



# *e-Feeder*

ELET 4308/4108

Senior Project

Final Presentation

College of Technology

University of Houston



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## *What does it do?*

- ✧ *Dispenses dry dog food*
- ✧ *Dispenses clean water*

## *For pet owners who are?*

- ✧ *Frequent travelers*
- ✧ *Busy individuals*



## *Features*

- ✧ *Dispenses food and water based on need*
- ✧ *Dispenses food based on time*
- ✧ *Extended use system*
- ✧ *Portable*
- ✧ *Easy maintenance*
- ✧ *Microcontroller Based*

## *Schedule Summary*

- ✧ *Design Phase*
- ✧ *Preliminary Construction*
- ✧ *Programming*
- ✧ *Final Construction*

# Cost Analysis

1. *Part list and cost*  
*Table 1.1 illustrates it.*
2. *Support tools*  
*Table 1.2 illustrates it.*
3. *Labor cost*  
*Table 1.3 illustrates it.*
4. *Total e-Feeder cost*  
*Table 1.4 illustrates it.*





Table 1.1

No.	Parts list	Quantity	Source	Est. cost	Act. cost	
1	8051 microcontroller	1	class	\$125.00	\$95.00	
2	Submersible water pump	1	Donated	\$10.00	\$0.00	
3	6V stepper motor	1	Donated	\$6.00	\$0.00	
4	LCD	1	EPO	\$20.00	\$19.95	
5	Keypad	1	EPO	\$20.00	\$19.95	
6	Real time clock (RTC-1)	1	EPO	\$30.00	\$29.95	
7	Digital Input/Output (DIO-1) Board	1	EPO	\$30.00	\$29.95	
8	Snap-action switch	2	EPO	\$6.00	\$4.5	
9	Springs	2	Donated	\$1.00	\$0.00	
10	Food storage tank	1	Donated	\$10.00	\$0.00	
11	Food bowl	1	Donated	\$5.00	\$0.00	
12	Food holder	1	Donated	\$5.00	\$0.00	
13	Water storage tank	1	Donated	\$10.00	\$0.00	
14	Water bowl	1	Donated	\$5.00	\$0.00	
15	6-12V DC adaptor	1	EPO	\$16.00	\$16.00	
16	6V DC battery	1	EPO	\$8.00	\$7.95	
17	Wood and wooden board for frame	N/A	Donated	\$50.00	\$0.00	
18	Transportation handles	5	Donated	\$6.00	\$0.00	
19	Ping-pong	2	Donated	\$1.00	\$0.00	
20	Barrel bolts	2	Donated	\$6.00	\$0.00	
21	Elbow joint (male and female), extender, and connection tube	N/A	Donated	\$10.00	\$0.00	
22	Linear slider	1	Donated	\$5.00	\$0.00	
23	On and off switch	1	Donated	\$2.00	\$0.00	
24	Control box	1	Donated	\$1.00	\$0.00	
25	Screws and wires	N/A	class	\$5.00	\$0.00	
26	BASCOM51 Basic compiler for the 8051	1	BiPom	\$100.00	\$99.00	
				<b>Sub Total</b>	\$493.00	\$322.25
				<b>Discount</b>		\$19.05
				<b>Total</b>	\$493.00	\$303.20



<i>No.</i>	<i>Tools</i>	<i>Quantity</i>	<i>Cost</i>
<i>1</i>	<i>Digital Multimeter (DMM)</i>	<i>1</i>	<i>donated</i>
<i>2</i>	<i>Circular Saw</i>	<i>1</i>	<i>donated</i>
<i>3</i>	<i>Drill</i>	<i>1</i>	<i>donated</i>
<i>4</i>	<i>Soldering gun</i>	<i>1</i>	<i>donated</i>
<i>5</i>	<i>Wire stripper</i>	<i>1</i>	<i>donated</i>
<i>6</i>	<i>Hammer</i>	<i>1</i>	<i>donated</i>
<i>7</i>	<i>Knife, scissor, and tape</i>	<i>1</i>	<i>donated</i>



