Progress Report for the Smart Pet Feeder Monday March 31, 2008

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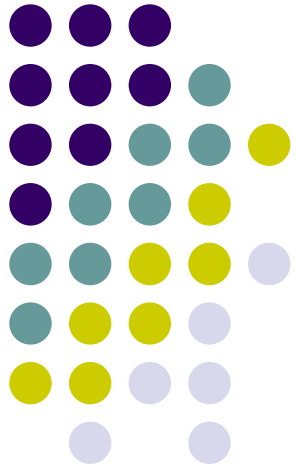
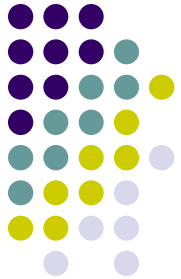
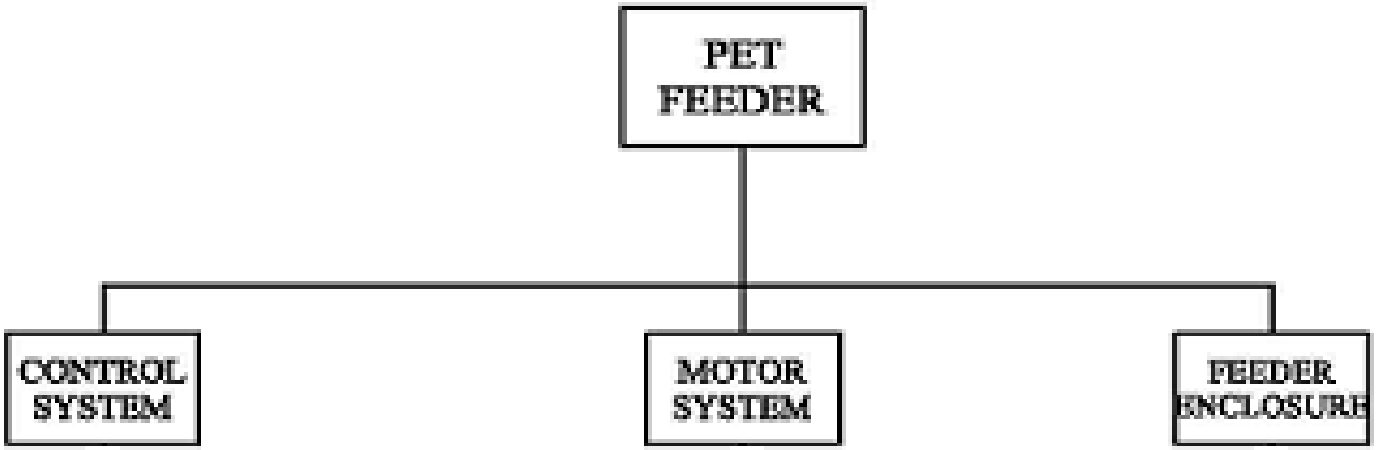


Introduction



- Automated pet feeder that:
  - Reliably provides food to a pet at the time the owner wishes
  - Keeps the pet from reaching the food stored for later feedings
  - Does not allow a “forbidden pet” to eat from a given feeder

Introduction

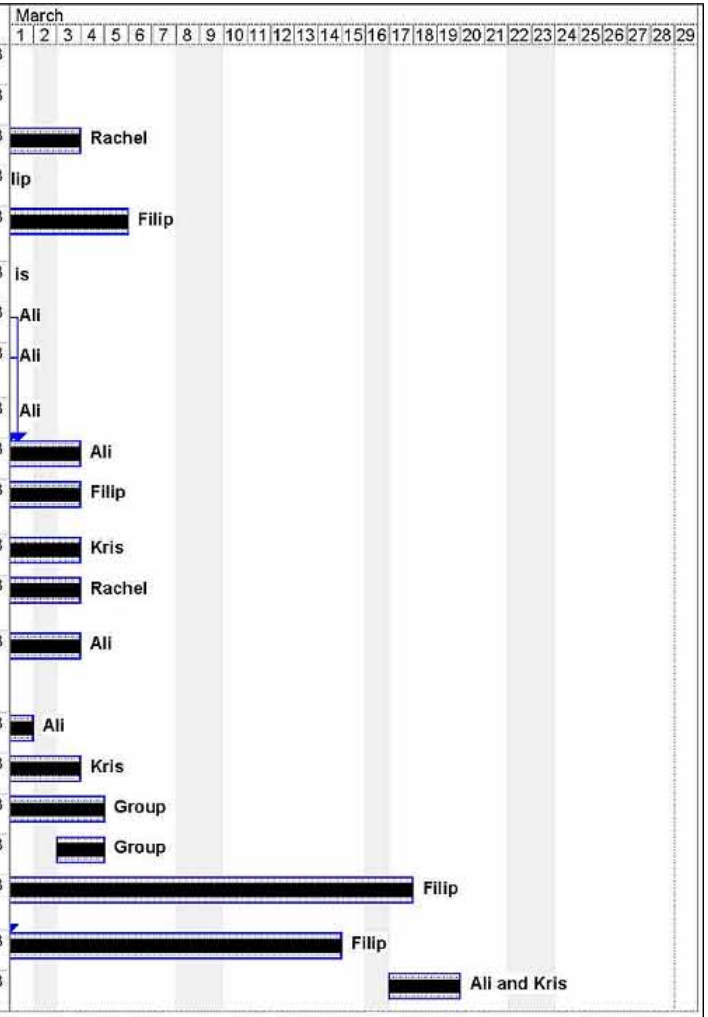


Progress-to-date

- Programming has begun
- Communication with LCD
- New IDE
- Testing of RFID
- Communication with RTC
- New parts have been machined

