1st WEEK

- Project meeting

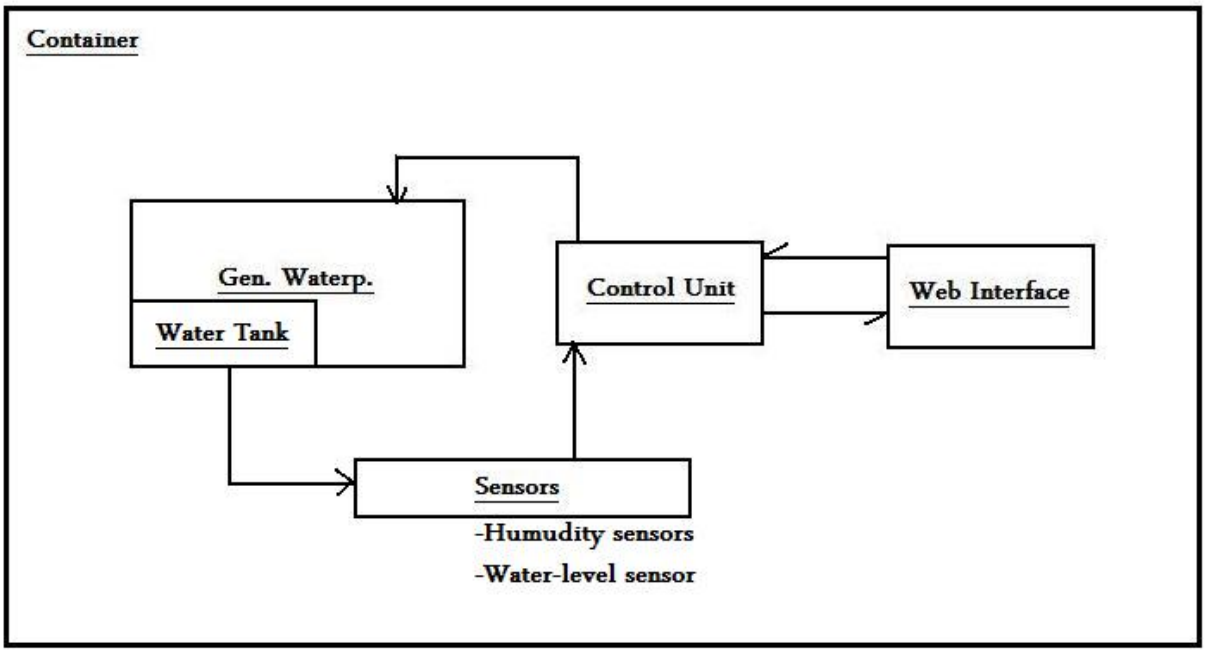
1. Informative meeting with supervisors
2. Get the description of the project

2nd WEEK

- Visit to the data center
- Project meeting
- Group meeting

3rd WEEK

- Project meeting
- Make a **Gant Chart** char_gantt.pdf
- Partition of the project to main units



4th WEEK

Types of humidifiers:

HumidifierTypes

- Project meeting

Questions 24th March

1. Do we make the web interface by Java?
2. Should we make humidyfier or is it possible buy one and make it control?
3. What humidyfier it's better (ultrasonic)?
4. what about the humidity and temperature dates?
5. The sensors are connected with the computer indirectly?

