Lab 05 - Programmable Logic Controllers (PLCs)
Group 15

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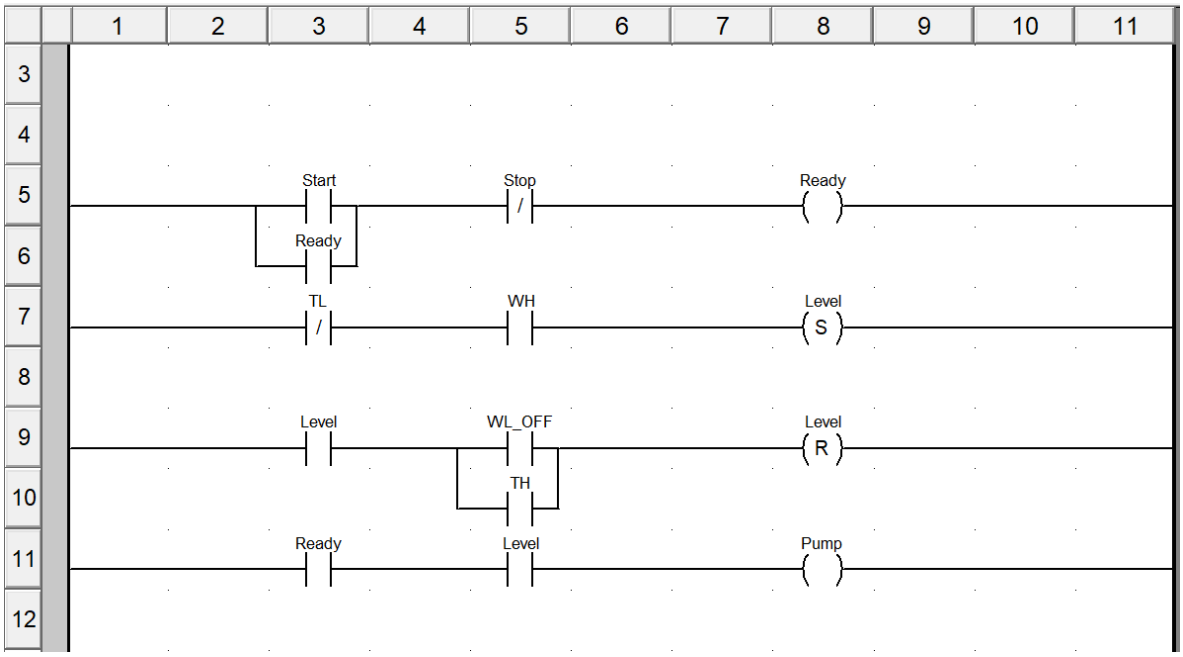
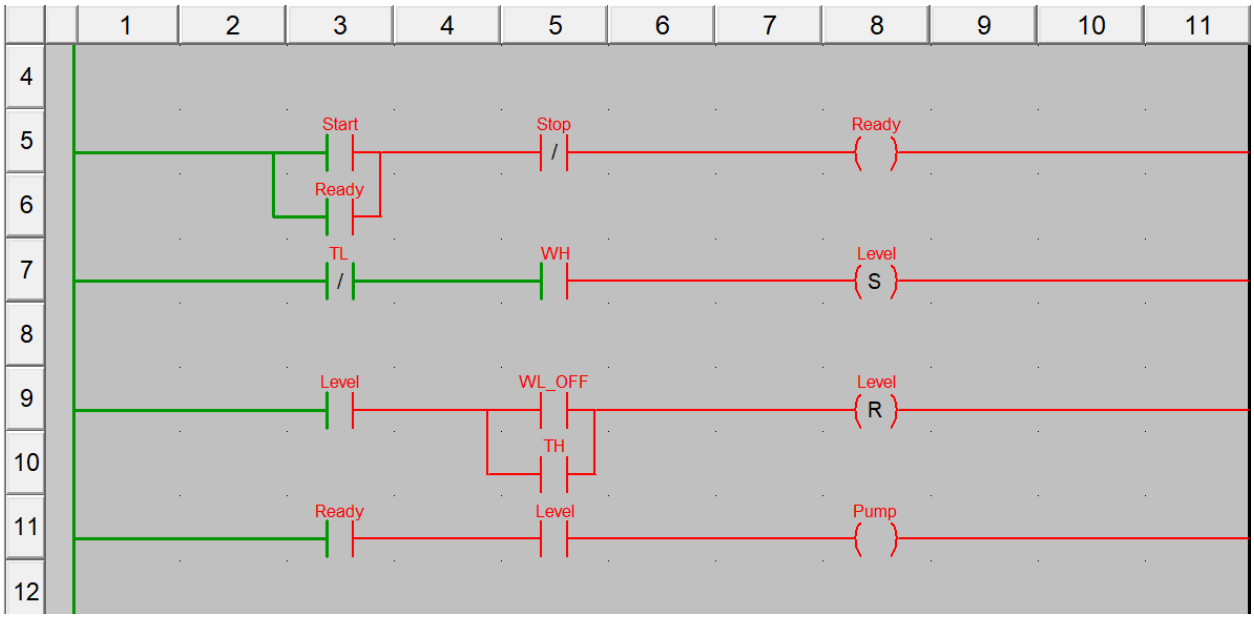
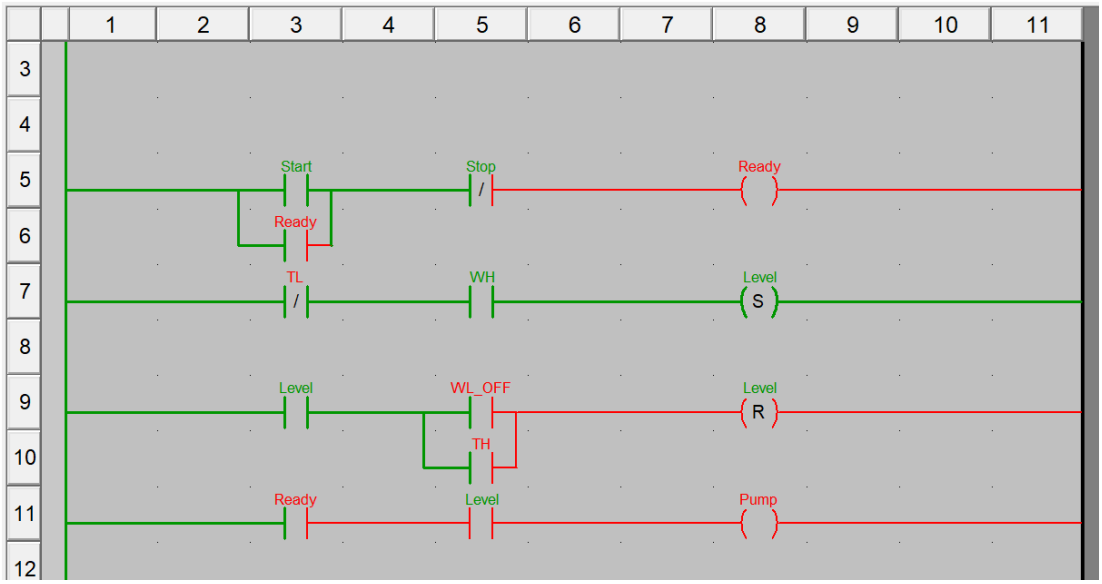
Ladder diagram