Progress-to-date

ID	Task Name	Start	Finish
25	Finish research on RFID	Mon 2/25/08	Wed 2/27/08
26	Order RFID	Wed 2/27/08	Wed 2/27/08
27	Get CW to talk to HC12	Mon 2/25/08	Mon 3/3/08
28	Create Wiring Schematic for Motor	Mon 2/25/08	Thu 2/28/08
29	Ready the driver chip to go into a breadboard	Tue 2/26/08	Wed 3/5/08
30	Create Wiring Schematic for the RTC	Mon 2/25/08	Thu 2/28/08
31	Integrate the RFID reader into the SLD	Mon 2/25/08	Fri 2/29/08
32	Integrate the Controller and Motor into SLD	Mon 2/25/08	Fri 2/29/08
33	Integrate the RTC into the SLD	Mon 2/25/08	Fri 2/29/08
34	Create eletrical schematic	Sat 3/1/08	Mon 3/3/08
35	Write summary of chosing the motor, chip, and interfacing of the 2	Tue 2/26/08	Mon 3/3/08
36	Write summary on RTC and RFID	Tue 2/26/08	Mon 3/3/08
37	Write summary on CodeWarrior and LCD interfacing	Tue 2/26/08	Mon 3/3/08
38	Write summary on IR sensors and emitters, the program, and the system interfacing	Tue 2/26/08	Mon 3/3/08
39	Transmit sections from proposal to PR1, reformat Bibliogra	Tue 2/26/08	Sat 3/1/08
40	Create PowerPoint for progress report 1	Tue 2/26/08	Mon 3/3/08
41	Write Progress Report	Tue 2/26/08	Tue 3/4/08
42	Rehearse Presentation	Mon 3/3/08	Tue 3/4/08
43	Design the system to keep the weight of the base off the shaft of the motor	Tue 2/26/08	Mon 3/17/08
44	Machine base and tray	Sat 3/1/08	Fri 3/14/08
45	Test RFID system	Mon 3/17/08	Wed 3/19/08

