

# Smart Home Safety System

Team #7

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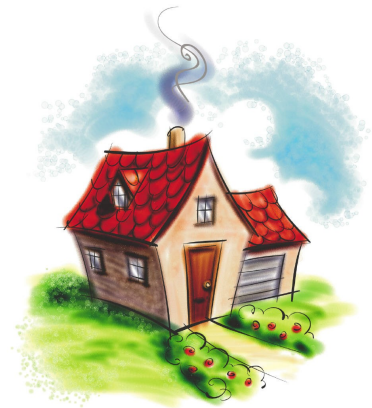
Che Wei Yu

Daniel Ruktantichoke



# [ Motivations ]

- In 2001 alone
  - there were over 350 thousand residential fire in the US
  - 15 thousand injuries
  - 3 thousand fatalities
  - \$5 billion loss in property damage



# [ Motivations cont. ]

- Save lives
- Reduce the response time between emergency departments and the home owners
- Reduce the stress and strain
- Reduce costs
- Prevent possible lives threatening events



# [ Project Objective ]

- To design a home safety system that will automatically respond when hazardous conditions occur at any given time.
  - Notify appropriate parties
  - Activate ventilation system that will alleviate or prevent a potential danger situation



# [ Project Goals ]

- The Smart Home System is designed to:
  - Detect smoke and temperature
  - Activate fan device
  - Display status on the LCD screen
  - Notify homeowner and the appropriate emergency response department when hazardous conditions occur