Table 1.2

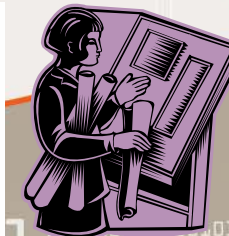
Table 1.3

<i>No.</i>	<i>Tasks</i>	<i>\$/hour</i>	<i>No. of labors</i>	<i>hours/week</i>	<i>No. of weeks</i>	<i>Total</i>	
1	Planning & Design	\$23.00	4	15	3	\$4,140.00	
2	Programming	\$23.00	2	15	5	\$6,900.00	
	Electronic (Interface) assembly	\$23.00	2	15			
3	Mechanical assembly	\$23.00	4	15	5	\$6,900.00	
4	Testing and debug	\$23.00	4	15	2	\$2,760.00	
					<b>Total</b>	<b>15</b>	<b>\$20,700.00</b>



Team combines all members' tuition fees together to derive the total cost of \$20,700 and the amount is distributed to four tasks in total 15 weeks. Each cost of task is calculated by \$/hour x No. of labors x hours/week x No. of weeks.

For example of task 1,  $\$23 \times 4 \times 15 \times 3 = \$4,140$ .



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# Total e-Feeder cost



Table 1.4

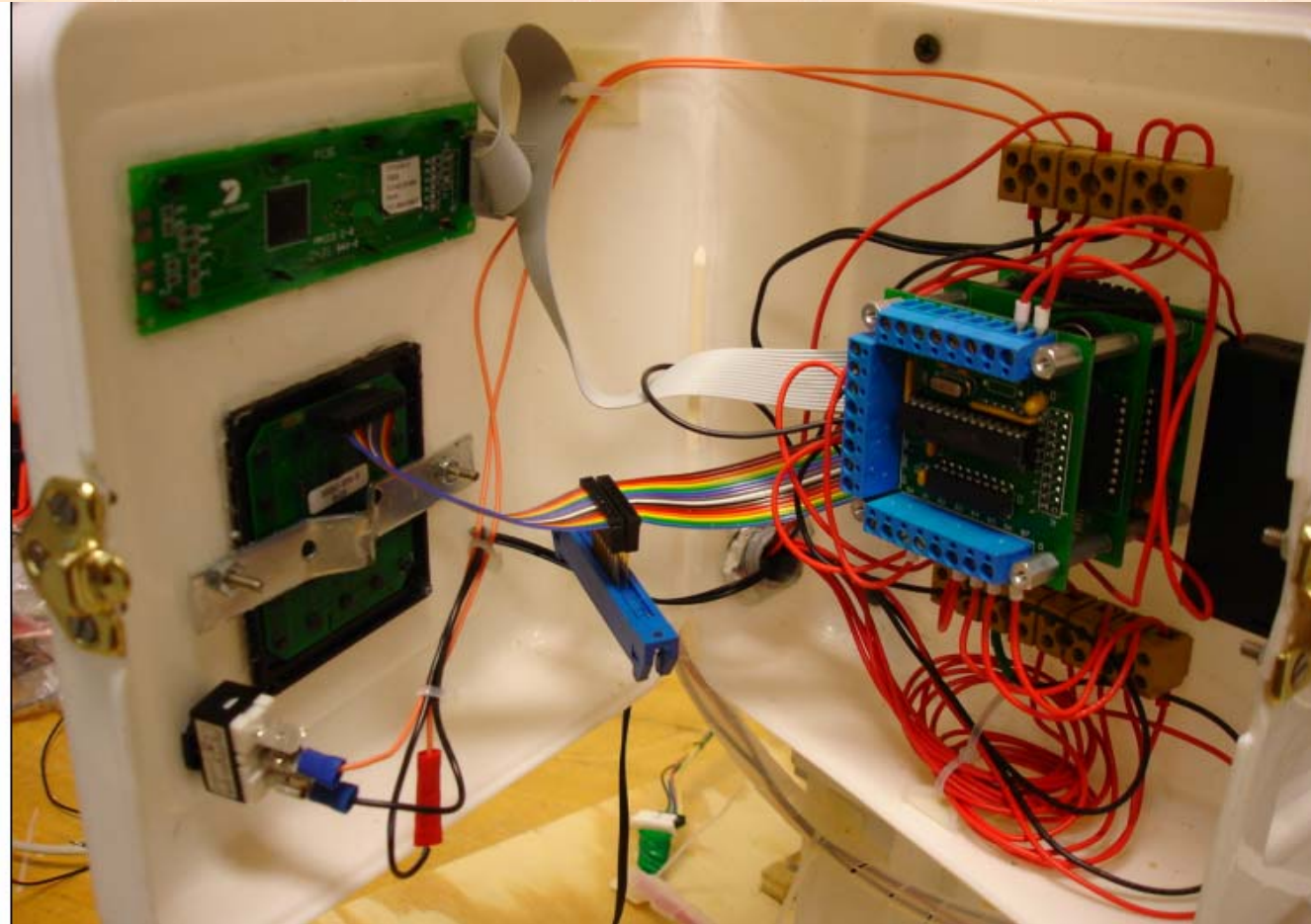
	<i>Est. cost</i>	<i>Act. cost</i>	<i>Differences</i>
<i>Parts list</i>	\$493.00	\$303.20	-\$189.8
<i>Labor usages</i>	\$20,700.00	\$20,700.00	\$0.00
<i>Total</i>	\$21,193.00	\$21,003.20	-\$189.8



