PLC210 Lab 1: Data Comparison Instruction

Upon completion of this lab, the student should be able to:

1. Explain the function and operation of the basic comparison instructions
2. Explain the function and operation of the compare (CMP) instruction
3. Interpret the logical operators and statements within the CMP instruction
4. Explain the operation of the MEQ instruction
5. Explain the operation of a ladder routine containing compare and comparison instructions

Download the project Compact_Module_1_EX1_cmp_mvm.ACD, go Online and put the CompactLogix into the Run mode to do the following lab

The I/O addresses in this lab may need to be changed to match the addresses on your hardware trainer. Symbols will be designated in the lab so the steps and questions can be independent of the I/O addresses.
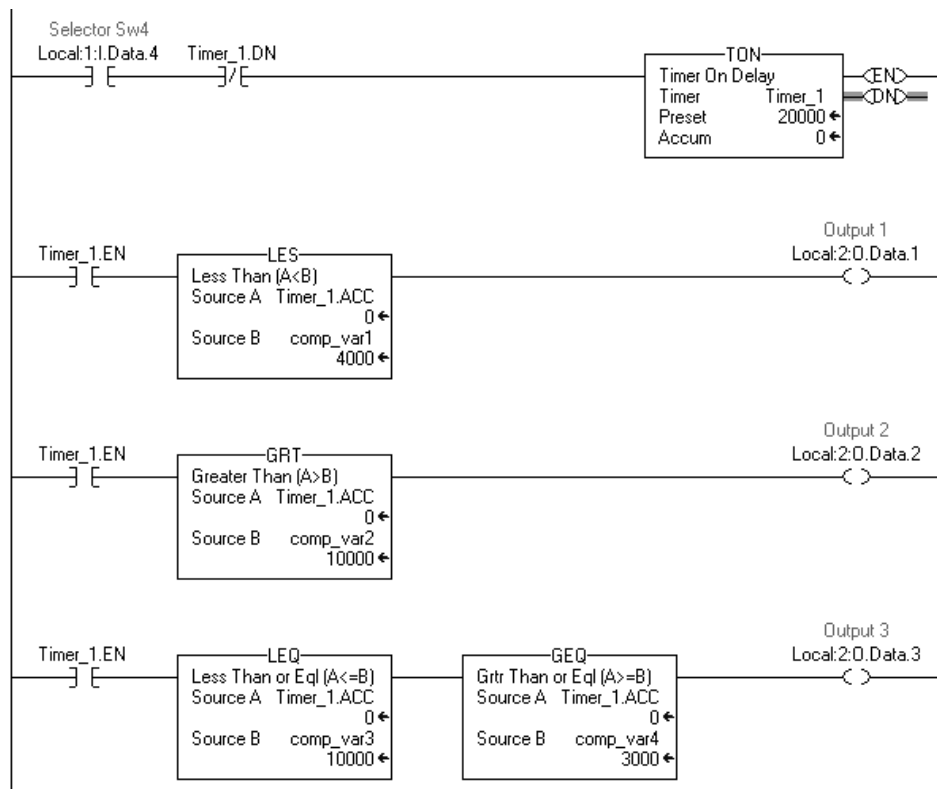

Figure 1. Basic comparison instructions.

1.   Once the input is turned on, what happens to the timer after it times out?

        Explain:

2.   Turn on the "Selector Sw4" input.
        What output(s) come on immediately?
        How long do the output(s) stay on?

3.   When will Output 1 come on?
        How long will it stay on?

4.   When will Output 2 come on?
        How long will it stay on?

5.   When will Output 3 come on?
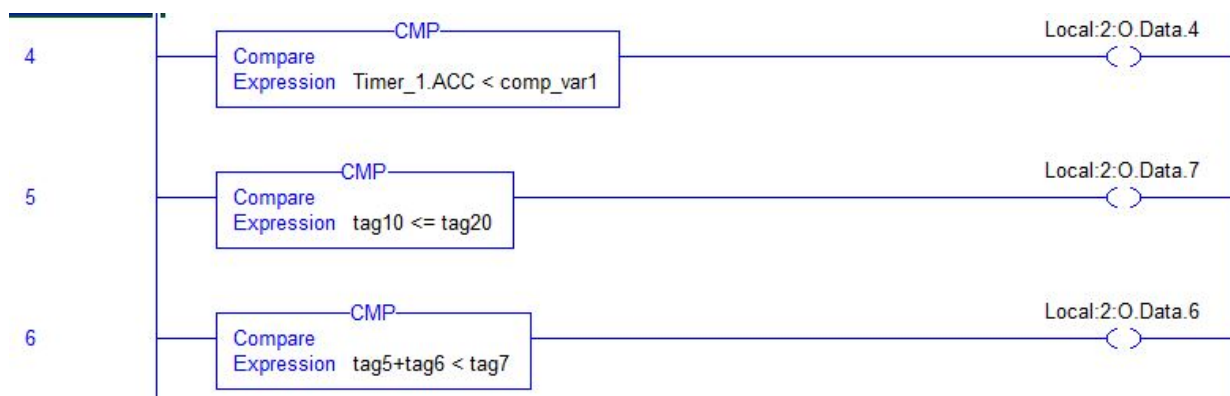   How long will it stay on?

Figure 2. Using the CMP instruction.