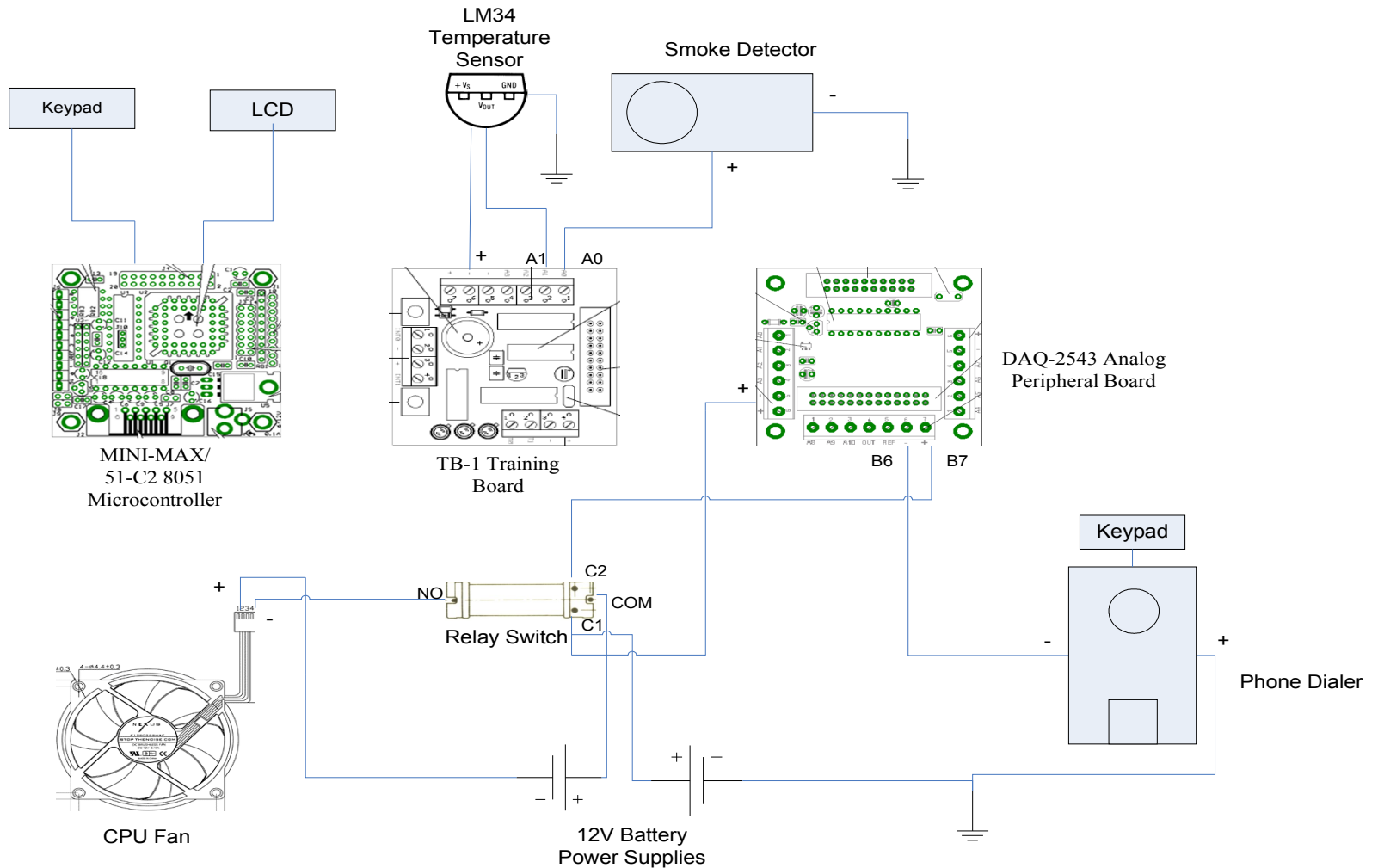


# Project Schedule

1		<b>- MISC</b>
2	✓	Meeting Wednesdays
3	✓	Meeting Sundays
4	✓	Progress Report
5	✓	Parts Purchasing
6	✓	Presentation 1
7	☒	Presentation 2
8	✓	<b>- Design</b>
9	✓	<b>- Research</b>
10	✓	MC circuit
11	✓	Smoke detector circuit
12	✓	Temperature sensor
13	✓	Stepper motor
14	✓	Phone Dialer
15	✓	<b>- Discussion</b>
16	✓	MC circuit
17	✓	Smoke detector circuit
18	✓	Temperature sensor
19	✓	Stepper motor
20	✓	Phone Dialer
21	✓	<b>- Proposal</b>
22	✓	Formatting
23	✓	Project Schedule
24	✓	Cost Analysis
25	✓	Hardware Design
26	✓	Software Design
27	✓	<b>- Implementation</b>
28	✓	<b>- Research</b>
29	✓	MC circuit
30	✓	Training Board
31	✓	DAC-01
32	✓	Smoke detector circuit
33	✓	Temperature sensor
34	✓	<b>- Phone Dialer</b>
35	✓	modem
36	✓	Mic. In
37	✓	connecting to DAC

