

The DS1820 temperature sensor continuously monitors the surrounding temperature and provides real-time data to a microcontroller unit (MCU), which processes the data and adjusts the fan speed accordingly. The IRF540 MOSFET ensures efficient power delivery to the fan, allowing it to operate at variable speeds based on temperature changes. An LCD display is integrated into the system to provide real-time temperature readings and fan speed status.

This system is suitable for various applications, including electronic cooling systems, smart home automation, and industrial temperature regulation, providing an energy-efficient solution for temperature-based cooling.

Keywords: Temperature control, Arduino Uno, Temperature sensor, LCD display

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