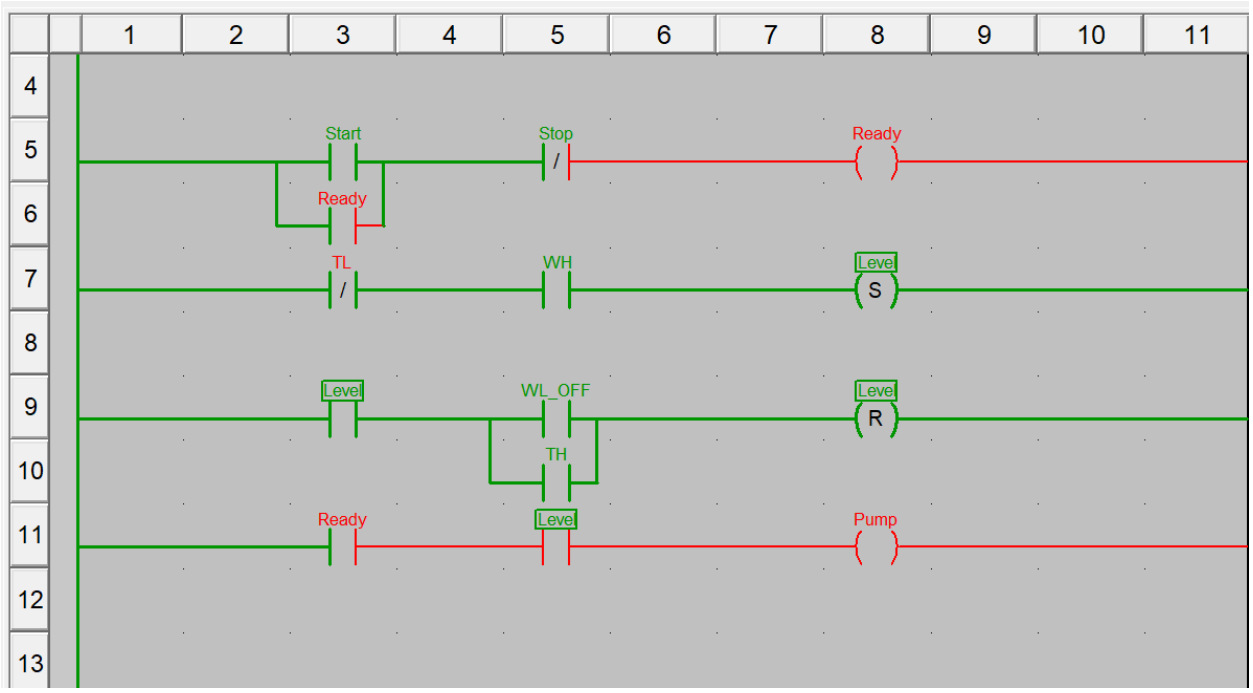
Screenshots from the simulation in Unity Pro S



