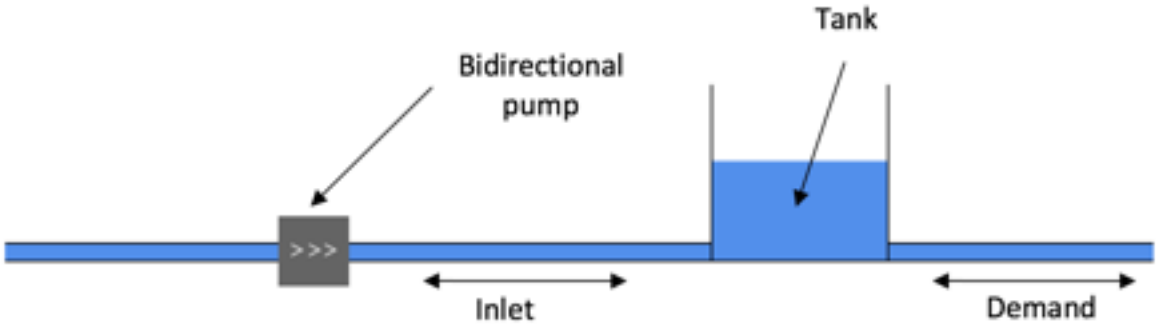
Computational Intelligence - Assignment 1 – 20%

Description

Your goal for this assignment is to design and implement a Fuzzy Logic pump controller for the feedback system shown below.



Your fuzzy logic pump controller must control the bidirectional pump shown in the diagram above in order to keep the level in the water tank between 40% and 70% full. The level in the water tank is effected by a demand for water from appliances further down the line and its level can also be effected by rainfall. The appliances further down the line can consume water from the tank and can also feed water bank into the tank.

You should use the following input and output variables as part of your design:

Inputs	**Outputs**
level (between 0 and 100)	command (between -1 and 1)
demand (between -1 and 1.5)	

Each variable should be broken down into the appropriate terms and membership functions but that part of the fuzzy logic design along with the inference rules are left up to you.

Deliverables

Your fuzzy logic system should be designed using qtFuzztLite and you should integrate your work into the Processing testbed simulator. Your fuzzy logic controlled should be able to maintain the level in the water tank so that the green light remains on. You should use the rain, and demand checkboxes to ensure your system work under all conditions.

You will need to submit a single zipped file containing the java source code and fll file for the fuzzy logic.

Deadline

Thursday March 9th at 18.00hrs.