Computational Intelligence   Assignment 1 - 20%

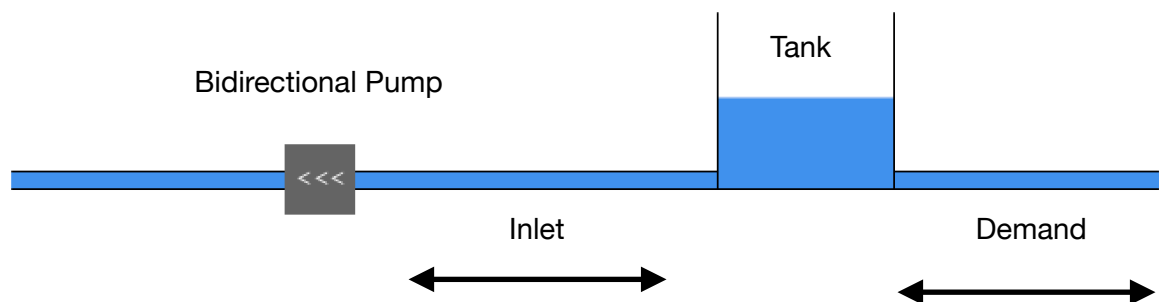## Description
Your goal for this assignment is to design and implement a Fuzzy Logic pump controller for the feedback system shown below.

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
You should create a design document that details your decisions with regard to the creation of linguistic variables, and rules terms. Your document should include diagrams for each linguistic variable showing how each term is setup. You should also create a rule matrix and translate it into rules for your system.

Your fuzzy logic controller should be able to maintain the level in the water tank so that the green light remains on. You should use the pump, rain, and demand checkboxes to ensure your system works under all conditions. You will need to submit a single zipped file containing your design document and the java source code.

Deadline
Friday March 9th 2018 at 18.00hrs.