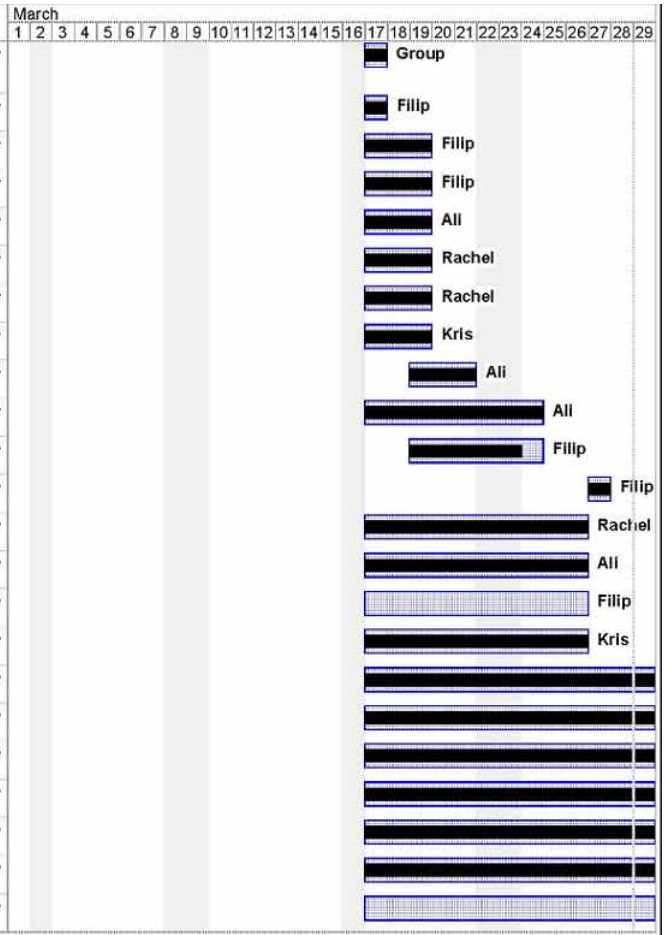


Project: Gantt Chart 20080327.mpp
Date: Sat 3/29/08

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

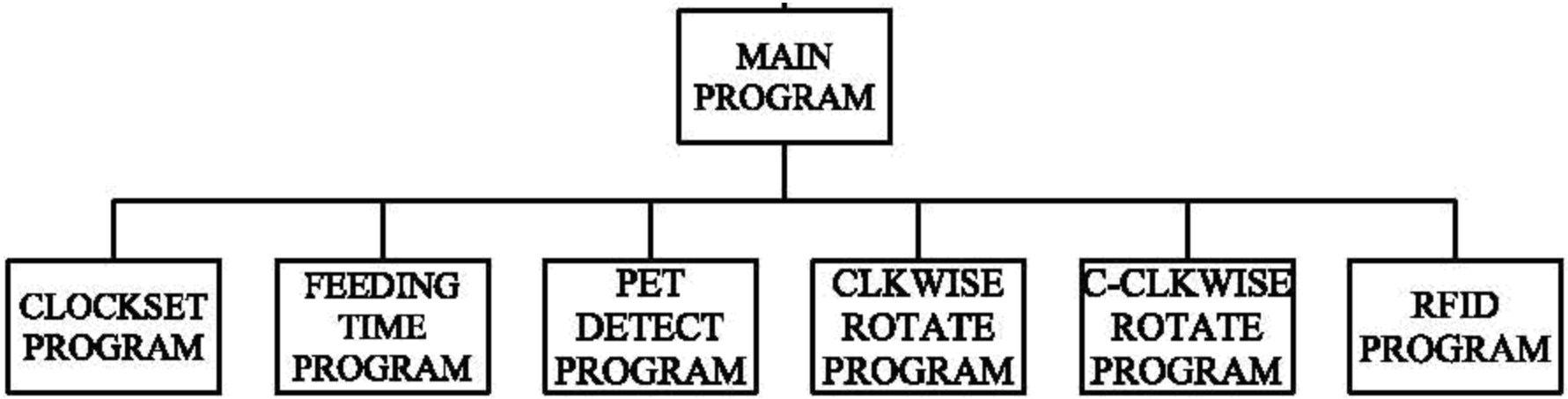
Progress-to-date

ID	Task Name	Start	Finish	Resource
46	Get ICC talking to CML12S	Mon 3/17/08	Mon 3/17/08	Group
47	Purchase parts for tray support	Mon 3/17/08	Mon 3/17/08	Filip
48	Figure out R and C values	Mon 3/17/08	Wed 3/19/08	Filip
49	Preliminary driver program	Mon 3/17/08	Wed 3/19/08	Filip
50	Decide how to use RFID	Mon 3/17/08	Wed 3/19/08	Ali
51	Solder leads onto buttons	Mon 3/17/08	Wed 3/19/08	Rachel
52	Preliminary Main Program	Mon 3/17/08	Wed 3/19/08	Rachel
53	Establish communication with RTC	Mon 3/17/08	Wed 3/19/08	Kris
54	Edit Circuit Schematic	Wed 3/19/08	Fri 3/21/08	Ali
55	Create flowchart for RFID	Mon 3/17/08	Mon 3/24/08	Ali
56	Assemble motor driving circuit	Wed 3/19/08	Mon 3/24/08	Filip
57	Use motor control code to flash LEDs CW and CCW	Thu 3/27/08	Thu 3/27/08	Filip
58	Get LCD talking to HC12	Mon 3/17/08	Wed 3/26/08	Rachel
59	Create preliminary program for RFID	Mon 3/17/08	Wed 3/26/08	Ali
60	SolidWorks model of tray support system	Mon 3/17/08	Wed 3/26/08	Filip
61	Flowcharts for all programs	Mon 3/17/08	Wed 3/26/08	Kris
62	Write update on motor circuit	Mon 3/17/08	Sat 3/29/08	
63	Write update on main program	Mon 3/17/08	Sat 3/29/08	
64	Write update on clock program	Mon 3/17/08	Sat 3/29/08	
65	Write update on timer program	Mon 3/17/08	Sat 3/29/08	
66	Write update on RFID interfacting	Mon 3/17/08	Sat 3/29/08	
67	Write update on tray support system	Mon 3/17/08	Sat 3/29/08	
68	Write update on motor program	Mon 3/17/08	Sat 3/29/08	