- Group meeting

1. Share the task beetween us

Marta & Ivan	Peter & David
Responsibles	
Water tank	System control
Box	Web interface
Humidifyer	

5th WEEK

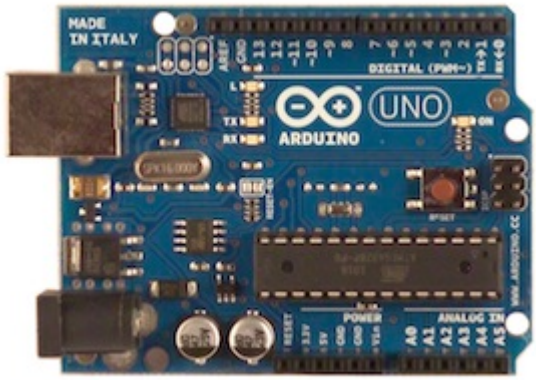
- Project meeting

Web Interface

- Programs Installing Instructions (JDK, NetPad++, TomCat, MySQL)

Control:

1. Microcontroller: http://www.arduino.cc/



1. PLC : http://www.siemens.com/press/en/pressrelease/?press=/en/pressrelease/2011/industry_automation/iia2011022520.htm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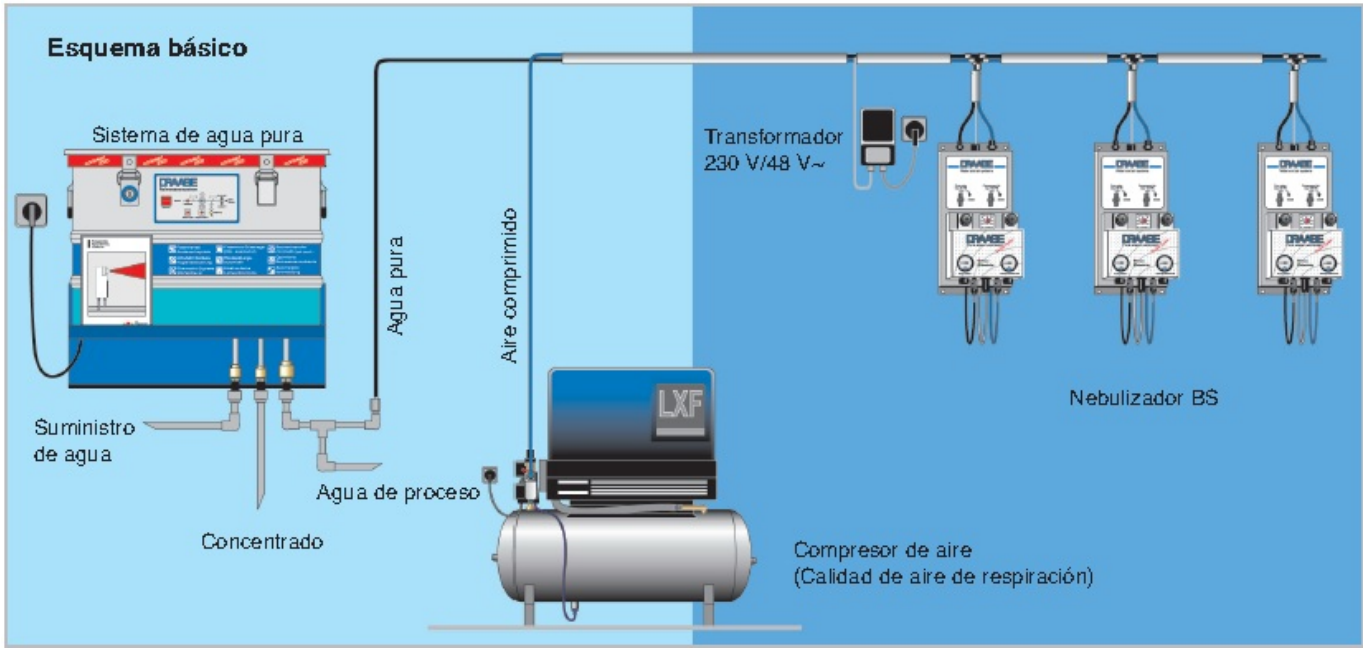
Tutorial about arduino :

http://www.youtube.com/watch?v=fCxzA9_kg6s

http://www.youtube.com/watch?v=_LCCGFSMOr4&feature=fvwrel

....

