

Temperature Monitoring using Pt-51

1. [20 points] In this project, you will interface the LM35 with the Pt-51 kit to monitor the temperature.
 - Interface the LM35 temperature sensor using the ADC MCP3008 with the kit. Ensure that the circuit functions correctly using standard voltages and room temperature, with corresponding display on LCD.
 - Use the above setup to monitor the room temperature so that the value gets updated every 1 second. On the first row of LCD, display the most recent 3 temperatures in the format **xx.x**, **yy.y**, **zz.z**. The second row should display the average *Avg.* of the past 10 temperature measurements and display **Ave.**
Temp: AA.A.
 - If the monitored temperature T falls outside the interval $[Avg. - 2, Avg. + 2]$, output an alarm audio tone and blink all the LEDs for 4 seconds. When blinking, the LEDs should remain On for 0.5 seconds and Off for 0.5 seconds. The LEDs remain On until T falls outside $[Avg. - 2, Avg. + 2]$.