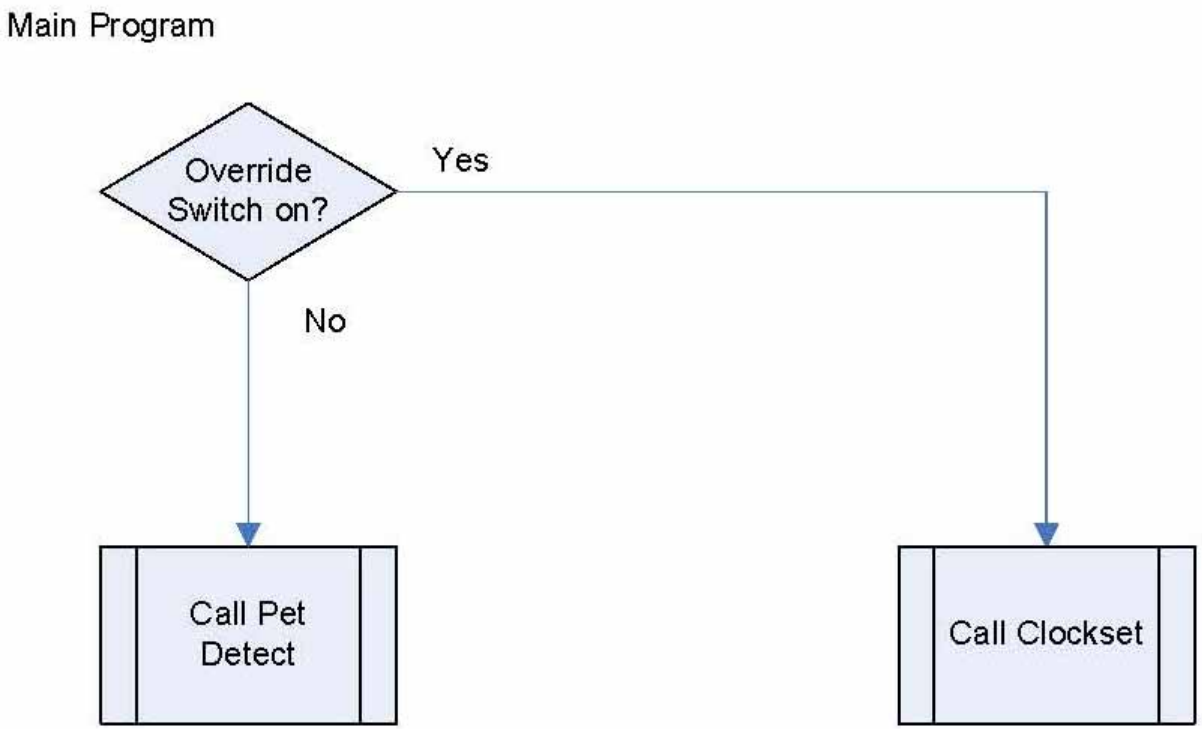


Progress-to-date

- Six main subprograms of the main program:



Progress-to-date

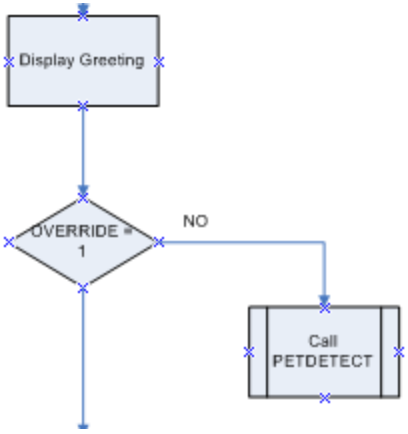


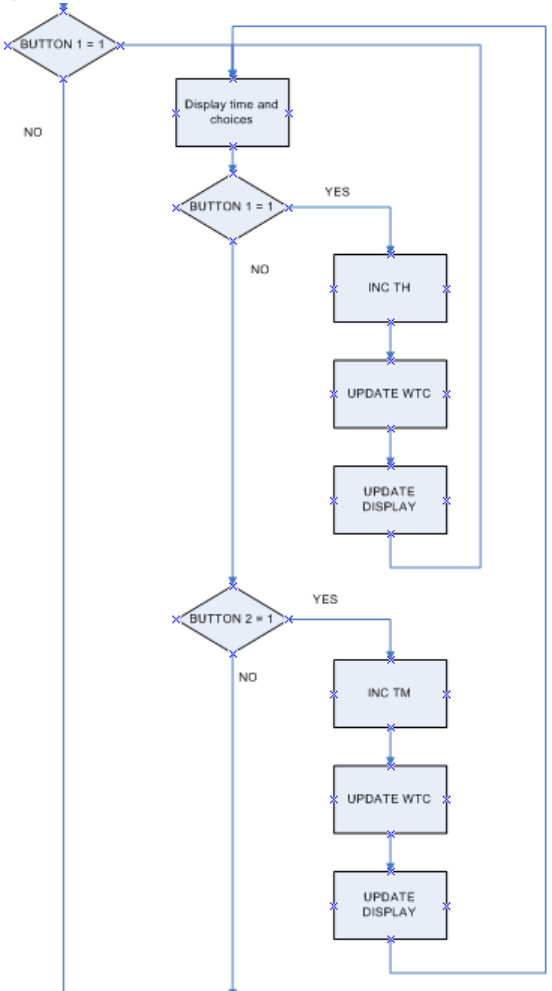
Progress-to-date

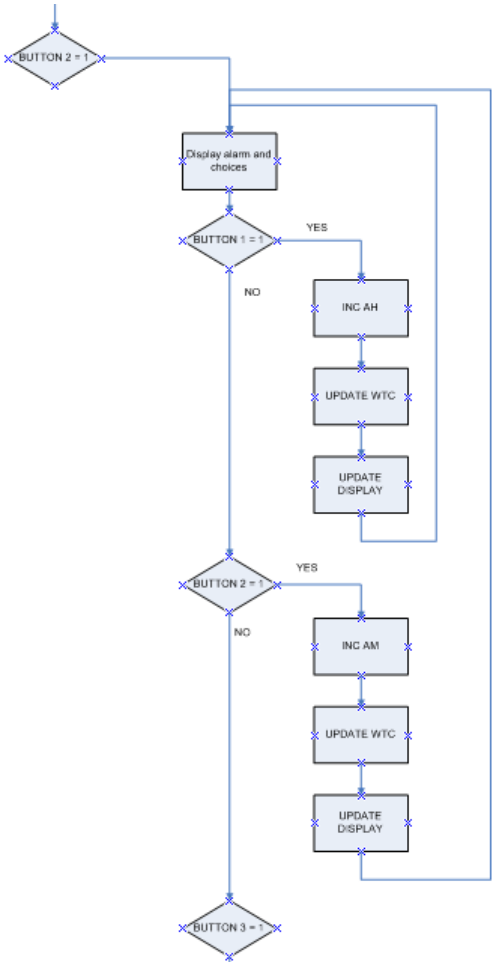
- RTC chip
  - Now communicating with it
  - Understand how the Watchdog Alarm functions
  - Input the time but it is not updating correctly

Progress-to-date

- Clockset program

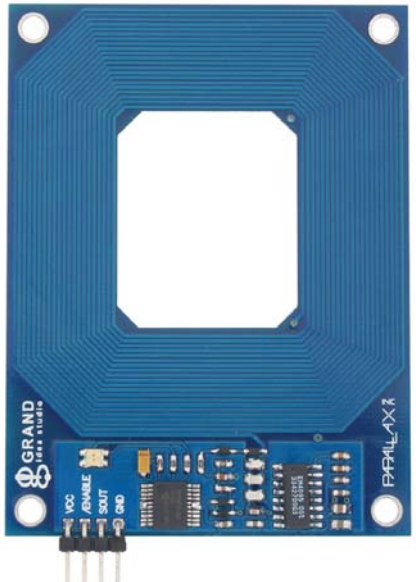






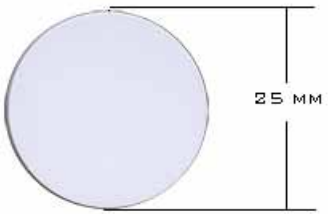
Progress-to-date

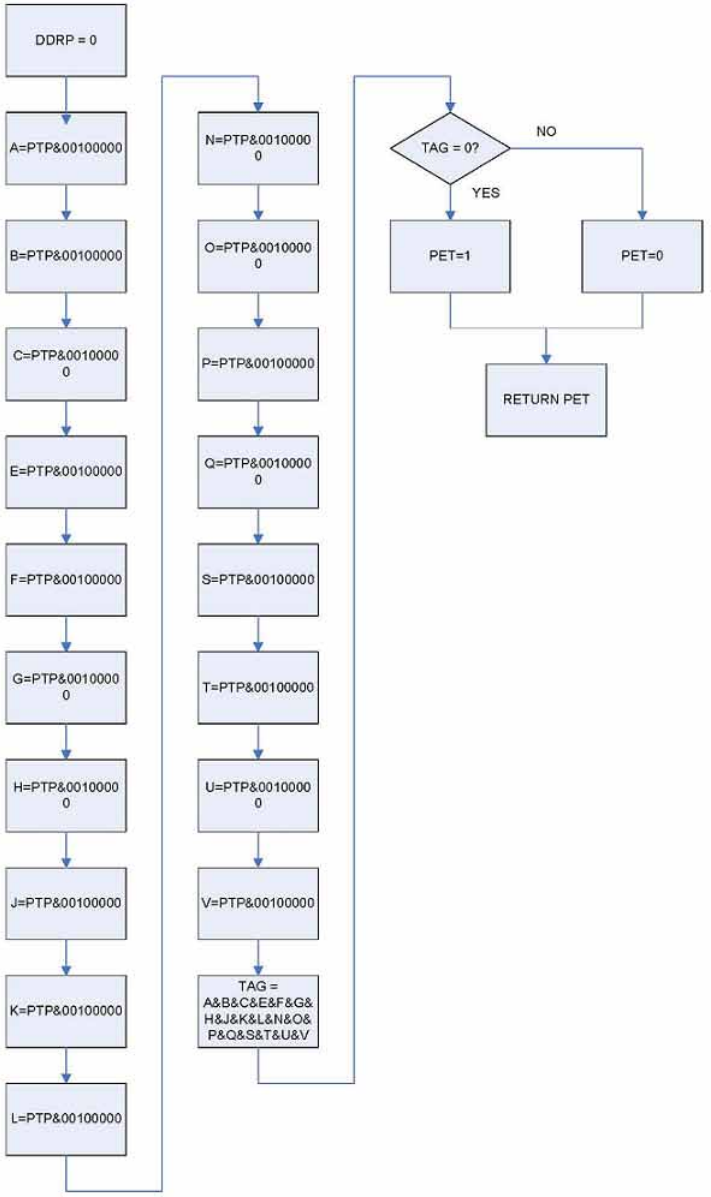
- RFID Reader/Tags
  - Received
  - Tested for range and operation
  - Found that the logic state of the SOUT pin does not change, but a unique ID number is sent when the tag is sensed



