Project summary
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DIFFICULTY

Main Objective
The development of a Data Acquisition and Storage Board (DASB) that enhances Elster's devices communication and storage capabilities.

Sub-Objectives
To make students become more familiar with the major stages in development process;
To study different alternatives for PIC MCUs usage;
To design and manufacture the DASB prototype board;
To prepare a comprehensive report on the design.

Abstract
Elster's meters offer the advantage of leading edge electronic metering technology, enabling accuracy class 0.2S, anti-tamper and security data as standard. DCD (Data Collector Devices) are used to record all the data provided by meters in an AMR (Automatic Metering System). DASB comes to enhance the meters and DCD' capability adding new features as: tariff switching with RTC, lifetime data storage with time stamp, new communication options. Power failure detection mechanism is critical in preventing data corruption during reading/writing cycles. This feature shall also be design and implemented on DASB.
The picture below represents a principle schematic of the design. PIC microcontrollers (Microchip) stay as a cost-effective suitable solution for the circuit's core.
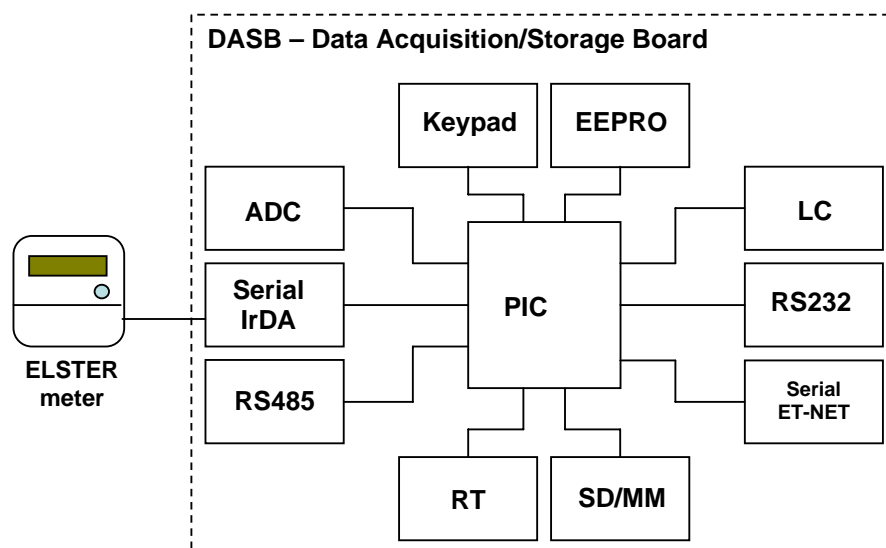
Development Tools
EasyPIC4 Development Board (Mikroelektronika)
Extension Boards (AD Converter, IrDA interface, RS485 interface, RTC)
PICmikroC Compiler (Mikroelektronika), PIC MCU (Microchip)
Oscilloscope, Signal Generator, Digital Counter, Testing boards, electronic components
PC, Documentation

Skills and Requirements
The student should have good knowledge of data acquisition systems, microcontroller's architecture, C programming (intermediate), assembly programming (intermediate), analog and digital circuits, electronic instrumentation. English is compulsory.

Elster Rometrics
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