Ideas how we make the humidifyer:



-Tubes and valves:

draabe-prospecto-general-airfog-esp_1_.pdf

6th WEEK

To take the decision about which type of humidifier and control it's better for our needs we did a comparative table with advantatges and disadvantages of all ideas that we had . The order of numbers it's 5 for most value and 1 for less . Finally we add all numbers and the option that had most value was choosen

Comparision of humidifiers

	Ultrasonic humidifier	Evaporative humidifier	Air compresor	Impeller humidifier
cost	4	5	1	3
maintenance cost	3	3	4	4
consumption of energy	5	2	3	4
complexity	3	2	5	3
size	3	5	2	4
efficiency	3	5	1	3
control	4	5	1	2
Total	**25**	**27**	**17**	**23**

Microcontrollers vs PLC

	Microcontroler		PLC	
cost	4		2	
power supplie	12 V	3	230V	3
programming	3		4	
inputs/outputs	5		5	
Ethernet	5		5	
Total	**20**		**19**	

Shopping list

- PC fans x 20
- filter
- microcontroller
- power supply
- water level sensors

Project meeting

- Would it be possible to use the university's lab for testing the microcontroller?

7th WEEK

During this week we made tests of different materials which might be used as a filter in our humidifier. So far, we measured the humidity difference only when PC fan is used, but next week we also consider testing with the use of hairdryer. Below we present the table with the results – except initial and final humidifies and the difference between them, we also embedded our observation about the hygroscopicity and how fast filters get dry. We evaluated this two parameters form 1 to 5. In case of the hygroscopicity 1 is considered as the least hygroscopic, while in case of drying, 1 is considered as the one which gets dry very fast.

Filter	Hygroscope	How fast dries	Humidity (start)	Humidity (final)	Humidity difference
White	2	5	50	53	**3**
Yellow	3	2	47	53	**6**
Black	5	2	53	57	**4**
Blue	1	3	47	50	**3**
Vileda White	5	2	52	55	**3**
Coffee filter	5	5	55	53	**-2**
White kitchen	4	4	49	53	**4**

Project meeting:

- Presentation of sketch of the humidifiers
- Presentation and discussion obtained results

8th WEEK

9th WEEK

Testing

We tried to testing our solution and the materials again in 35 m3 room. Every material testing for 3 hours. The materials has re-wetting in every half our. We used PC fan to blow the air. The test results are the following:

Material testing #2

Humidity Level (%)								
Fan:	10 cm, 220 V		Time periods (half hours)					
Re-wetting:	Every half hour	0	1st	2nd	3rd	4th	5th	6th
Type of maerial	White	48	50	53	53	54	53	53
	Yellow	47	50	54	53	53	52	53
	Black	48	51	53	52	52	52	52

Conclusions:

- Pc fans are not enought effective → more effective air blowing system needed
- These materials aren't appropriate to use humidifier filter → original humidifier filters and other parts: http://www.filters-for-home.com/Humidifier_Filters.html

Flowchart

- Humidity controlling and water level sensoring system's flowchart:flowchart.docx

