University of Houston
College of Technology
Senior Project Proposal
Advisor: Dr. F Attarzadeh
ELET 4308/4108
Team : 11

AUTOMATIC DOG HOUSE HEATER

By: Adis Ismic, Edgardo Vasquez, Samah Haider, Jason Hall

Dog Heating Team

Team Number 11

- **Jason Hall :**
  - Introduction, objective, motivation
- **Adis Ismic**
  - Project description, specifications, Alternatives
- **Samah Haider**
  - **Software, project schedule**
- **Edgardo Vasquez**
  - Construction, cost analysis, commercial usage

Dog House Heater WHY?

- How many dogs, unable to get out of the freezing wind, will die helplessly on the ends of their chains while the SPCA says that it cannot prevent the keeping of dogs this way because it is "reasonable and generally accepted practice of animal manageme

A.D.H.H.
Product Objective

SAVE DOG LIVES IN COLD WEATHER, BY IMPLEMENTING OUR PRODUCTS IN EVERY DOG HOUSE.

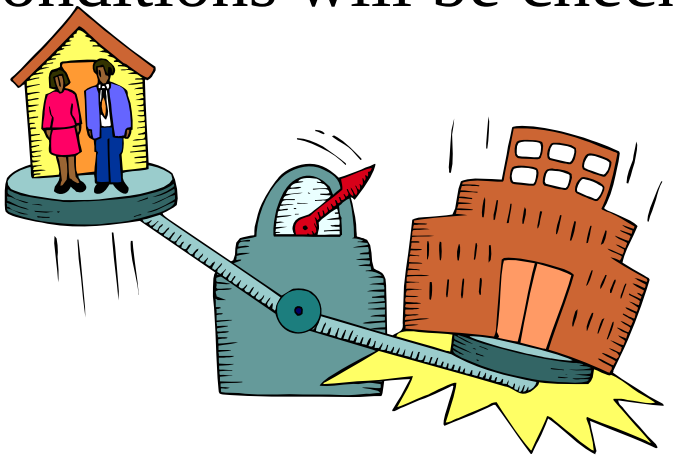
Our product will target pet owners that live in the northern part of the country where cold temperatures is a serious issue.

Dog House Heater
Product Explanation

How does the product work?

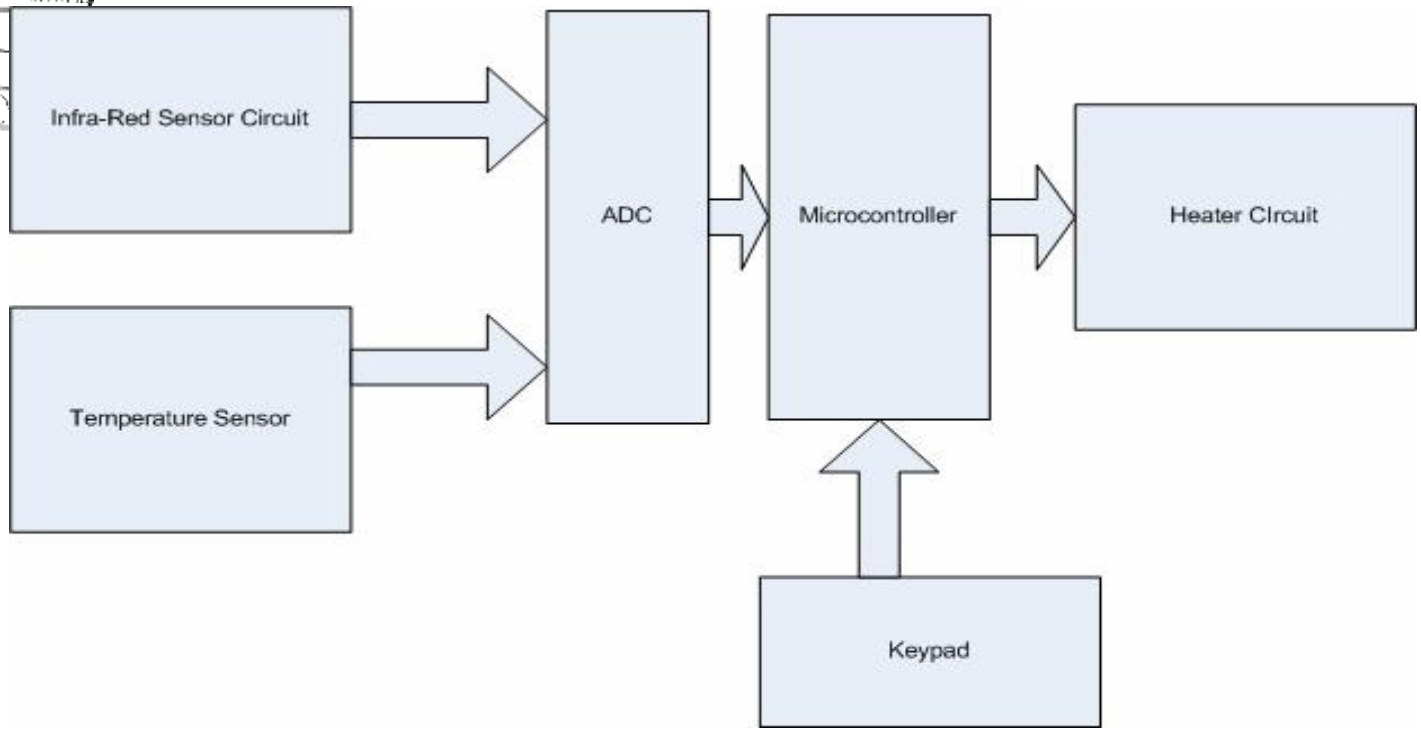
Checks if the temperature is below the desired level