# Control box – front panel

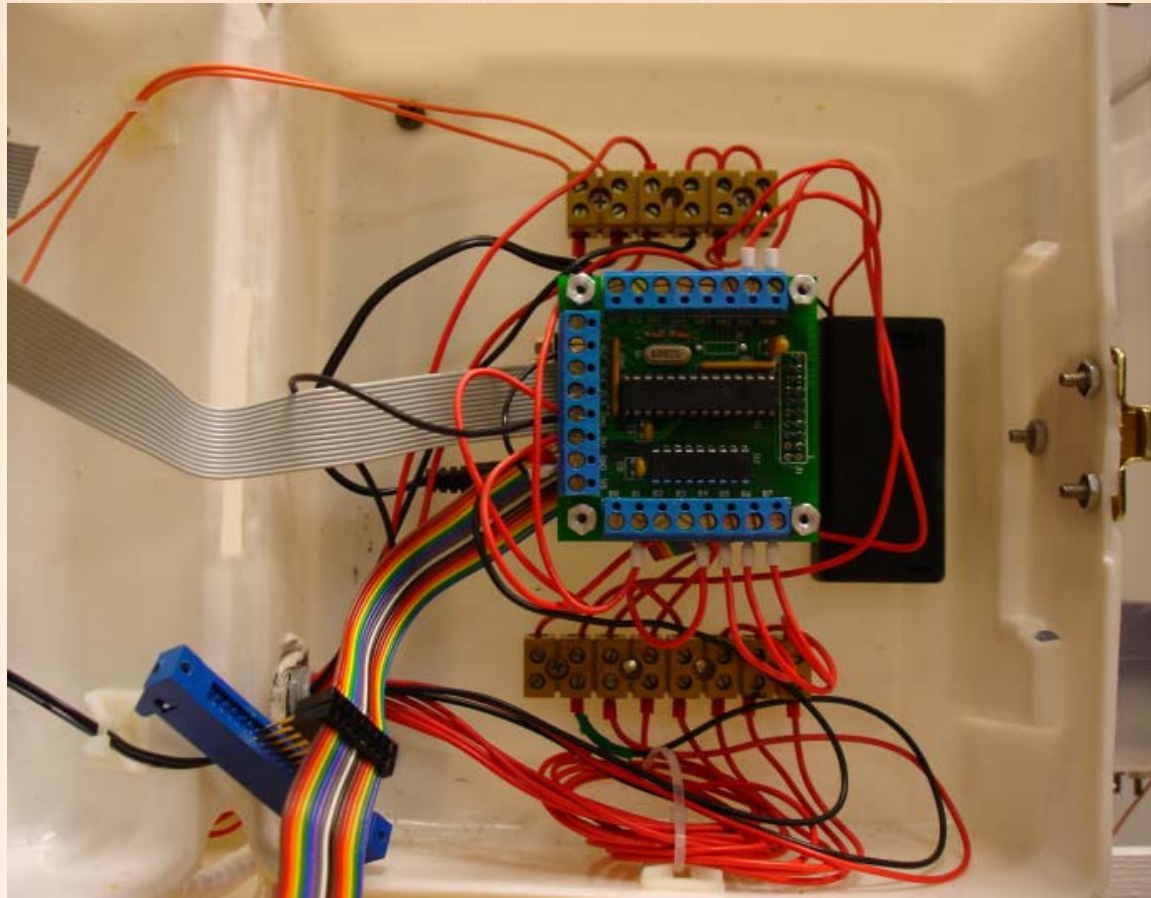


# Control box – interior





# Control box – DIO Board



