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ELET 4308 Senior Project
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I² Coffee Machine

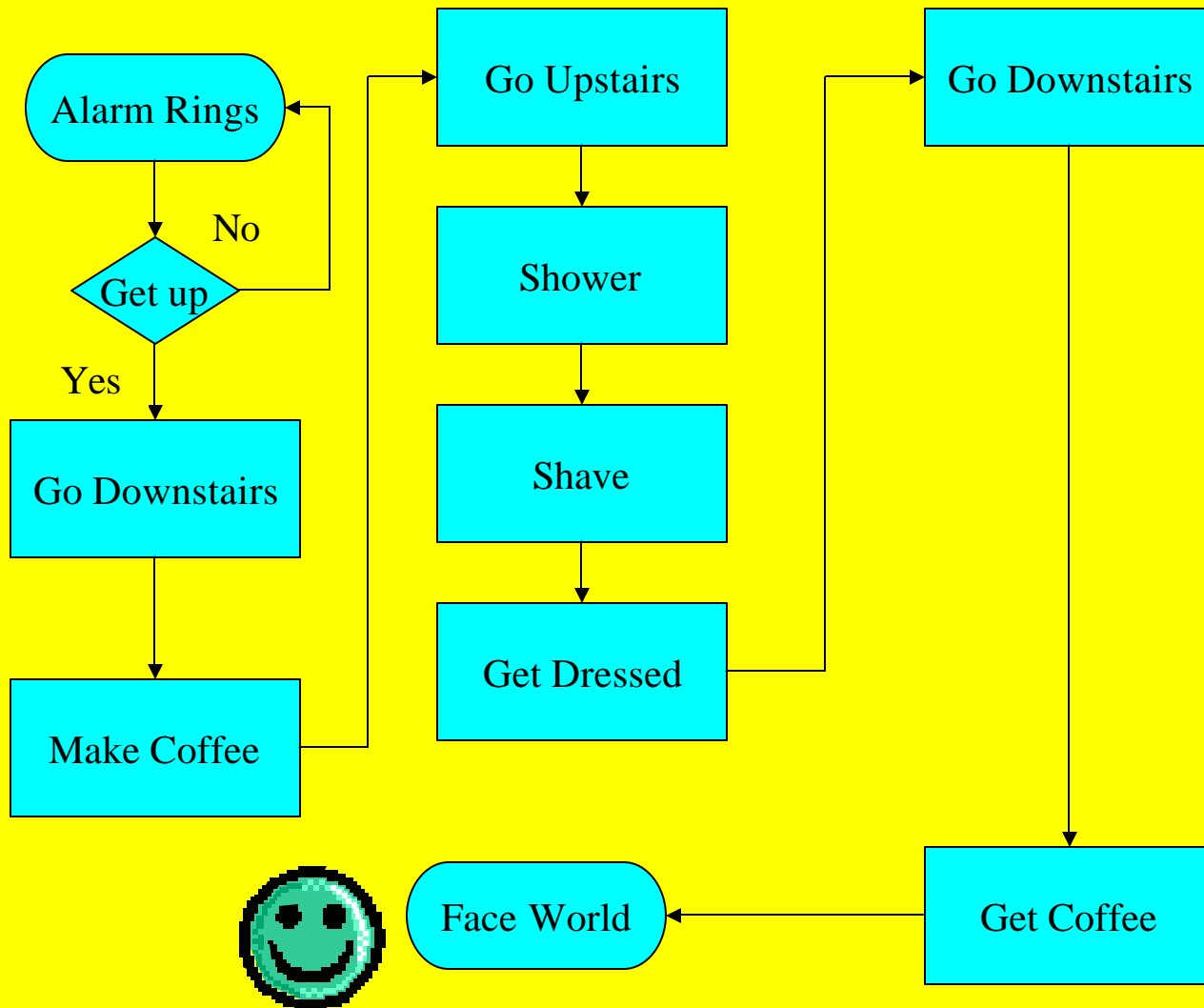
Internet Integrated Coffee Machine

Introduction



- Coffee – Some people can not start their day without it.
- Do you remember this morning? -- I don't but lucky I made a flowchart.

