### **Rfu-328 Progress report:**

**Week four**

# Currently implemented:

Now with the core of the one to one communication in a stable state, work could begin on getting and displaying values given from a flow sensor. The flow sensor is connected to the controller, reading pulse values created when something flows through the pipe. These values are read repeatedly whilst the controller is looking for a message from Hub. On every second the controller will get the last value read and send it to the hub and then like before expect an acknowledgement from the hub.

This however was slightly changed with the need to know the temperature of the water flowing through the pipe. To deal with this, the amount of time the controller spent listening has been halved and the sent values alternate between the pulse rate and the heat values. Note this has no effect of the delta time value used in the hub to create the flow rate as the pulse data will still be sent only every second.

Without a full heat sensor in place, for the time being a variable resistor has been used and tested with.

With all the data being required by the hub sorted the next stage was to add another command that the hub would recognize so to accept the heat value. Using the values the hub then computes the flow rate and using the LCD screen, displays the data.

# Interface

Another feature the systems has is to allow the user to set a max flow rate and max duration before the state of the valve is changed and closed. This all had to be incorporated into the hub’s UI.

At this point there are four screens:

* Flow rate and Total flow display
* Flow rate and heat value display
* Max flow duration
* Max flow rate

At current the fourth button will cycle through these screens, if the user wants to change their max flow rate or max duration they have to press the third button to put the device into “set” mode.

Once in this mode the interface will blink letting the user now they can now change things, if in the case of the max flow duration the blinking “:” character indicates that the time value after that can be changed.

To change the value for the max flow duration, once in set mode the user can press the first button to increment the value or the second button to decrement it. To cancel set mode the user must change screens.

To change the value in max flow rate, the user presses the set button then the device will take the highest flow reading at this point at set it as its new max.

The max duration value can be set to 23:59:59 at its highest value, any higher and the values will roll over back to zero.

# Current design issues

Due to the large amount of attributes the system requires such as pin numbers, and various values used in keeping track of the current screen number, there are a big number of global variables that need to be reduced to improve efficiency. This could be done by incorporating by reworking the structure of the code and a careful analysis of what is really needed.