# Non-submersible water pump





# Water tank



# Water bowl, floating sensor with on/off switch



# Water Dispenser Diagram

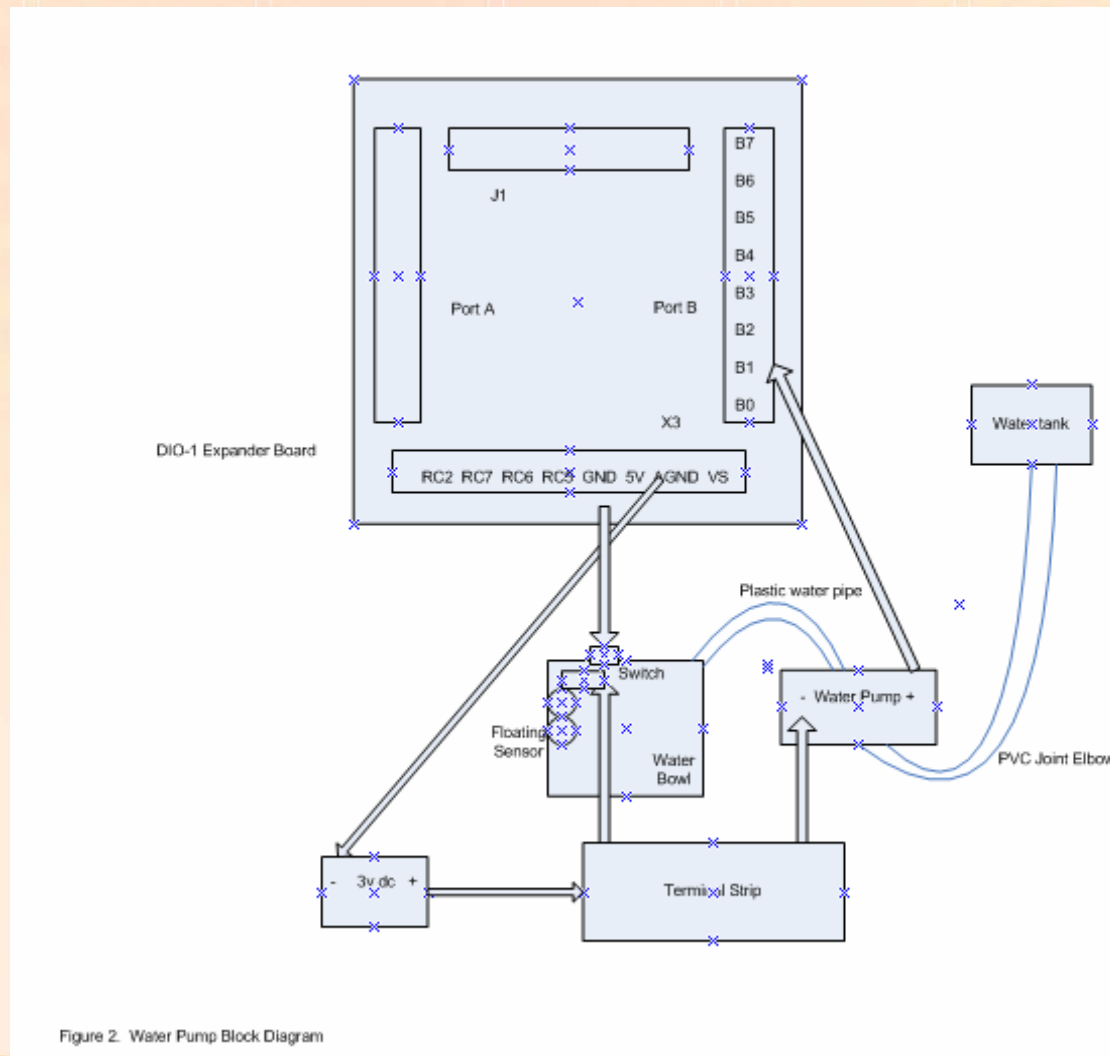


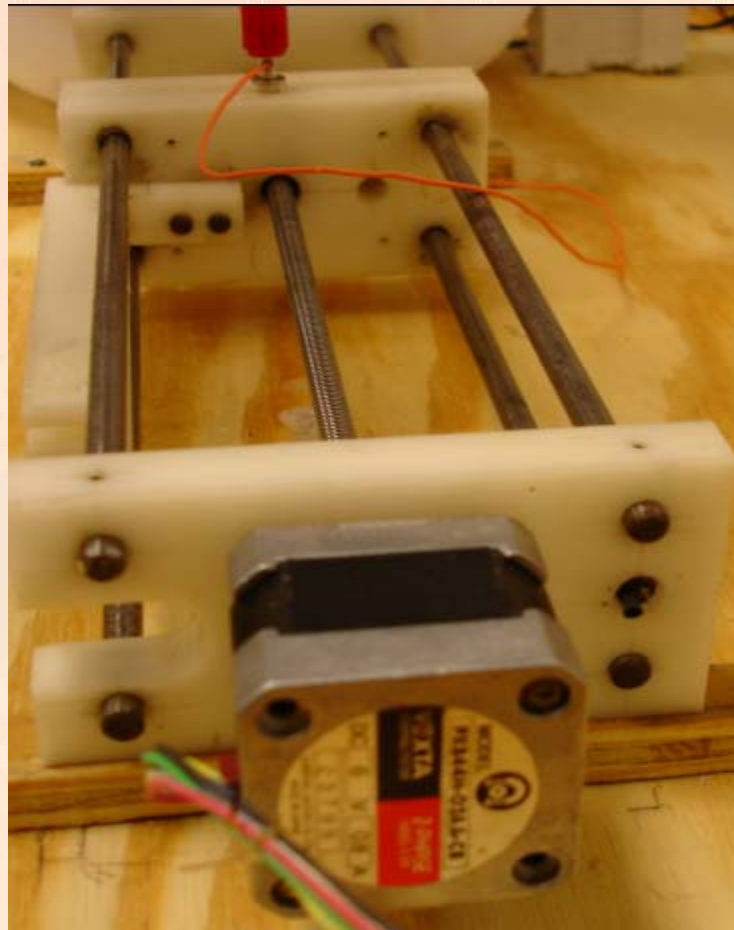
Figure 2. Water Pump Block Diagram

# Complete water pump