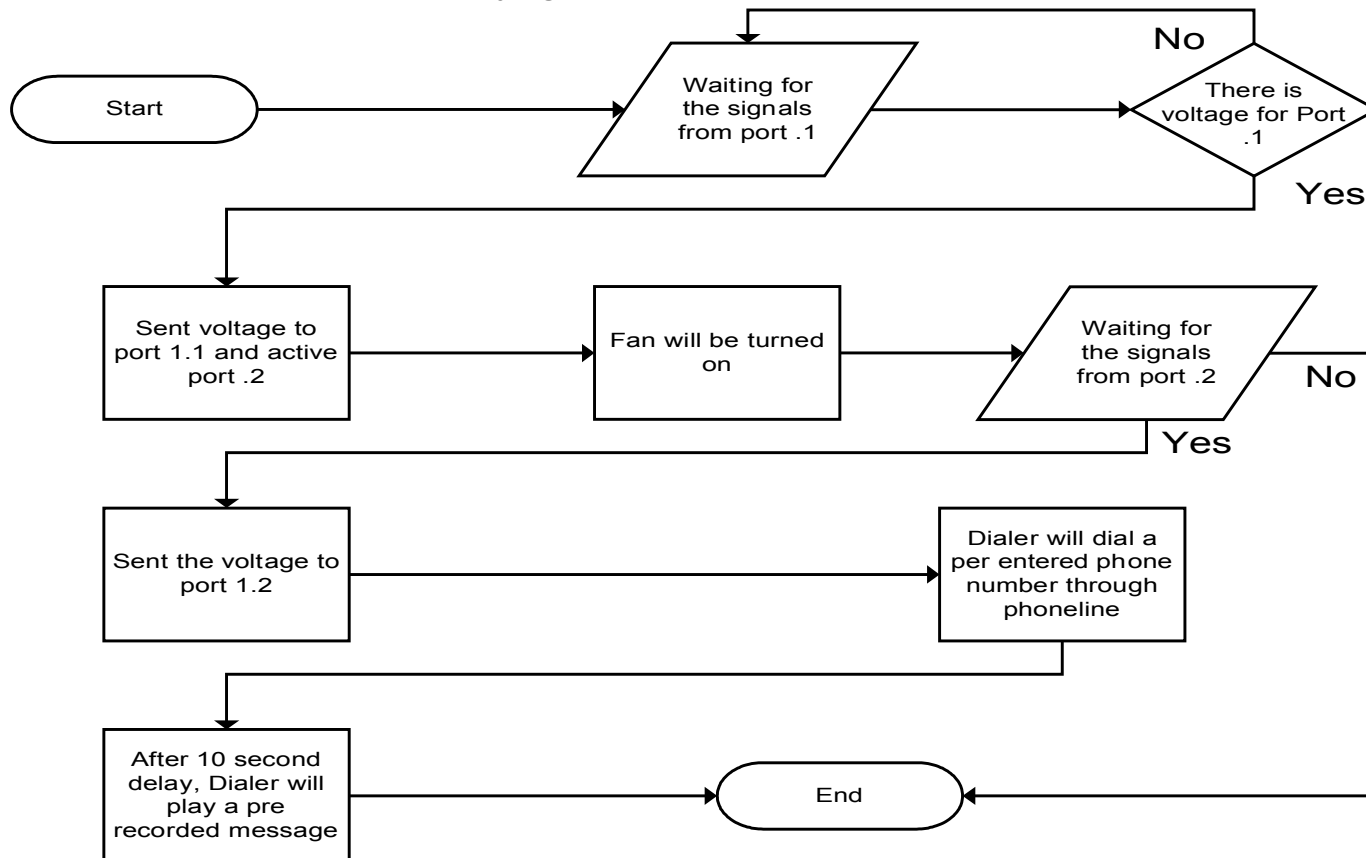
38	✓	<b>- Phase One</b>
39	✓	<b>- Hardware</b>
40	✓	Interface keyboard with MC
41	✓	Interface LCD with MC
42	✓	connecting Temp. Sensor to TB
43	✓	connecting Smoke Sensor to TB
44	✓	connecting Fan to DAC
45	✓	Testing
46	✓	<b>- Phase Two</b>
47	✓	<b>- Software programming</b>
48	✓	Temp. Sensor
49	✓	Smoke Sensor
50	✓	Keyboard/LCD
51	✓	Fan
52	✓	Testing
53	✓	<b>- Phase Three</b>
54	✓	Telephone Network Interface
55	✓	Voice recording
56	✓	Phone NO. recording
57	✓	interfacing with DAC
58	✓	Testing
59	✓	<b>- Phase Four</b>
60	✓	Prototype
61	✓	Testing
62	✓	Modification