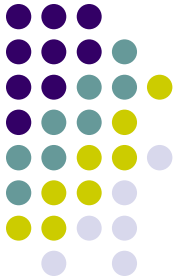
Progress-to-date

- RFID Subprogram





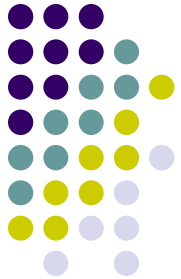
Progress-to-date



- LCD
  - Now talking to LCD
  - Have a working program

  - Program we had acquired from Axiom was not compiling
  - We realized it was not complete

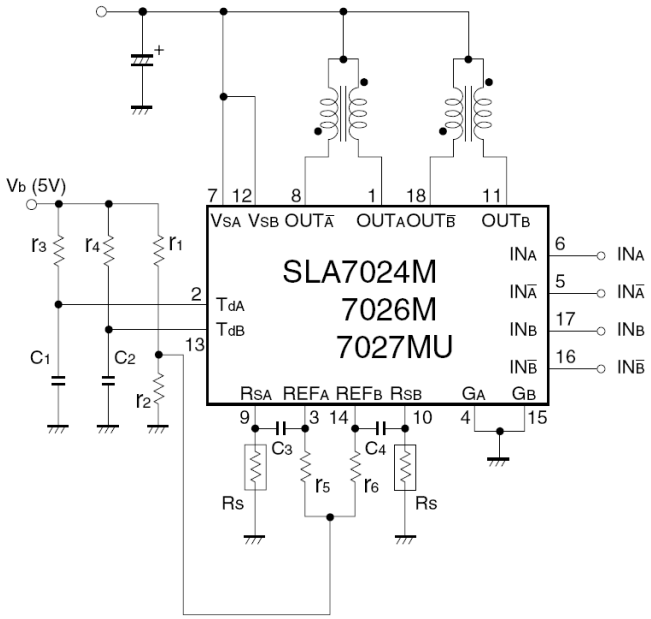
Progress-to-date



- IDE
  - Chosen a new one
    - Original IDE, “Embedded GNU”, was requiring administrative rights
    - ImageCraft ICCV7
  - Communicating and compiling
    - Until recently, we believed that the programs were not downloading, but it turned out that it was

Progress-to-date

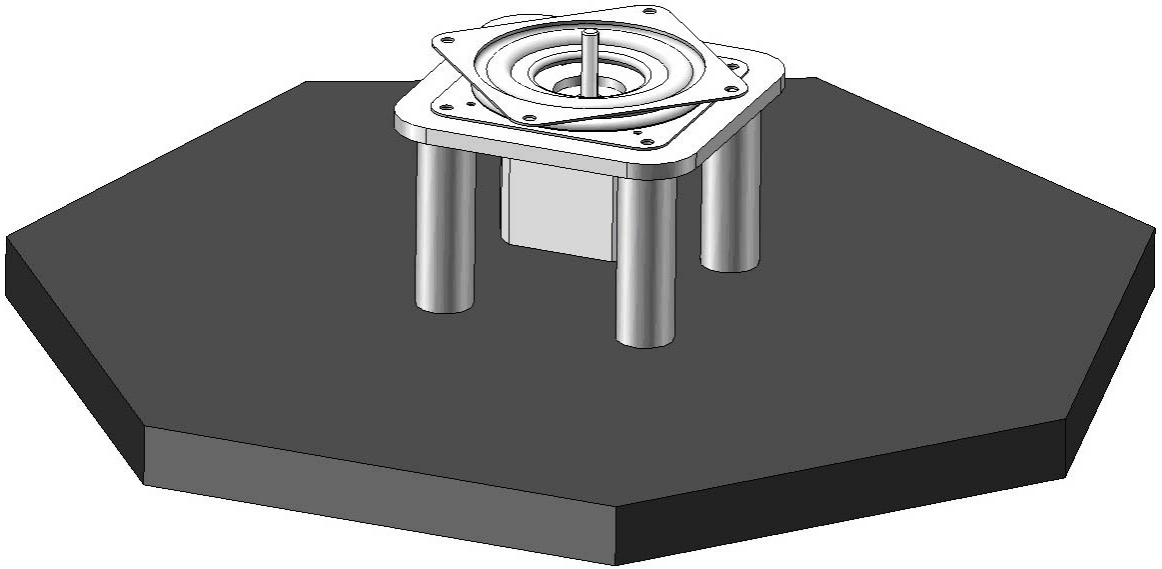
- Stepper motor
  - Received
  - Driver circuit design is complete
    - Resistor and capacitor values have been determined



r1 : 510Ω
r2 : 100Ω (VR)
r3 : 47kΩ
r4 : 47kΩ
r5 : 2.4kΩ
r6 : 2.4kΩ
C1 : 470pF
C2 : 470pF
C3 : 2200pF
C4 : 2200pF
Rs (1 to 2W) : 1Ω typ (7024M)
0.68Ω typ (7026M)
1.8Ω typ (7027MU)