system



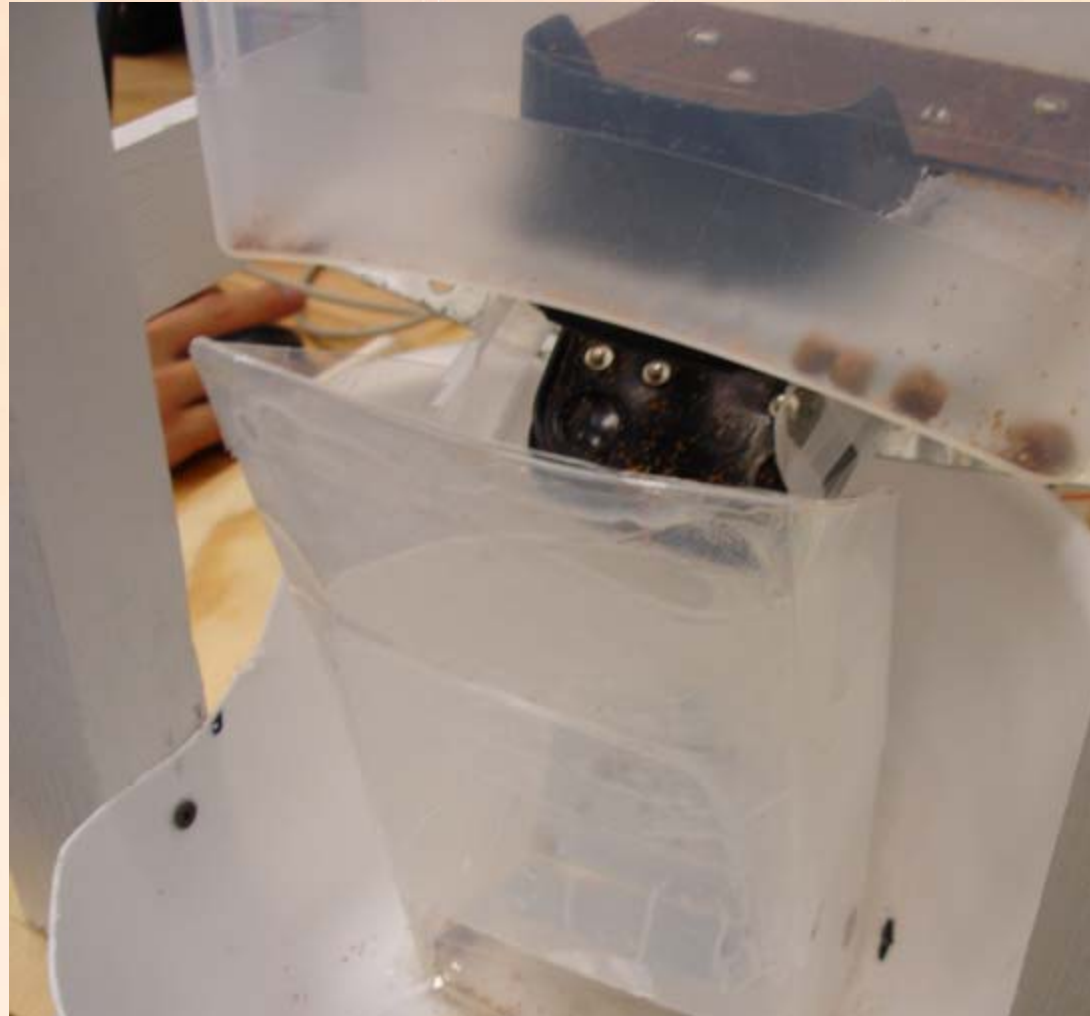


# Linear slider with stepper motor





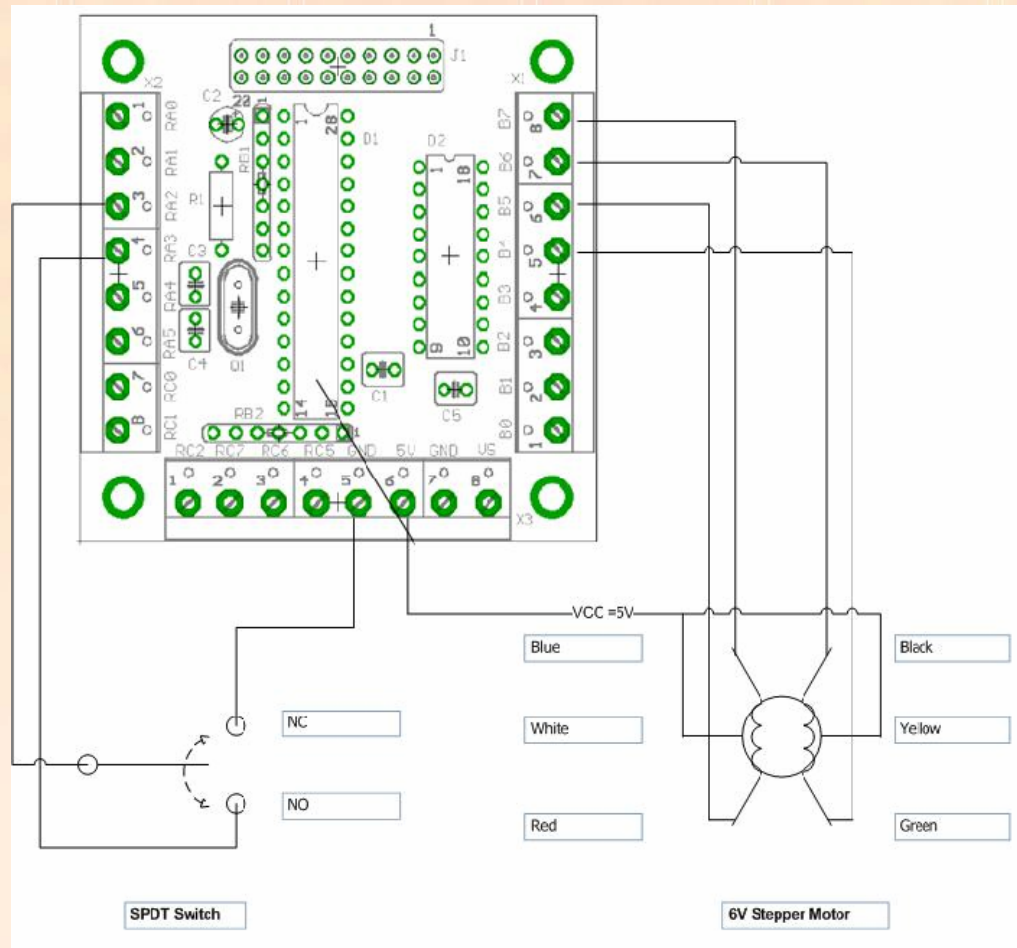