# Hardware Circuit



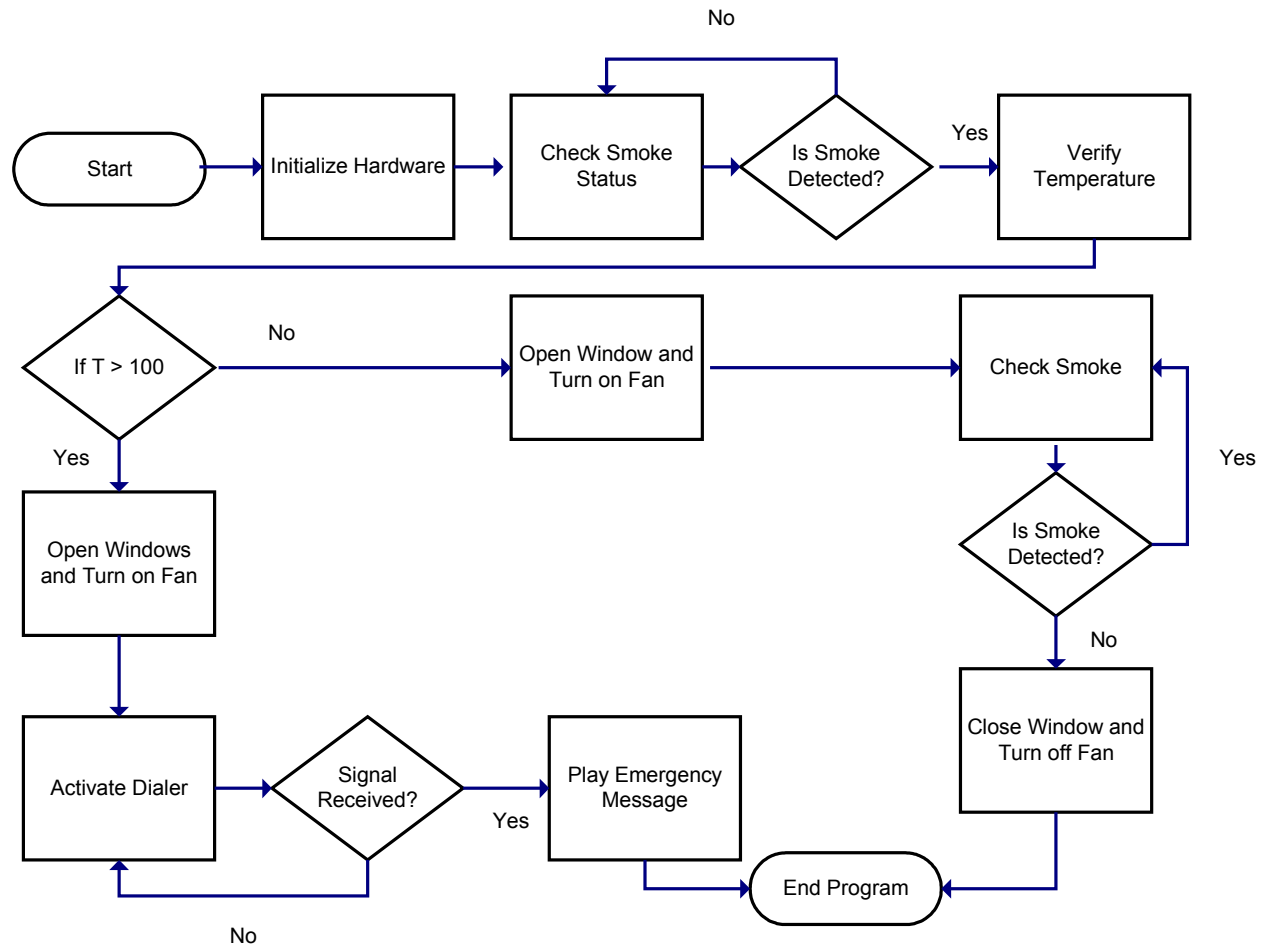
# Hardware Flowchart

Port .1: input port for temperature sensor  
Port .2: input port for smoke sensor  
Port .3 input port for general setting( et. Reset)  
Port 1.1 output port for fan and stepper motor  
Port 1.2 output port for dialer  
Port 1.3 output port for voice playing machine