- Checks if the dog is present in the dog house
- If all the conditions are meet
  - The heater will be executed
- All conditions will be checked again

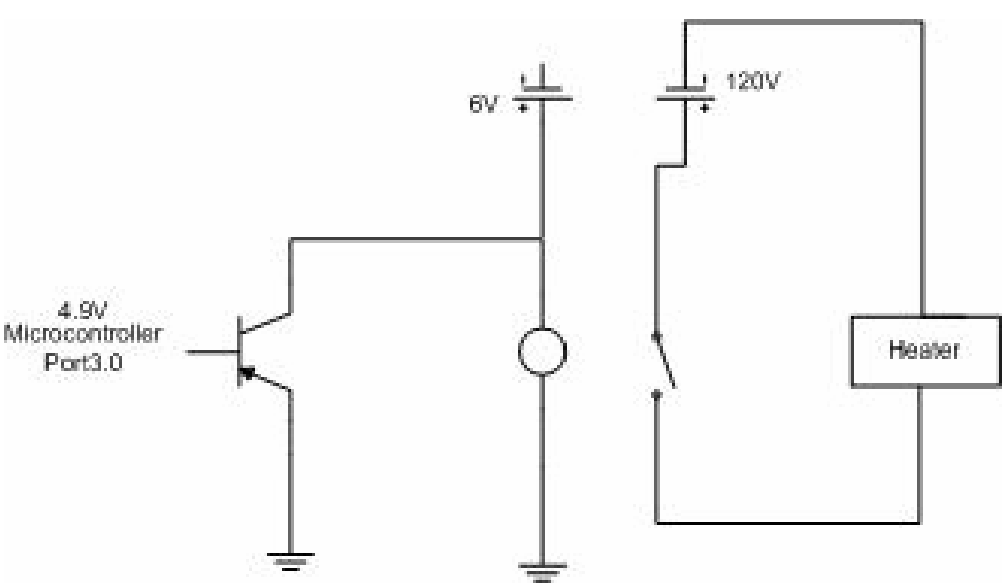


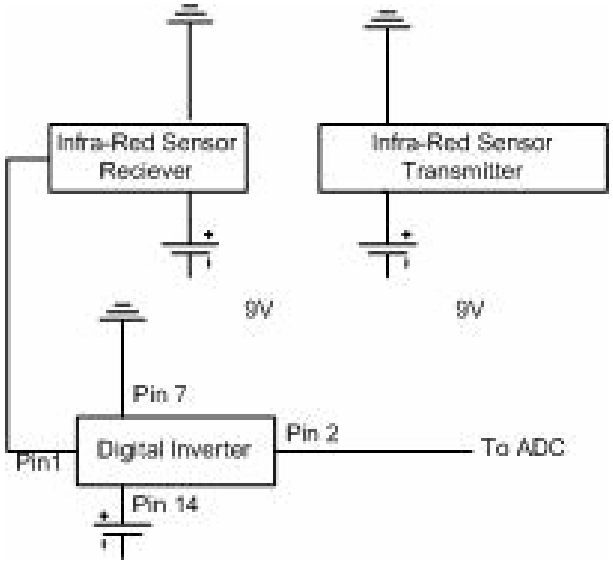
Dog House Heater
Component Explanation

Block Diagram



ADHH: Circuit Diagram

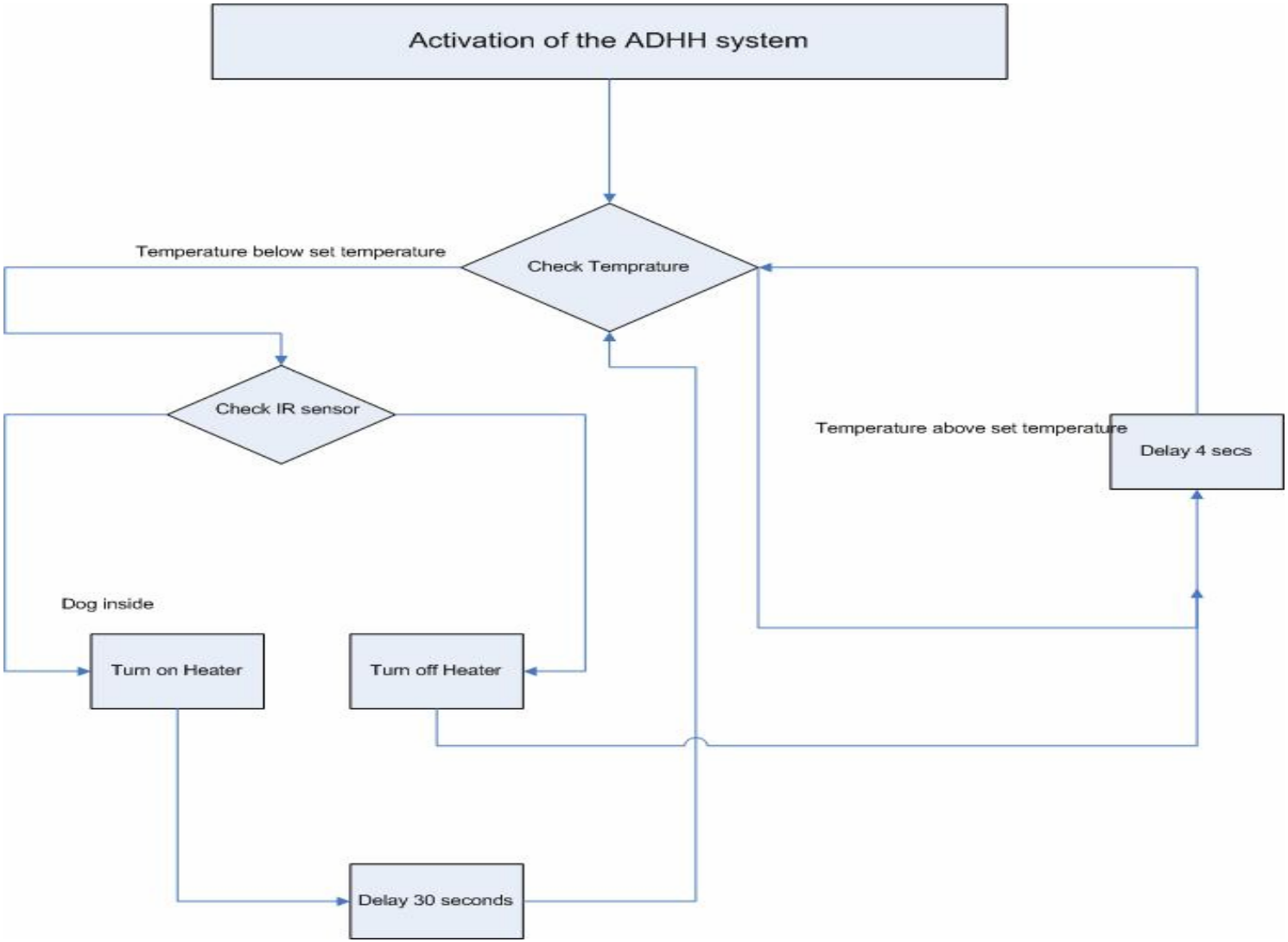




- Heater Circuit

Infrared Circuit Diagram

ADHH: Program Flowchart

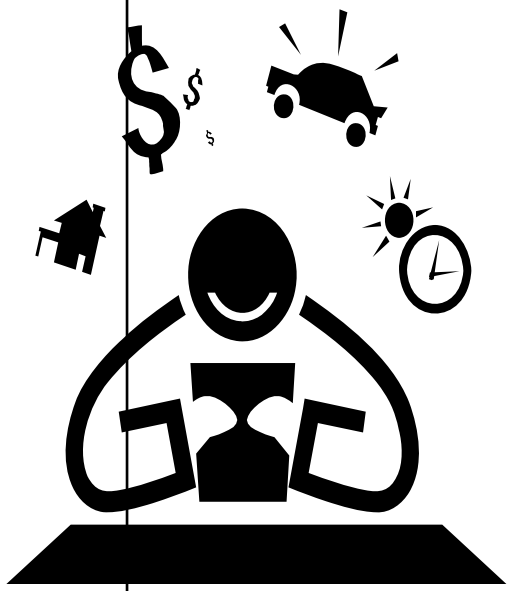


ADHH: Part of Code

```
for(;;)
{
        printf ("\n");

        ReadADC(ADC_UNIT+1,&adc);

        if( adc < (dtemp*2) )
                {

                        ReadADC(ADC_UNIT+4,&adc);

                        if ( adc > 120 )
                                {
                                        printf ("dih heater on");
                                        TurnOn(Heater);
                                        delay(60000);

                                }
                        else
                                {
                                        printf ("dio heater off");
                                        TurnOff(Heater);
                                        delay(4000);
                                }
                }
                else
                        {
                                printf("\n Temp is above 60");
                                TurnOff(Heater);
                        }
        delay(1500);
}
```

ADHH: Estimated Cost

Item	Est. Cost
Microcontroller 8051	$70.00
Infrared Beam sensor MK120	$20.00
Wood for dog house	$85.00
Heater	$20.00
Relay	$ 5.00
Switch	$2.00
Inverter	$ 1.00
LM34 Temperature sensor	$7.00
Basic Switching Transistor	$ 1.00
Total	$210.00



ADHH: Construction

- Types of Wood:
  - Cedar-most expensive but it can withstand the environment
  - Plywood-cost efficient but must be protected from the environment
- IR Beam Sensor Enclosure:
  - Clear enclosure to make sure the receiver is receiving the transmitter signal
  - Movable stands on the Y axis for a up and down layout.
- Removable Roof:
  - Roof is supported by 4 bolts witch can be taken off for complete roof removal