# Open/Close gate



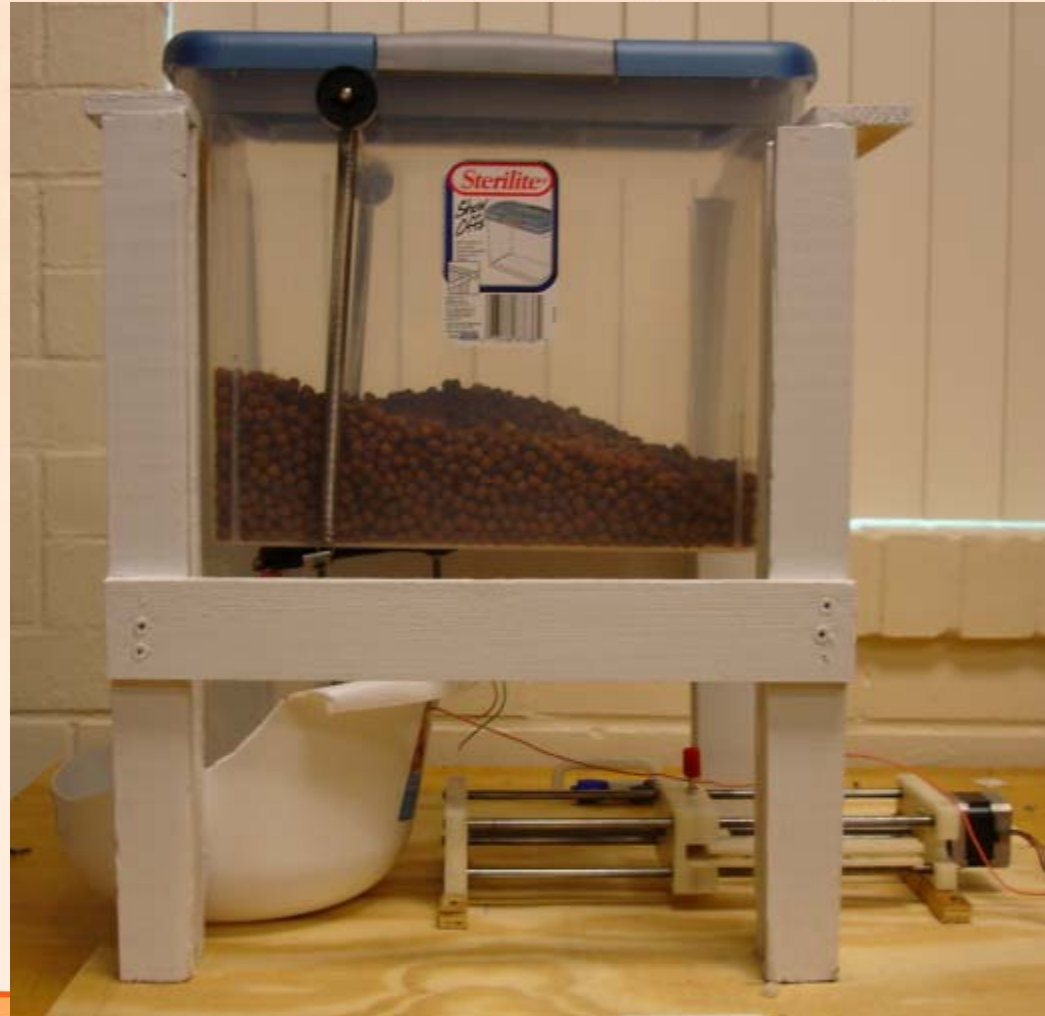
# Food container, food bowl



# Food Dispenser Wiring Diagram

