Objective

- Develop a low cost, expendable and easily maintainable acquisition system for the Concordia University SAE Baja.
Proposed Solution

- Use a PIC24 to:
  - Record temperature using an analog port.
  - Record speeds using external interrupts and a timer.
  - Present data to driver with an LCD.
  - Log data to an SD card.
Why PIC24?

- PICs are versatile
- Application notes and other resources
- 16 Bit
- Peripheral Pin Selection
- Optimized for C
- Lots of memory
- Transfer of code easy between pic24 family
- We had one!
Temperature

- Prevent overheating of CVT transmission
- uC interfaced with an LM35 sensor using 10-bit ADC
- The range of the LM35 sensor is more than enough (+155°C)
Engine RPM

- Uses an external interrupt counter (500ms)
- Calculates speed using Timer1
- Hardware: Reed switch + magnet
- Disadvantage: Lack of precision
- Solution: Average value over time period
Display

- LCD (for now)
  - 4 bit parallel bus (less I/O expensive)
  - Easily implemented

- 7-Segment Display (Future)
  - More robust
  - Much more wiring
Logging

- SD card
  - SPI Interface
  - Cheap and large memory
  - FAT16
  - Library available from Microchip
    - Faster development time

- Wireless (Future)
Questions?