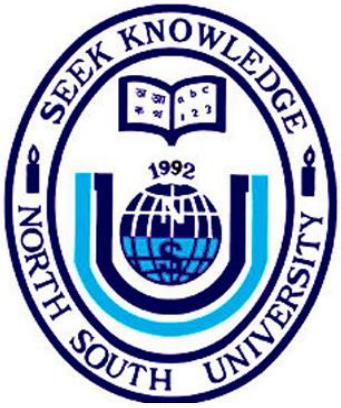
Design of a low voltage digital thermostat using LM35 and PIC Microcontroller.



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ABSTRACT

This system is about the design of a low cost temperature sensing and control system (thermostat) with the use of PIC microcontroller and LM35 temperature sensor. The system is relatively inexpensive to make and can be integrated with temperature control systems such as air conditioners and fans. Apart from making temperature control systems more affordable for everyone, this system also helps save energy by automatically switching the devices on or off at the appropriate temperatures. In this project the LM35 and PIC16f877a microcontroller have been used to make a digital thermostat that is programmed to switch on and off a fan automatically when the temperature rises above or falls below a certain threshold value. The device also includes a LCD display to indicate the ambient temperature to the user. The threshold temperature can be programmed into the PIC microcontroller using a PIC programmer. The device as a whole works as a digital thermostat. Commercially available digital thermostats work at 24V AC typically. Some versions use a low voltage as low as 6V or as high as 30V. In this project the thermostat design allows it to operate at only 5V, making it more energy efficient than currently commercially available digital thermostats. The versatility of the system allows it to integrate with many different devices. Apart from air conditioners, furnaces and fans, this system can be used to build incubators or to maintain a constant temperature in your refrigerator at home.