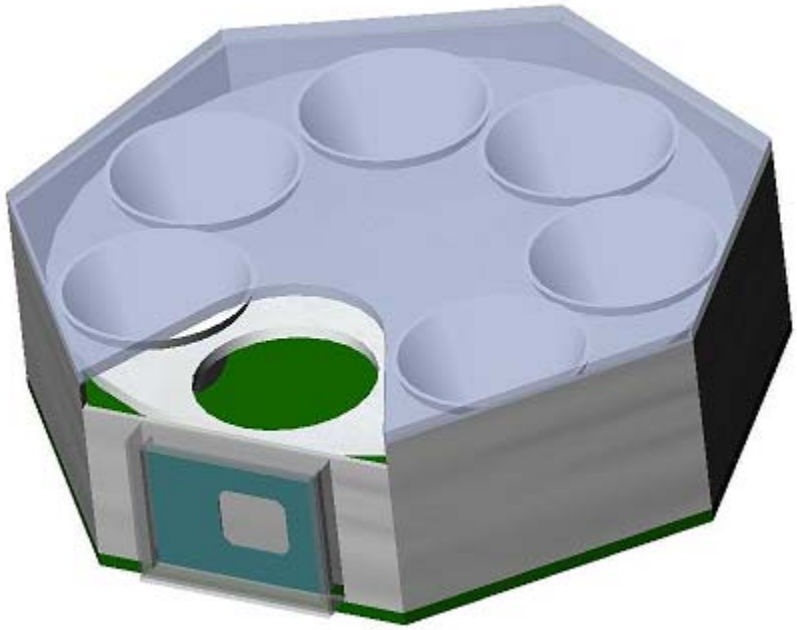
Progress-to-date

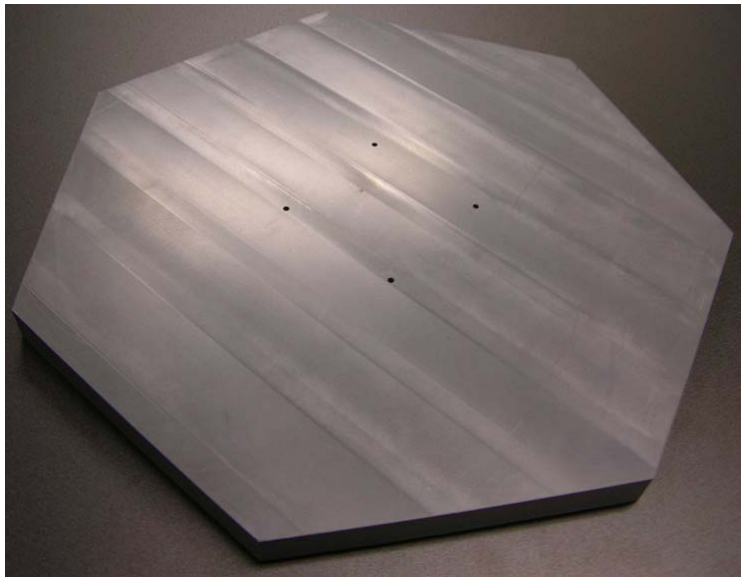
- Support System
  - All elements machined
  - Assembly is all that is left



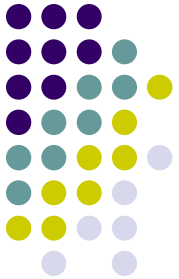
Progress-to-date

- Feeder enclosure
  - Base machined
    - PVC





Problem Areas



- LCD
  - Program wasn’t compiling
- RTC Chip
  - Input the time but it is not updating correctly
- IDE
  - Original IDE, “Embedded GNU”, was requiring administrative rights
- Downloading program
  - Board was not downloading programs