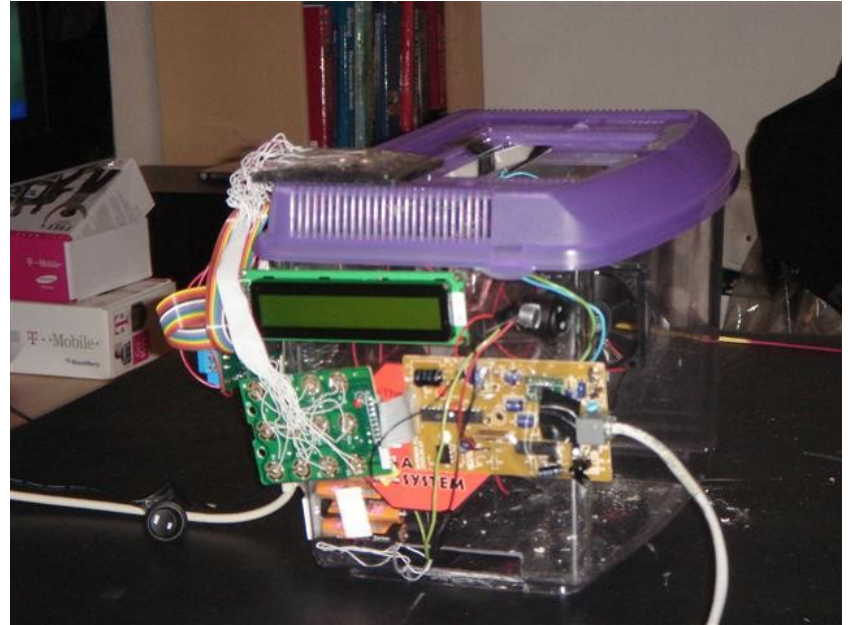
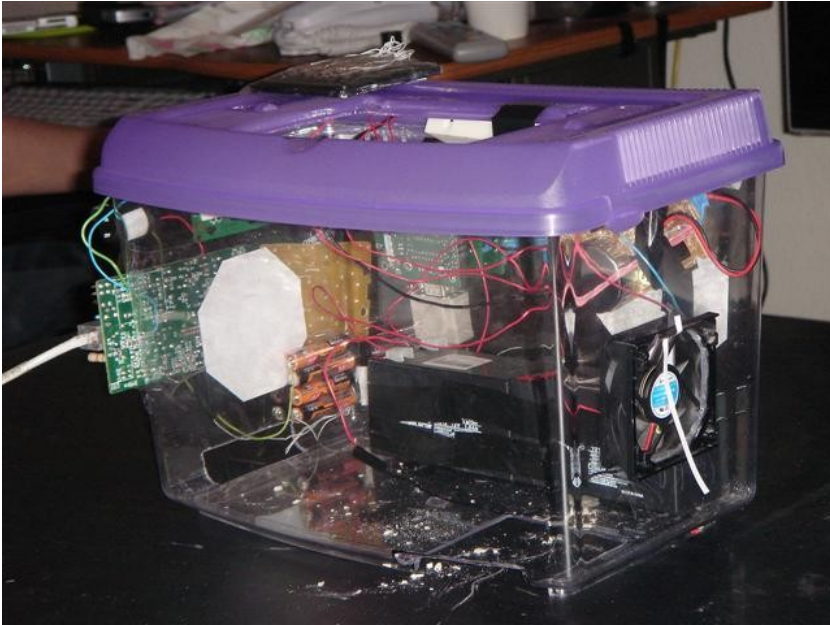
# Software Flowchart



# Cost Analysis

Items	Quantity	Cost (\$)
Micro-Controller	1	Borrowed
LCD	1	Borrowed
Keypad	1	Borrowed
MC Cables	1	Borrowed
Smoke Detector	1	Donated
CPU Fan	1	Donated
Expander Board	2	79.90
Battery	4	39.80
Training Board	1	39.00
Phone System Package	1	35.00
Temperature Sensor	5	10.00
Fish Tank	1	9.99
Reed-Relay	3	9.06
Metal Film	1	5.73
Diode	3	5.74
Breadboard	1	5.00
Transistor	3	2.24
Motor Fan	2	1.90
3' Cable	1	1.50
Connector	2	0.50
<b>TOTAL</b>	<b>37</b>	<b>\$245.36 (w/0 tax)</b>

# [ Prototype ]



# [ References ]

- <http://www.bipom.com/>
- <http://www.mouser.com/>
- <http://www.adt.com/resi/>
- <http://www.usfa.fema.gov>



# [ Questions? ]

