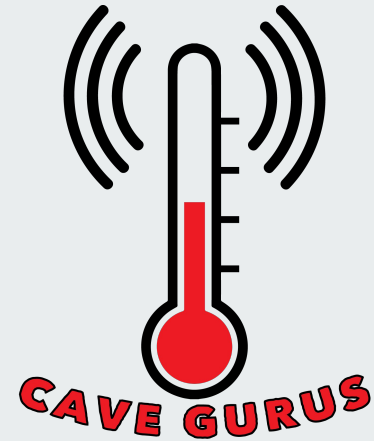


EE486C - Design Review 3

Cave Climate Monitor

Cave Gurus: Yang Du
Jason Damp
Cheng Wang
Taylor Begay

Client: Dr. Tim Titus of USGS - Astrology Branch
GTA: Demetria Shepard



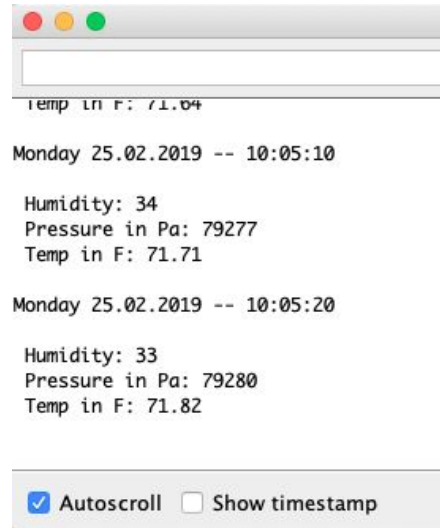
WBS Part 1



Person Primarily Responsible: Taylor Begay

ID	Activity/ <u>Task</u>	Description	Deliverable(s)	Other People
1	Order Parts			
1.1	6 Nodes Total	Each team member has a complete node for further R&D. Convenient when all team members cannot meet at once and minimum design requirement from Client.	<ul style="list-style-type: none"> - Primary Focus will be on HC-12 module - HC-12 Module Tx/Rx Data - Cellular Plan to send data thru mobile carrier to USGS HQ 	
1.2	PCB Implementation	To save power and space, we look to design our circuit on a PCB, with online PCB Software then order thru website.	<ul style="list-style-type: none"> - Transfer from Solderless Breadboard to PCB - Explore Online Softwares - Discuss Compartment Designs 	
1.3	If necessary, order more components.	Great standing in Budget, look to explore how we can make our device as user friendly for our client.	<ul style="list-style-type: none"> - Replace failed components - Expand Subsystems - Explore compartment options 	

Output



```

temp in F: 71.04

Monday 25.02.2019 -- 10:05:10

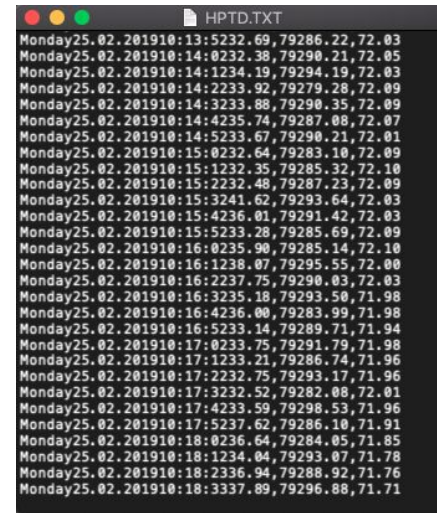
Humidity: 34
Pressure in Pa: 79277
Temp in F: 71.71

Monday 25.02.2019 -- 10:05:20

Humidity: 33
Pressure in Pa: 79280
Temp in F: 71.82
  
