PLC Lab 2

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## Basic Analysis:

We are tasked in creating a simple conveyer belt. There will be an on and off switch will turn on and off the system. When the system is on, the conveyer belt will be moving, and the sprinklers will have the ability to turn on and off. There will be two sensors on the conveyer belt. As an object passes the first sensor, the sprinklers will turn on, as the object passes the second sensor, the sprinklers will turn off. If at anytime the off button is pressed, both the conveyer belt and sprinklers will turn off.

## Configuration details:

The bench will be configured to use the Schneider TM251MES. The red and green pushbuttons will be used as digital inputs. They will be assigned %DIX1:1 and %DIX1:2 respectively. The two photosensors will be used to detect the item passing on the bels. They will be assigned %DIX1:7 and %DIX1:8 respectively. The Green and Red Lightbulbs will be digital outputs, used to show state of both the conveyer belt and the sprinklers. They will be assigned %DQX1:1 and %DQX1:2 respectively.

## Ladder Logic:

Using two latches, I will be able the get the desired outcome.

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## Test Plan:

I plan to test the on and off function of the conveyor belt first. Setting up the two pushbuttons as well as the green light, I will be able to see if the latching logic I set up works.

Once the on and off functionality of the conveyer belt woks, the sprinkler will be very similar to test. The latching logic is the same as the conveyer belt, it just has a coil in series that is assigned the state of the conveyer. This will allow the sprinklers to turn off when the off button is pressed.

## Build Steps:

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I first wired up the two-output lights. They were wired from Digital output 1 and 2 to the light, then from the other terminal of the light to ground. Secondly, I wired up my two pushbuttons. I needed to wire the normally open switch as the on button and the normally closed switch as the off button. They were wired to digital inputs 0 and 1 respectively.

## Conclusion:

This lab was a very good learning experience. I learned how to use the PLC software’s and how to apply them to a real-world problem. When I first simulated the program, my initial plan of using two latches worked as expected and did not need any modification. My wiring also did not have any issues. I was able to wire the system without any need for changes. I was able to turn on the green light (conveyer belt) with the push of a button and turn it off with the push of the other button. And only when the light was on, the yellow light was able to be turned on with the two light sensors. And the stop button was able to turn both the lights off.