Budget

Smart Pet Feeder — March 26 2008

Deliverables

- Prototype
- Written Report
- Oral Presentation

BUDGET SUMMARY

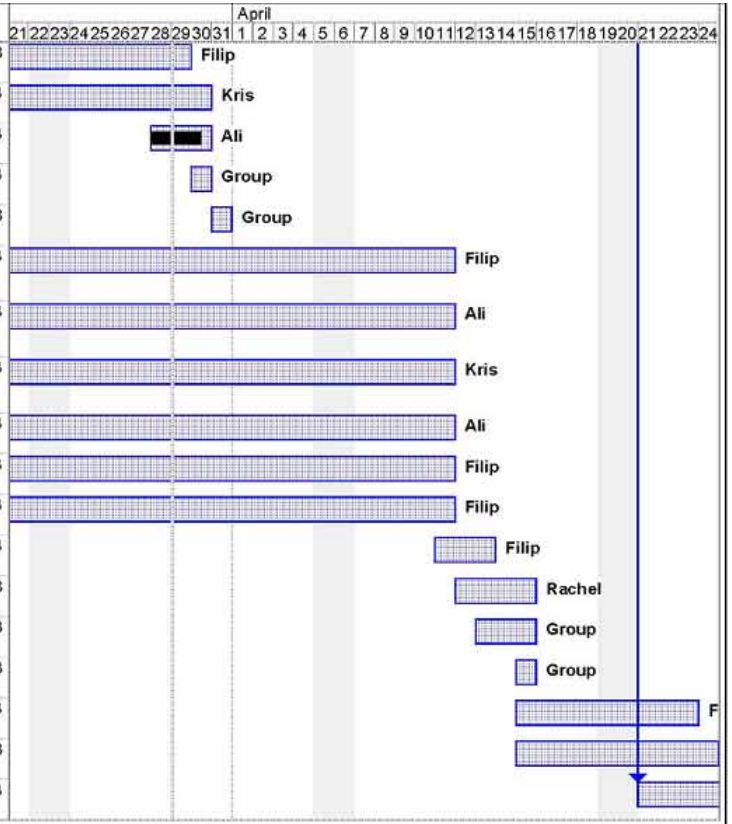
Description	Budget	Actual	Difference
I. Staff	0.00	0.00	$0.00
II. Equipment & Components	359.88	355.96	$3.92
III. Administrative Costs	0.00	0.00	$0.00
IV. Remaining Contingency	*40.12*		
BUDGET SUB-TOTAL	**400.00**	355.96	**$44.04**

II. Equipment & Components

Description	Notes	Qty	Units	Rate	Budget	Actual	Difference
Tray Support System		1	system	20.00	20.00	26.56	-$6.56
Acryllic		1	plate	50.00	50.00	0.00	$50.00
Stepper motor		1	motor	50.00	50.00	58.00	-$8.00
Stepper motor refund		1	motor	-58.00	-58.00	-60.90	$2.90
Unipolar stepper motor		1	motor	58.00	58.00	58.00	$0.00
Motor controller		2	array	10.00	20.00	20.63	-$0.63
Cat Dish		6	dishes	0.48	2.88	3.00	-$0.12
Buttons and Switches		4	switches	1.50	6.00	5.40	$0.60
RFID transponders		2	tag/sensor	15.00	30.00	58.38	-$28.38
IR Recievers		10	reciever	1.50	15.00	15.00	$0.00
Power supply		1	supply	20.00	20.00	44.52	-$24.52
Digital Display		1	display	59.00	59.00	42.00	$17.00
IR collar tag		1	tag	33.00	33.00	31.49	$1.51
Resistors and Capacitors		6	unit	4.00	24.00	25.14	-$1.14
Real-time Clock Chip		1	chip	30.00	30.00	28.74	$1.26
Equipment Subtotal					**359.88**	**355.96**	**3.92**

Schedule Status

ID	Task Name	Start	Finish
69	Write update on feeder enclosure	Mon 3/17/08	Sat 3/29/08
70	Create PowerPoint presentation	Mon 3/17/08	Sun 3/30/08
71	Assemble Progress report	Fri 3/28/08	Sun 3/30/08
72	Rehearse presentation	Sun 3/30/08	Sun 3/30/08
73	Progress report 2 due	Mon 3/31/08	Mon 3/31/08
74	Create code for motor control	Mon 3/17/08	Fri 4/11/08
75	Create code for Reader triggering and RTC trigger	Mon 3/17/08	Fri 4/11/08
76	Create flowchart / preliminary code for the alarm/clock set program	Mon 3/17/08	Fri 4/11/08
77	write RFID program	Mon 3/17/08	Fri 4/11/08
78	Machine Lid	Mon 3/17/08	Fri 4/11/08
79	Machine Sides	Mon 3/17/08	Fri 4/11/08
80	Assemble Enclosure	Fri 4/11/08	Sun 4/13/08
81	Assemble and compile full program	Sat 4/12/08	Tue 4/15/08
82	Assemble Prototype	Sun 4/13/08	Tue 4/15/08
83	Complete Prototype	Tue 4/15/08	Tue 4/15/08
84	Build Power Enclosure	Tue 4/15/08	Wed 4/23/08
85	Test and Debug Prototype	Tue 4/15/08	Thu 4/24/08
86	Write Final Paper	Mon 4/21/08	Wed 4/30/08



Project: Gantt Chart 20080327.mpp
Date: Sat 3/29/08

Task
Split
Progress
Milestone
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Project Summary
External Tasks
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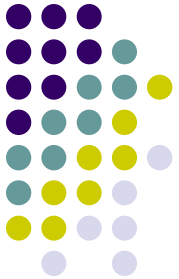
Bibliography

- RFID Reader Module (#28140).” Parallax, Inc. Rocklin: 2005.
- “DS1286 Watchdog Timekeeper.” Jameco.com. 03 Mar. 2008. < http://www.jameco.com/webapp/wcs/stores/servlet/ProductDisplay?langId=-1&storeId=10001&catalogId=10001&productId=133444>
- “1.8° Size 17 Super Torque Motor.” Lin Engineering. Santa Clara.
- “SLA7024M, SLA7026M, and SMA7029M High-Current PWM, Unipolar Stepper.” Allegro. Worcester: 1994.

Thank you!!



Questions?

Comments?

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