Basic Morning Routine



Background



- Want to be able to start your coffee machine while checking your email?
- Ever want to know the temperature of your coffee before drinking it?
- Can be used in the home or office.

Design Alternatives

➤ **Microcontroller**

- More expensive
- Raise the product cost

➤ **Future Enhancements**

- Wireless capability
- Web-based monitor and control
- Internal 12 Volt power source

Design Specifications

➤ Hardware

- Computer (Windows 9x/2k/XP)
- Coffee Machine
- Small Components:
 - Resistors, Transistors, Relays, Wires, Diodes, Thermistor, Game Port, Serial Port

➤ Software

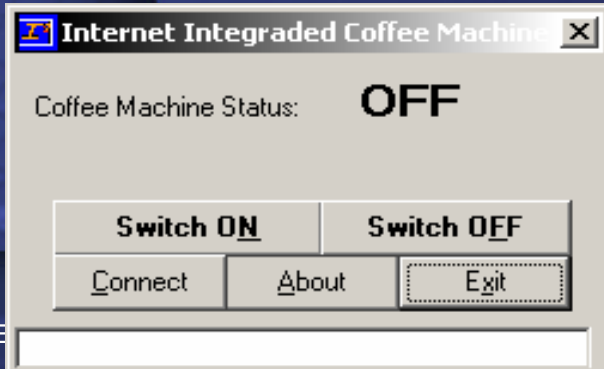
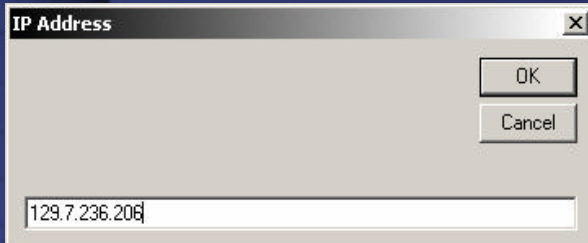
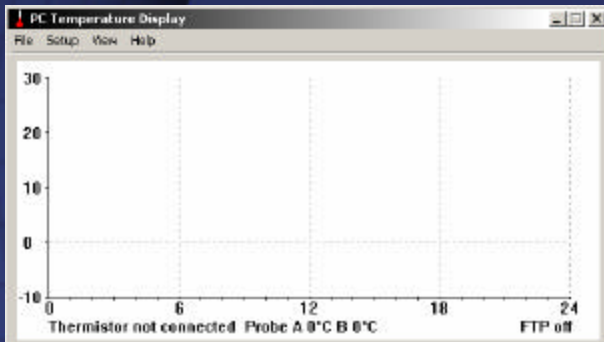
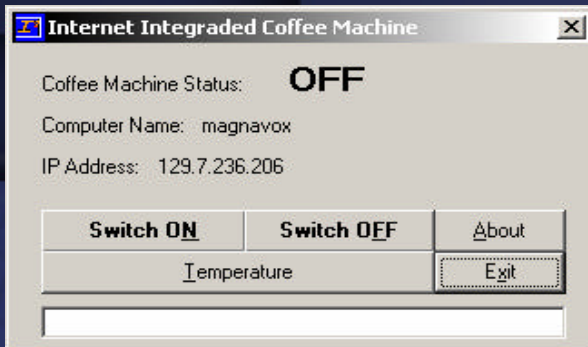
- Visual Basic:
 - Graphic User Interface