ADHH: Construction

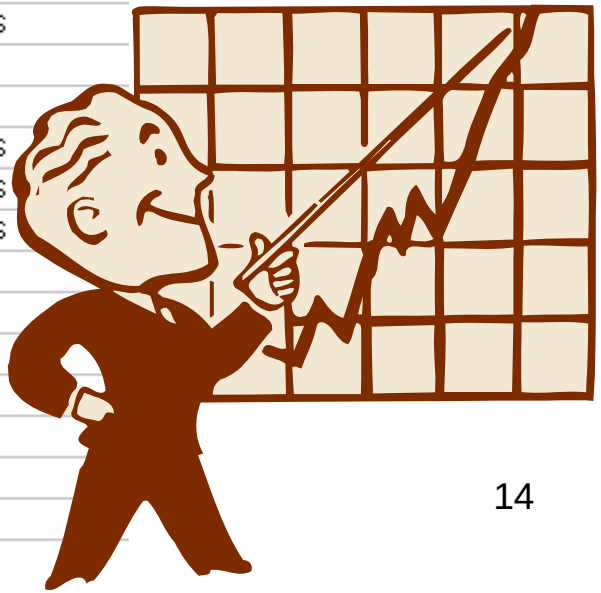
- Easy Access Hardware:
  - The microcontroller as well as the temperature sensor are bolted to one side hardware layout.
  - Roof can open to one side to access the hardware inside without taking the whole roof out.
- Manual Switches
  - Easy access switch in front of house for complete power off
  - Side access switch to control the power on the IR sensor
- Easy Heater Layout:
  - Heater layout is on the back of the house for easy access and replacement without touching anything inside the house.
- Sensors Layout:
  - Temperature sensor is inside the house to check the temperature inside the house.
  - IR beam sensor Transmitter is on the Top Right side and the receiver is on the bottom left side for maximum dog detection.

A. D. H. H.
Marketing

- We plan to market our product to pet stores, such as, Petsmart and Petco.
- Pet hospitals are another key place to educate pet owners.
- Partner up with local branches of SPCA.

Dog House Heater: Timeline

	Task Name	Duration	Start	Finish	Predecessors
1	**Research and Interview**	**10 days**	**Thu 1/20/05**	**Wed 2/2/05**	
2	Research patents	1 wk	Thu 1/20/05	Wed 1/26/05	
3	Research Web Sites	1 wk	Thu 1/20/05	Wed 1/26/05	2SS
4	Visit Pets Store	2 days	Thu 1/27/05	Fri 1/28/05	3
5	Visit ASPCA	3 days	Thu 1/27/05	Mon 1/31/05	4SS
6	Visit Home Depot	1 day	Thu 1/27/05	Thu 1/27/05	5SS
7	Visit EPO for Possible Parts	3 days	Mon 1/31/05	Wed 2/2/05	4,6
8	**Parts and Material**	**11.75 days**	**Thu 2/3/05**	**Fri 2/18/05**	
9	Pick up donated wood	6 hrs	Thu 2/3/05	Thu 2/3/05	7
10	Gather Material needed to build dog house	1 day	Thu 2/3/05	Fri 2/4/05	9
11	Purchase Electronic Parts	1 wk	Fri 2/4/05	Fri 2/11/05	10
12	build dog house	2 wks	Fri 2/4/05	Fri 2/18/05	11SS
13	**Test and Verification**	**5 days**	**Fri 2/18/05**	**Fri 2/25/05**	
14	Test microcontroller	3 days	Fri 2/18/05	Wed 2/23/05	12
15	test temperature sensor	2 days	Fri 2/18/05	Tue 2/22/05	14SS
16	test infrared sensor	1 wk	Fri 2/18/05	Fri 2/25/05	15SS
17	test heater	2 days	Fri 2/18/05	Tue 2/22/05	16SS
18	**Build prototype**	**30 days**	**Tue 2/22/05**	**Tue 4/5/05**	
19	Put components together	1 wk	Tue 2/22/05	Tue 3/1/05	17
20	Write program	3 wks	Tue 3/1/05	Tue 3/22/05	19
21	debug program	1 wk	Tue 3/22/05	Tue 3/29/05	20
22	interface hardware and software	1 wk	Tue 3/29/05	Tue 4/5/05	21
23	Final testing	3 wks	Tue 4/5/05	Tue 4/26/05	22
24	Presentation	1 wk	Tue 4/26/05	Tue 5/3/05	23