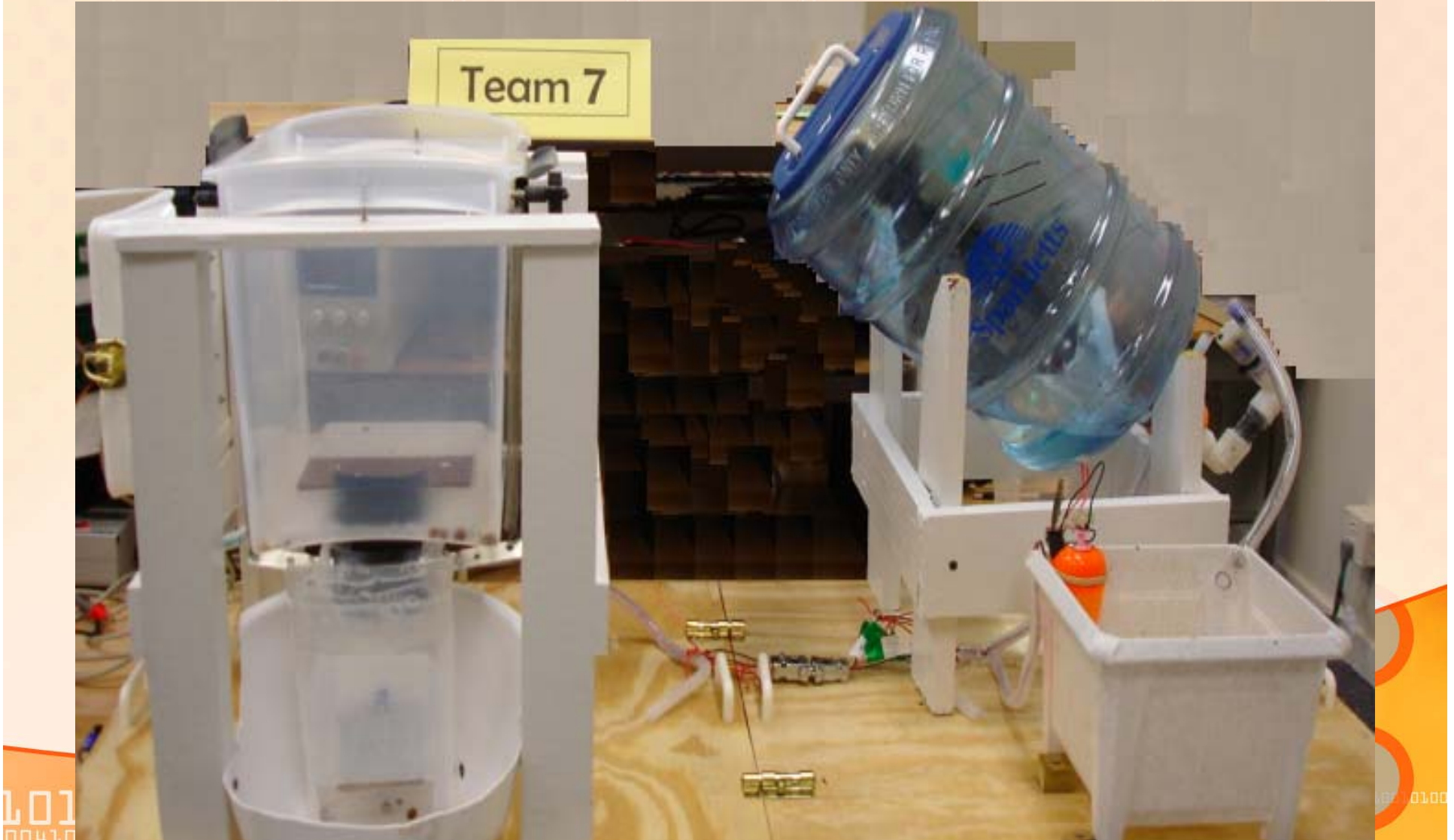


# Complete food system

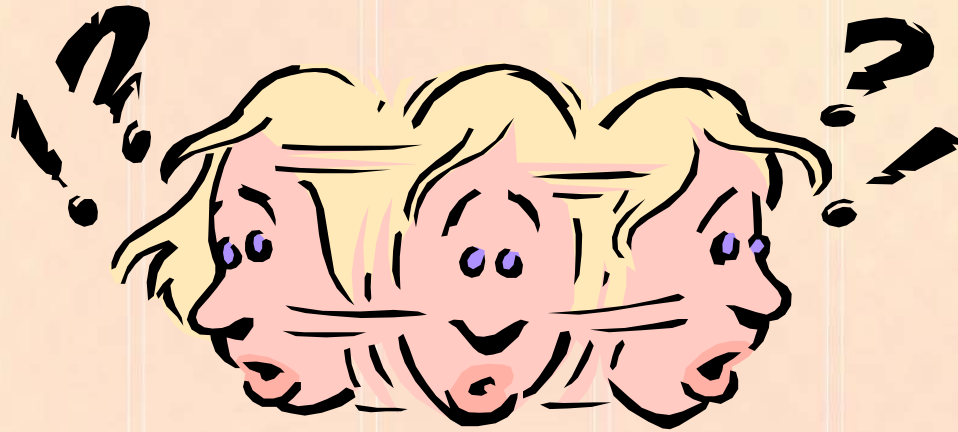




# Combo integration







Q and A?