HOST

TEMPERATURE SENSOR

CONNECTION TO HOST

CLIENT



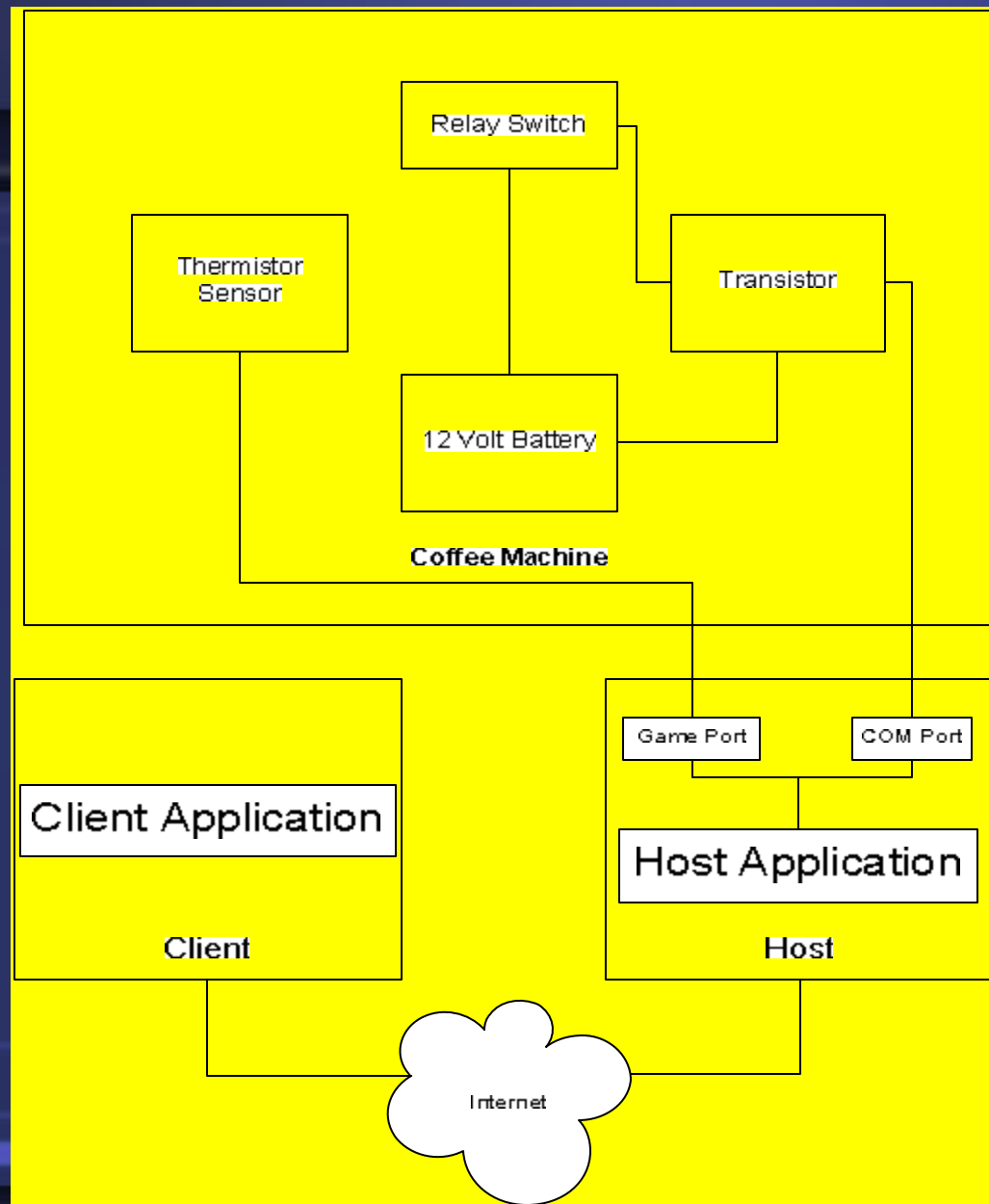
Product Requirements

- Remotely access the computer and have full control of the machine
- Create the software that will be used to access and control the machine
- Connect the coffee machine to serial port and game port.
- Fit all of the components inside of the coffee machine

Project Objectives

- Design a coffee machine that can be controlled remotely from any computer over the internet
- Design a coffee machine that will operate like your regular everyday coffee machine
- Make a coffee machine that will meet safety, health, and environmental regulations
- Able to control On/Off switch from the host and client and check temperature

Project Description



Project Description Cont.