```

Autoscroll Show timestamp

Figure 1: Serial Monitor Output



```

HPTD.TXT
Monday25.02.201910:13:5232.69,79286.22,72.03
Monday25.02.201910:14:0232.38,79290.21,72.05
Monday25.02.201910:14:1234.19,79294.19,72.03
Monday25.02.201910:14:2233.92,79279.28,72.09
Monday25.02.201910:14:3233.88,79290.35,72.09
Monday25.02.201910:14:4235.74,79287.08,72.07
Monday25.02.201910:14:5233.67,79290.21,72.01
Monday25.02.201910:15:0232.64,79283.10,72.09
Monday25.02.201910:15:1232.35,79285.32,72.10
Monday25.02.201910:15:2232.48,79287.23,72.09
Monday25.02.201910:15:3241.62,79293.64,72.03
Monday25.02.201910:15:4236.01,79291.42,72.03
Monday25.02.201910:15:5233.28,79285.69,72.09
Monday25.02.201910:16:0235.90,79285.14,72.10
Monday25.02.201910:16:1238.07,79295.55,72.00
Monday25.02.201910:16:2237.75,79290.03,72.03
Monday25.02.201910:16:3235.18,79293.50,71.98
Monday25.02.201910:16:4236.00,79283.99,71.98
Monday25.02.201910:16:5233.14,79289.71,71.94
Monday25.02.201910:17:0233.75,79291.79,71.98
Monday25.02.201910:17:1233.21,79286.74,71.96
Monday25.02.201910:17:2232.75,79293.17,71.96
Monday25.02.201910:17:3232.52,79282.08,72.01
Monday25.02.201910:17:4233.59,79298.53,71.96
Monday25.02.201910:17:5237.62,79286.10,71.91
Monday25.02.201910:18:0236.64,79284.05,71.85
Monday25.02.201910:18:1234.04,79293.07,71.78
Monday25.02.201910:18:2336.94,79288.92,71.76
Monday25.02.201910:18:3337.89,79296.88,71.71
  
```

Figure 2: MicroSD Card Output

WBS Part 2

Person Primarily Responsible: Cheng Wang				
ID	Activity/Task	Description	Deliverable(s)	Other People
1	Create Website			
1.1	Design website UI	Layout the basic design of our main pages so that they are ready for content.	<ul style="list-style-type: none">- Home Page- Project Description Page- About us Page	
1.2	Set website links	Ensure all menus are properly linked as well as the footer links and any others we may need to include.	<ul style="list-style-type: none">- Working drop down menu- Working links in footer- All other links functional	
1.3	Fill website up	Begin replacing images and text from the website template to allow us to start building our electronic project documentation.	<ul style="list-style-type: none">- Updated Home Page- Update Project Description- Updated About us- Any other required pages have been added and filled	
1.4	Upload website to server	Utilize Dreamweaver to upload our most recent changes to the NAU CEFNS Server.	<ul style="list-style-type: none">- Redundant Local Copy- Updated Server Files- Updated date in footer	

Cheng Wang

Person Primarily Responsible: Jason Damp

ID	Activity/Task	Description	Deliverable(s)	Other People
1	HC-12 Multi-Node Structure			
1.1	Research	Research wireless infrastructures and decide which method best fits our application	<ul style="list-style-type: none"> - List of configurations - Pros/Cons for each - Decision of best fit (top 2) 	
1.2	Configuration	Add third node to system and configure in previously chosen configuration	<ul style="list-style-type: none"> - Code - (3) Assembled Test Circuits - Test data 	
1.3	Primitive Testing	Test the primitive multi-node system in a semi real-world application	<ul style="list-style-type: none"> - Field report (.txt) of collected data - List of bugs/improvements - (3) Still intact weather modules 	- Entire team
2	Power System Implementation			
2.1	Gather Data	Test our devices power consumption to better understand how much power we will really need	<ul style="list-style-type: none"> - Individual module reports - Transmitting/Receiving report - Estimated battery size (maH) 	
2.2	Research	Find batteries that fit our design constraints (voltage, maH, physical size). Research possible voltage regulating circuit	<ul style="list-style-type: none"> - Voltage regulator circuit - Desired battery size (to fit box) - Finalized amount of maH 	
2.3	Slightly-Less Primitive Testing	Configure circuit with battery and test at home	<ul style="list-style-type: none"> - Detailed report on battery life - Test data (.txt) - List of potential improvements 	- Entire team

WBS Part 4

Person Primarily Responsible: Yang Du

ID	Activity/ <u>Task</u>	Description	Deliverable(s)	Other People
1	Solder/Assemble Complete System			
1.1	Prepare Enclosures	Prepare the enclosures so that they are water tight	<ul style="list-style-type: none"> - Circuit Compartment - Temperature Compartment - Prepared PCB mounts 	- Entire Team
1.2	Schematic & Layout PCBs	Layout our components in such a way that they are easy to solder and wires as short as possible	<ul style="list-style-type: none"> - Overall Schematic - PCB Layout - Prepared components for solder 	
1.3	Solder PCB	Solder all nodes into individual enclosed systems	<ul style="list-style-type: none"> - Soldered components on PCB - Wires cleanly connecting things - Complete system (w/o battery) 	- Entire team
1.4	Assembly	Assemble all nodes into their final forms. Mounted PCB, battery, temp sensor (and charging port?)	<ul style="list-style-type: none"> - Mounted PCBs - Mounted battery - Mounted weather sensor 	- Entire team

Yang Du



Closing

Questions?

Comments?

Concerns?

Compliments?