Shopping list

shopping.pdf

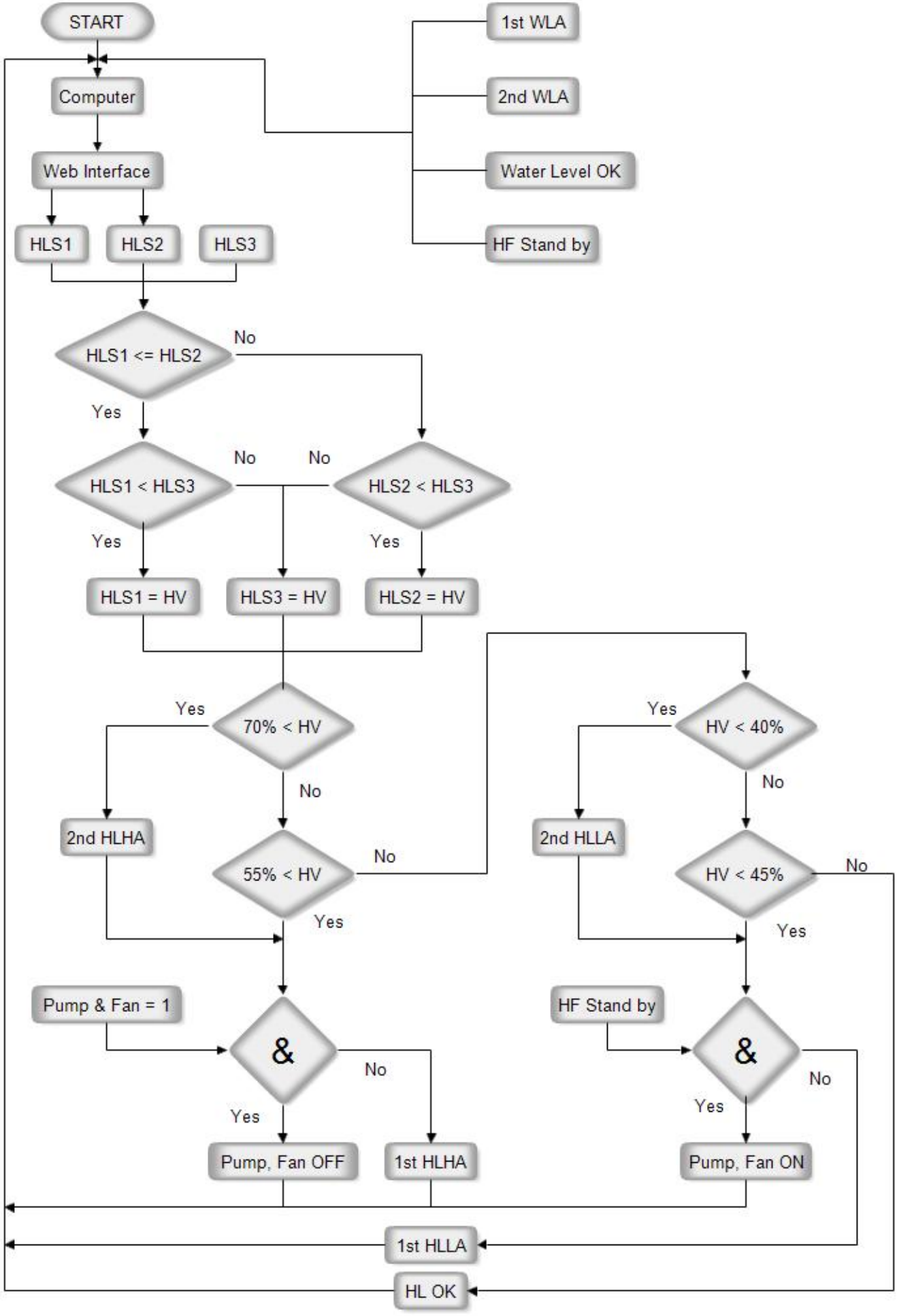
Project Meeting

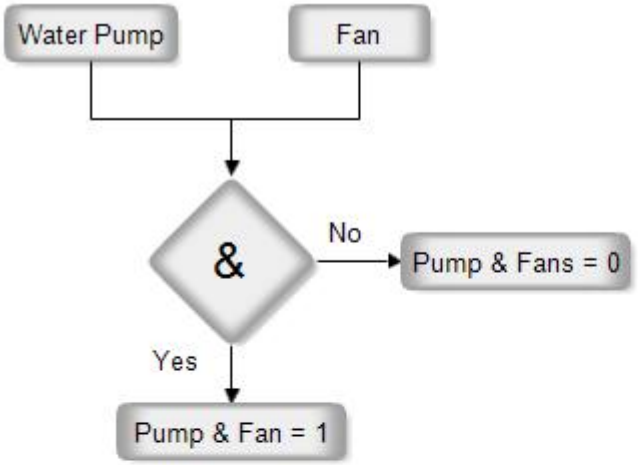
10th WEEK

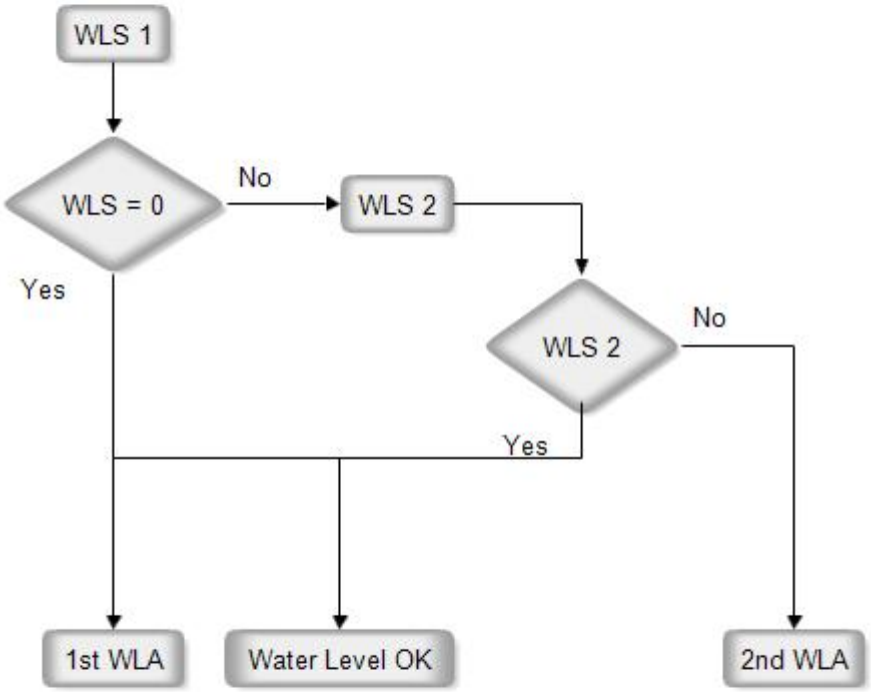
CONTROL DIAGRAM

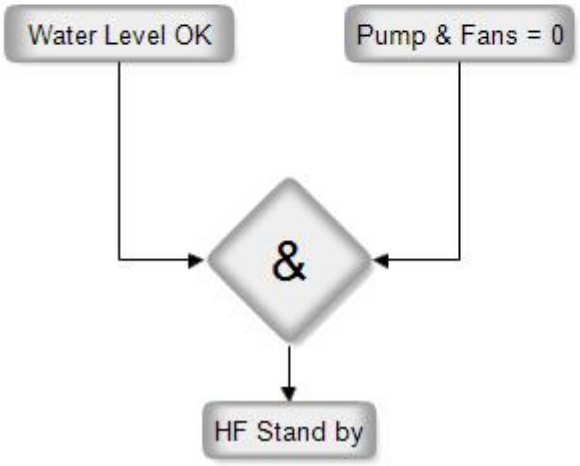
Humidifier system control

- HV: Humidity Value
- HLS 1,2,3 : Humidity Level Sensor
- HF Stand by: Humidifier Stand by
- WLS 1,2 : Water Level Sensor
- 1st WLA: 1st Water Level Alarm
- 2nd WLA: 2nd Water Level Alarm
- HL OK: Humidity Level is OK
- 1st HLLA: 1st Humidity Level LOW Alarm (Humidity level is under 45%)
- 2nd HLLA: 2nd Humidity Level LOW Alarm (Humidity level is under 40%)
- 1st HLHA: 1st Humidity Level HIGH Alarm (Humidity Level is above 55%)
- 2nd HLHA: 2nd Humidity Level HIGH Alarm (Humidity Level is above 70%)