- Coffee Machine
 - Sensor for temperature
 - On/Off Switch
 - Serial Port
 - Game port
- Personal Computer
 - Coffee Application
 - Control On/Off
 - Check Temperature
- Internet Connection

Construction Details

- Coffee Machine
- Computer
- Resistor
- Transistor
- Relay

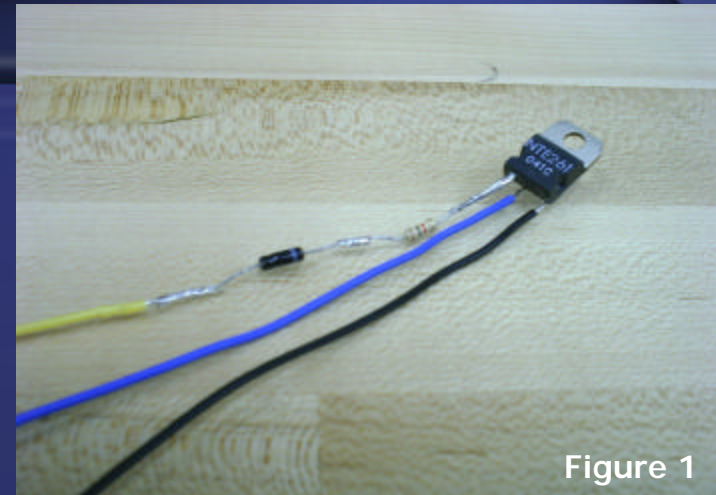


Figure 1

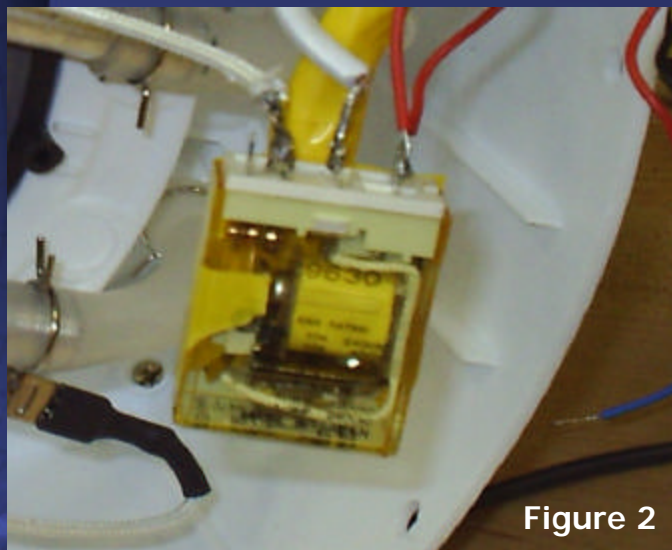


Figure 2

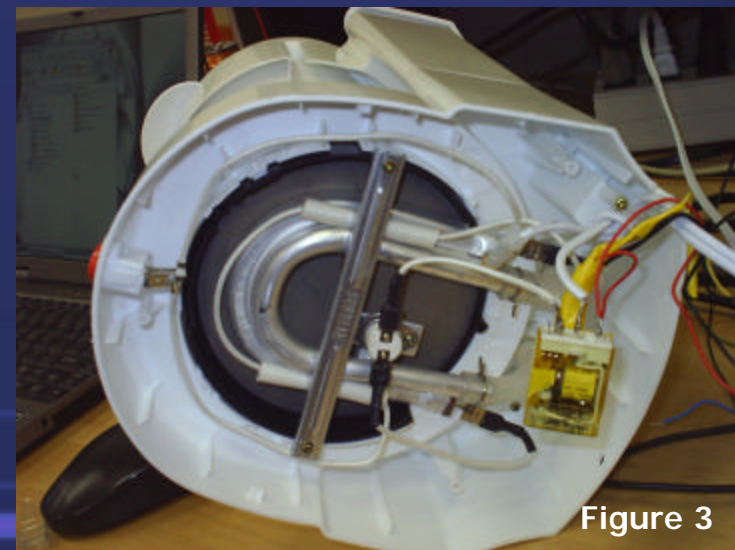


Figure 3

- 9-pin COM port
- 15-pin game port
- Resistor
- Thermistor
