Homework 2: Design Project Proposal

Due: Friday, January 27, at NOON

Team Code Name: Digital Real-Time Intelligent Networked Kegerator **Group No.** 4

Team Members (#1 is Team Leader):

#1: Matthew Kocsis **Areas of Expertise:** Microcontrollers, mechanics

#2: Justin Thacker **Areas of Expertise:** Software

#3: Ian Snyder **Areas of Expertise:** Hardware Interfacing

#4: Dustin Poe **Areas of Expertise:** Schematics and PCB

Project Abstract:

The Digital Real-time Intelligent Networked Kegerator is a microcontroller based draft beverage dispenser. This device controls and monitors the dispensing of draft beverages on a per user basis. System and user statistics will be logged and presented via a user interface.

Design/Functionality Overview:

The Digital Real-time Intelligent Networked Kegerator will address safety, legal, usability, and economic concerns of draft beverage distribution. Alcohol consumption monitoring will provide a **tool** to allow a person to know exactly how much they have consumed, learn estimated legal limits, and reduce unauthorized or unlawful drinking. System control and monitoring will allow users to track inventory, decrease beverage waste, and predict future resource needs.

The system will consist of a microprocessor with an embedded web server, RFID reader, LCD display with user inputs, flow monitoring and control hardware, and temperature monitoring and control hardware. The RFID reader will be able to recognize users, allowing for user statistic tracking. An LCD display will provide a limited navigable user interface to present system and user statistics. Flow meters will be used to monitor the volume of liquid dispensed, allowing for inventory tracking and consumption estimation. Solenoid valves will be used to allow and restrict flow. An AC contactor will work in unison with a temperature probe to control and monitor system temperature. An embedded web server will allow administrators to manage user accounts, flow access control, temperature, and beverage information, as well as providing detailed system and user statistics.

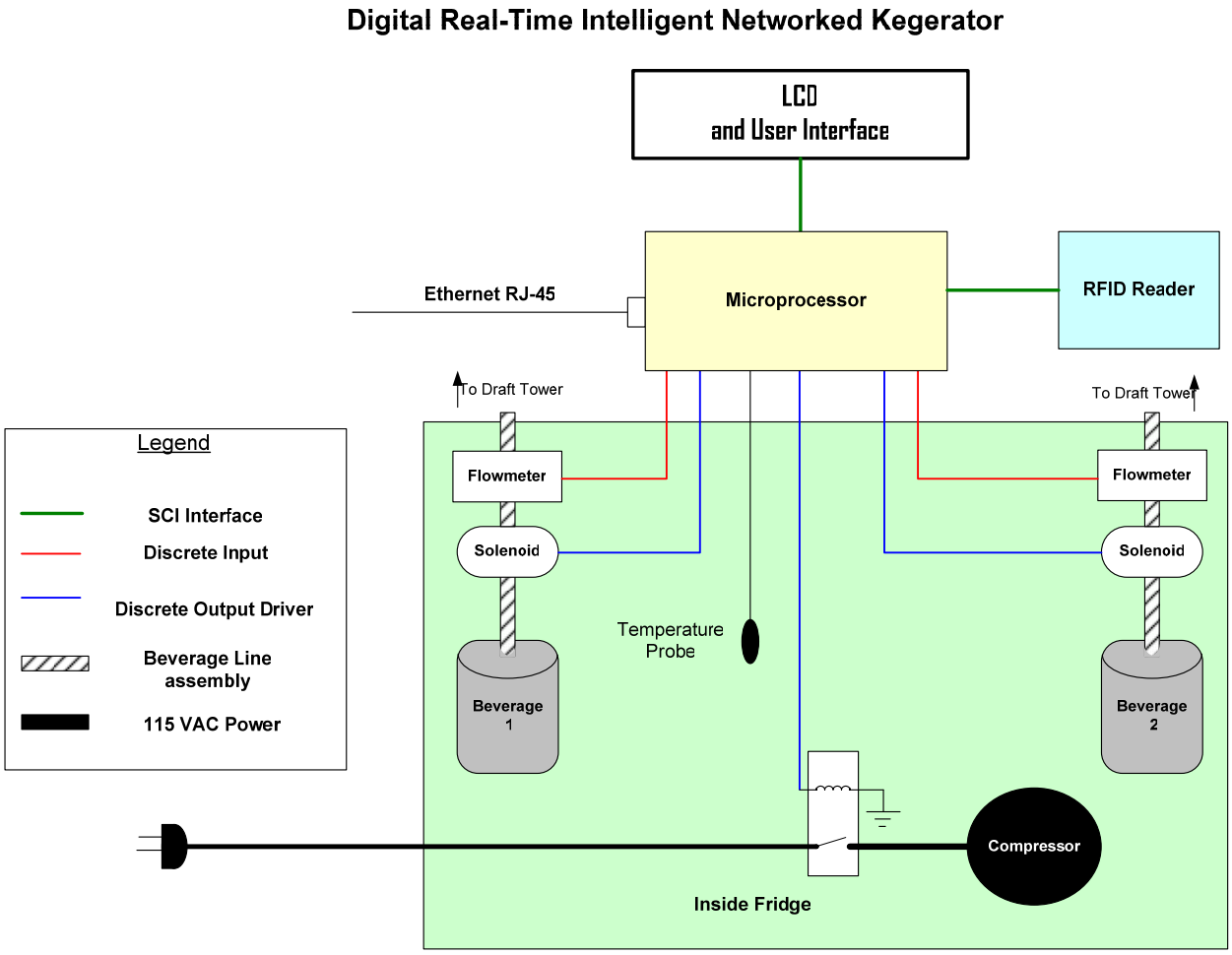
Our design is intended for use as an individual consumer or commercial product. The system will be modular for easy attachment to many standard freezers or refrigerators. It will be designed to be upwardly scalable for applications in restaurants and bars. The estimated cost of this project is $700. This price includes all major components with a margin for our smaller PCB components and miscellaneous expenses.

Ian and Dustin will be responsible for the hardware interfacing, schematics, PCB layout and population, hardware debugging, and circuit testing. Matt and Justin will be responsible for all of the microcontroller programming, embedded web development, and software testing.

Project-Specific Success Criteria:

1. **An ability to control and monitor beverage quantity and temperature**
2. **An ability to recognize current users via an electronic tagging system**
3. **An ability to track usage and present statistics on a per user basis**
4. **An ability to interact with a user through a graphical LCD display and user inputs**
5. **An ability to control and monitor device using a web interface**

Block Diagram:



Division of Labor:

Design Component Homework		***Professional Component Homework***	
Packaging Design and Specs	Matt Kocsis	Design Constraint Analysis/Parts List	Ian Snyder
Circuit Schematic and Narrative	Ian Snyder	Patent Liability Analysis	Matt Kocsis
Printed Circuit Board Layout	Dustin Poe	Reliability and Safety Analysis	Dustin Poe
Software Narrative and Listing	Justin Thacker	Social/Political/Environmental Analysis	Justin Thacker

Each *team member should take responsibility for* ***one*** *Design Component Homework and for* ***one*** *Professional Component Homework – note that these will count toward* ***individual*** *student grades.*