START
Computer
Web Interface
HLS1
HLS2
HLS3
1st WLA
2nd WLA
Water Level OK
HF Stand by
HLS1 <= HLS2
No
Yes
HLS1 < HLS3
No
Yes
HLS2 < HLS3
No
Yes
HLS1 = HV
HLS3 = HV
HLS2 = HV
70% < HV
Yes
No
2nd HLHA
55% < HV
No
Yes
HV < 40%
Yes
No
2nd HLLA
HV < 45%
No
Yes
Pump & Fan = 1
&
No
Yes
HF Stand by
&
No
Yes
Pump, Fan OFF
1st HLHA
Pump, Fan ON
1st HLLA
HL OK







Project Meeting

1. Problems with the shopping list.
2. Data center results.

11th WEEK

Project Meeting

- Shopping list
- Flowchart
- Filter material
- Fan

12th WEEK

Humidifier system controlling program for Arduino:

Program tested without connections with web interface. It worked satisfactorily.

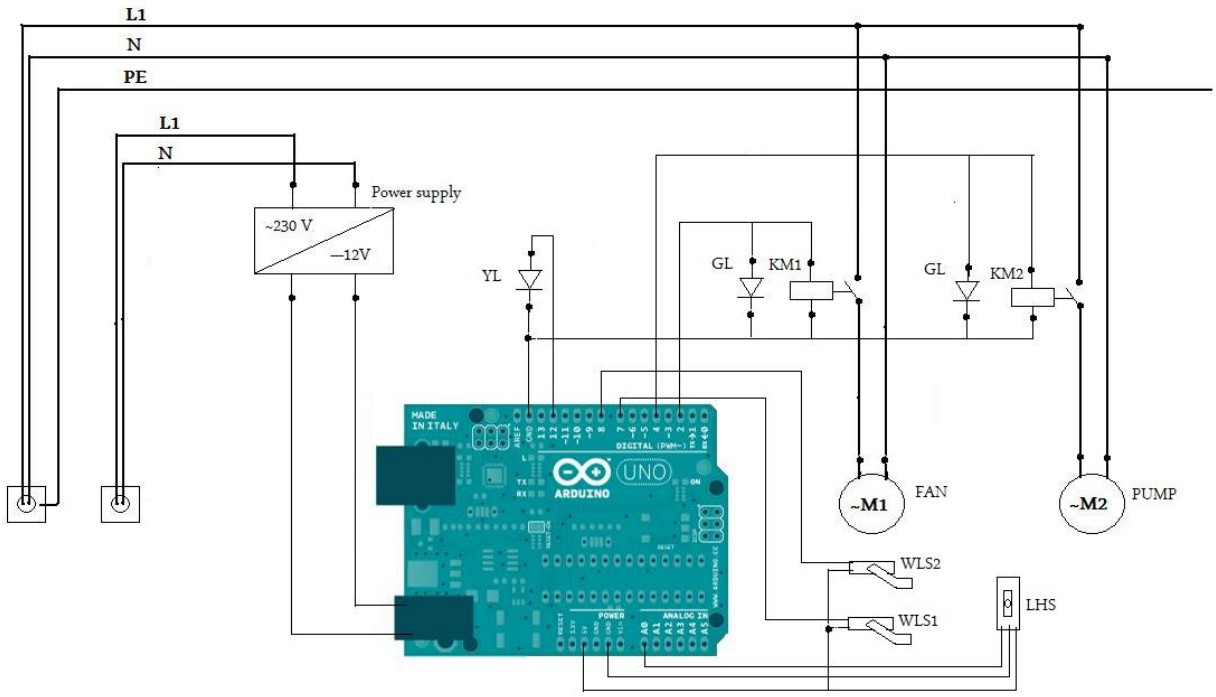
Humidifier Control

Project Metting

- Problem with communication between Arduino and Web Interface (Humidity Controlling Program)

13th WEEK

Power Diagram



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