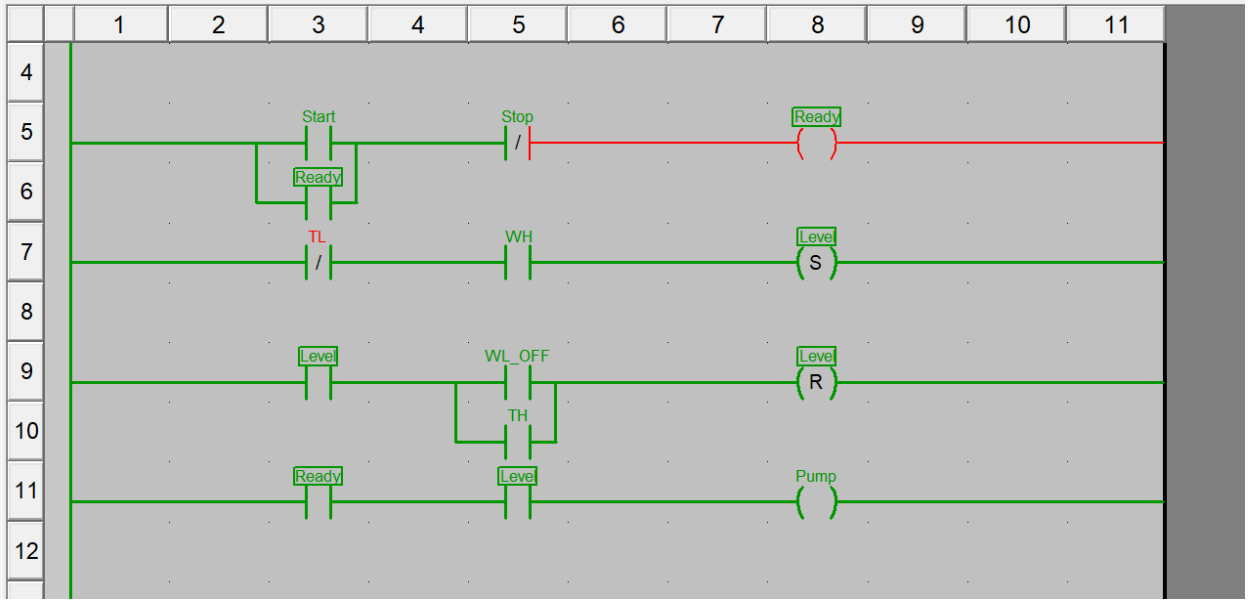
There are four rungs in the network. The first rung makes sure that the internal bit Ready is set when the Start button is pressed. It also stops the pulse made by Ready when the Stop bit is pressed. The Ready bit is latched as an input to itself to create the effect of a latch.
In the second rung, the Level bit is maintained to make sure that once the filling process has started, it will not stop halfway due to the water level surpassing the TL sensor. The Level bit will be Set only when the TL sensor is not covered with water and WH sensor is covered.



In the third rung, the Level bit will be Reset when the Well level is too low or when the tank is completely filled.



In the fourth rung, the Pump will start working only when the Ready bit is set and the Level memory bit is set.



As a fail-safe mechanism, we have included the Level bit to make sure that the filling process does not stop halfway. Also, we have made sure that the necessary sensor conditions are set whenever the Start button is pressed by the user to make sure that overflow does not happen.