- 12 V Battery

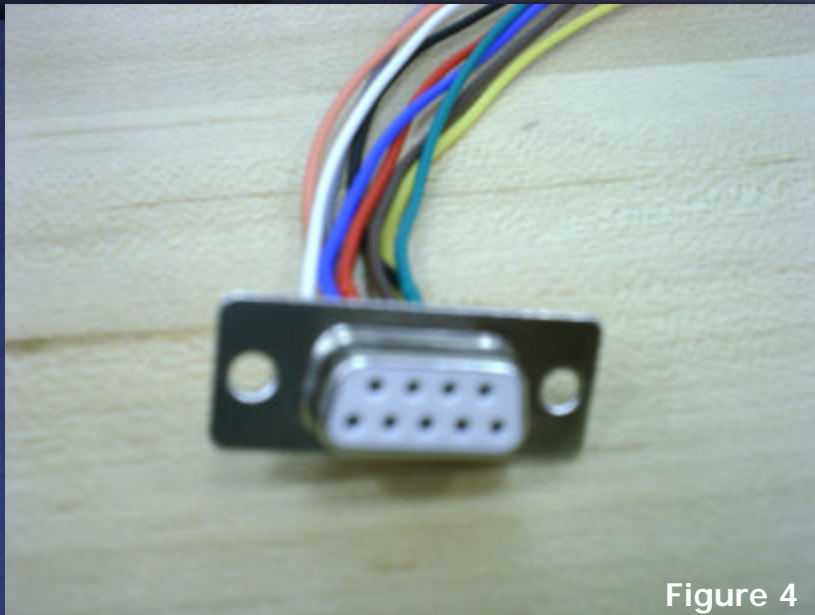


Figure 4

Software

- Visual Basic

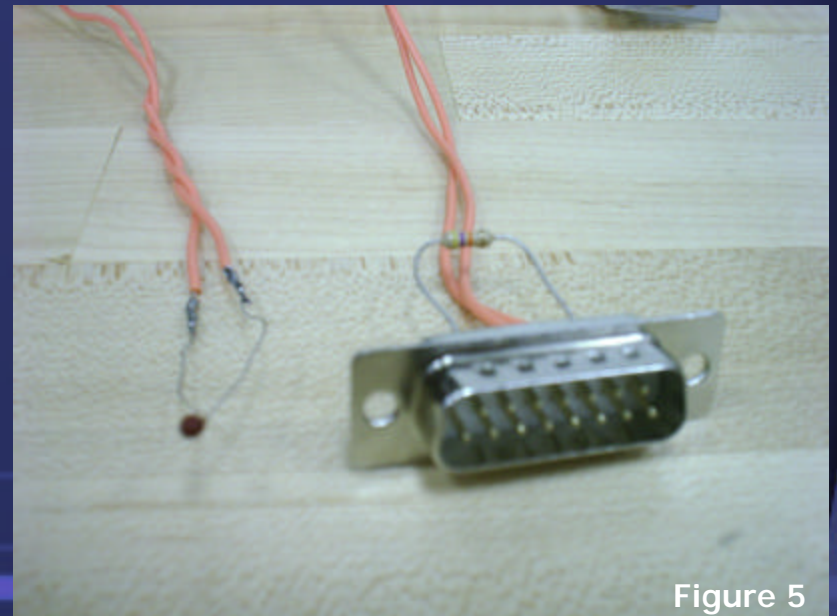


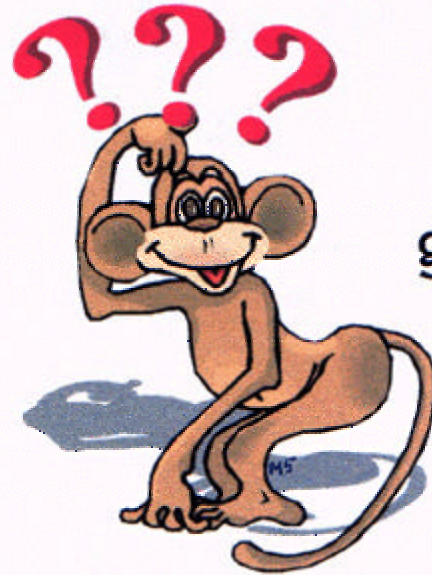
Figure 5

Cost Analysis



Parts	Cost
Computer	\$ 500.00
Coffee Machine	\$ 19.99
Battery	\$ 7.99
Transistor	\$ 3.45
Resistor	\$ 0.42
Relay	\$ 5.61
Diode	\$ 0.79
Game port	\$ 0.85
COM port	\$ 0.75
Wires	\$ 1.99
Thermistor	\$ 1.00
TOTAL	\$ 542.84

Total hours = 320



Questions
are
guaranteed in
life;
Answers
aren't.

Questions?