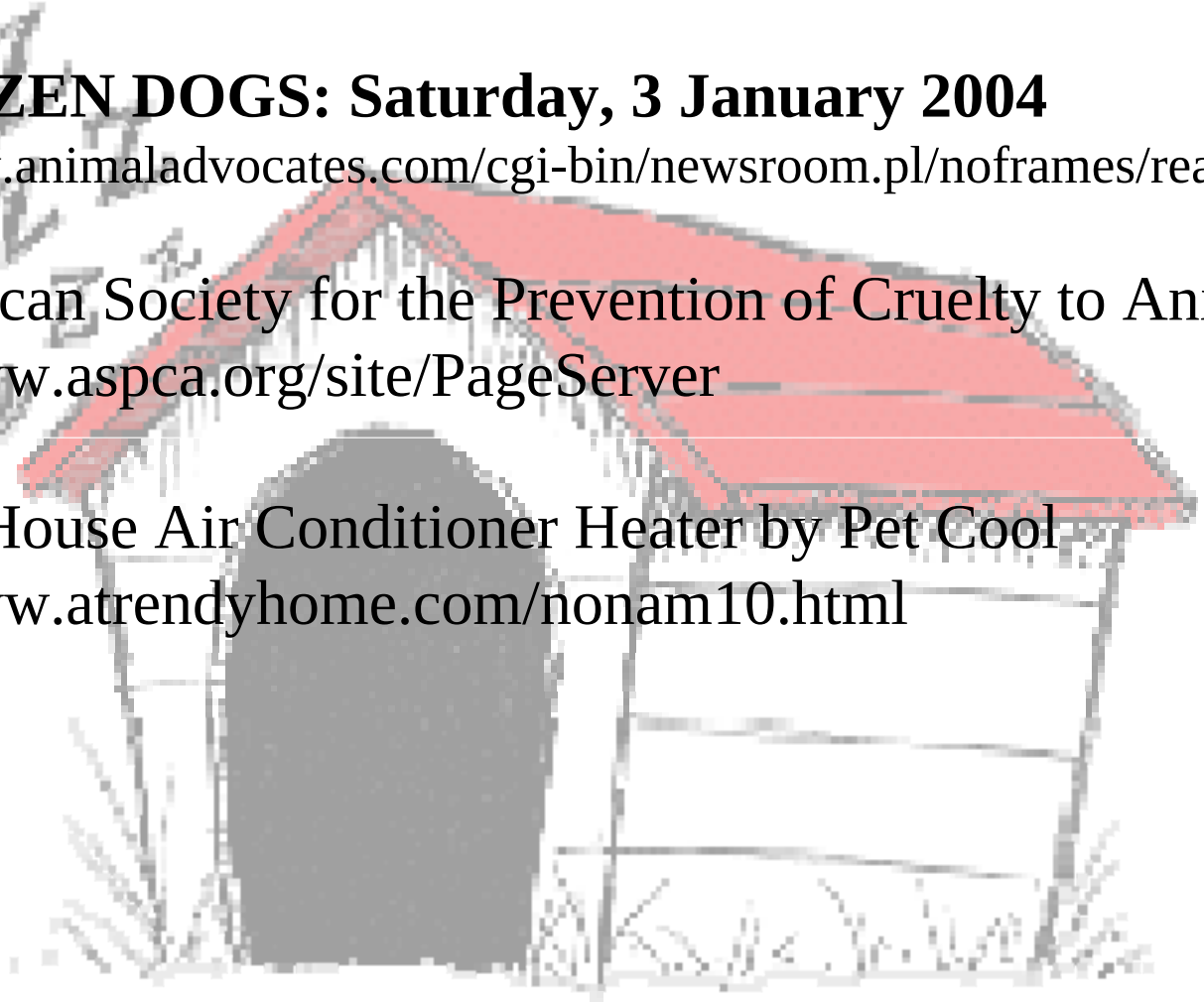
ADHH: Final Project

Dog House Heater
Work Cited

[1] **FROZEN DOGS: Saturday, 3 January 2004**
http://www.animaladvocates.com/cgi-bin/newsroom.pl/noframes/read/4159

[2] American Society for the Prevention of Cruelty to Animals
http://www.aspca.org/site/PageServer

[3] Dog House Air Conditioner Heater by Pet Cool
http://www.atrendyhome.com/nonam10.html



Thank you

Thank you Dr. Attarzadeh and assistants and fellow students.

Thank you for your time.

Thank you for your attention.

Any Questions?