



LAB 6 - Project

This project aims to develop a temperature-controlled fan system using the Atmega328P microcontroller. The system will read temperature values from a sensor **(for hardware implementation, replace the temp sensor by a variable resistance POT 10K ohm that you can manually adjust the temperature)** and adjust the fan speed accordingly. It will operate in two modes **(The system incorporates interrupt-driven mode switching)**:

- **Automatic Mode:** Adjusts fan speed based on temperature.
- **Manual Mode:** Allows user control of fan speed via serial communication.

You must use ADC for temperature readings, PWM for fan speed control, and serial communication for monitoring and user input.

System Description

- **Temperature Monitoring:** Reads temperature from (variable resistance) using ADC and maps it to fan speed.
- **Fan Control:** Uses PWM signals to adjust the fan's speed dynamically (use an LED as indication for fan's speed).
- **Interrupt-Driven Mode Switching:** Toggles between automatic and manual control modes via a push button connected to an external interrupt pin.
- **Serial Communication:** Displays temperature readings and mode status; accepts manual fan speed commands in manual mode.

Numbers of students: 1 to 4 students in each group

Submitted materials:

1. Hardware setup.
2. Printed copy of your software program including comments in each line.
(type your names on the submitted materials)

Handover time: 31st Dec. 2024

Place: Computer Lab, Building 16000