6.   When will Output 4 come on?

        How long will it stay on?

        What is the value of comp_var1?

7.   At rung 5 is output 7 on or off?

        Explain

8.   At rung 6 is output 6 on or off?

        Explain

Figure 3. Using the MEQ instruction.

9.   At rung 7 is output 5 on or off?

        Explain

Hint: Change tag1, tag2 and tag3 Style Property to Binary

Step 1

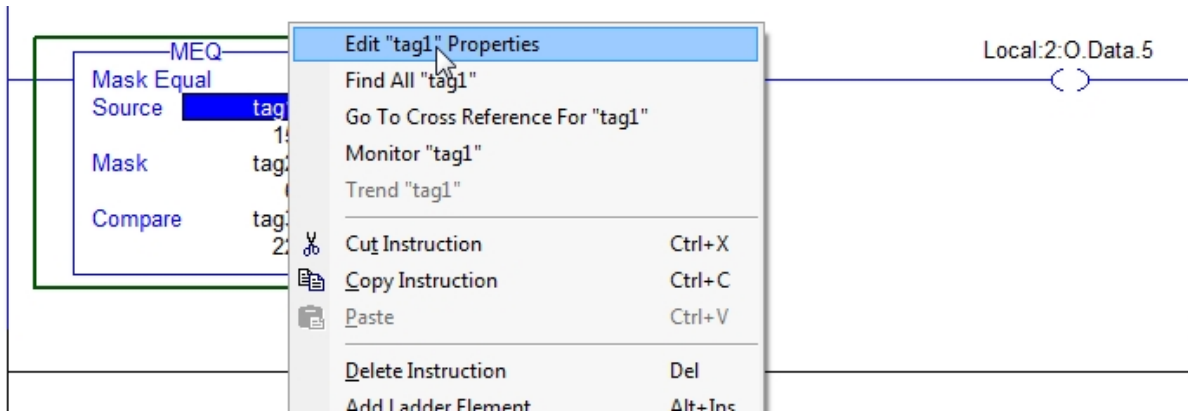   Right mouse click on tag1 and choose Edit "tag1" Properties

Figure 4. Monitoring the data in a tag.

Step 2

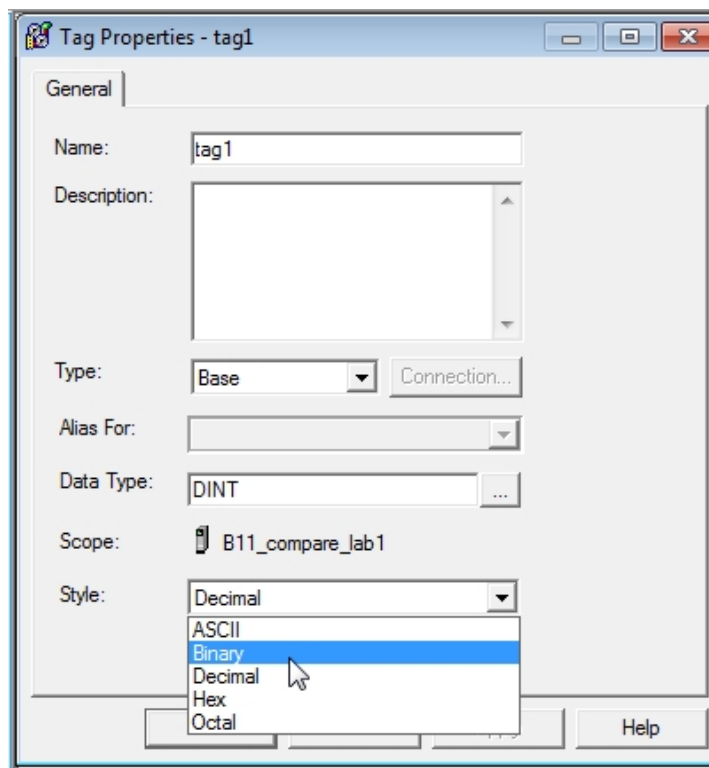Select Binary from the Style Selection Box

Figure 5. Changing the data view of a tag.
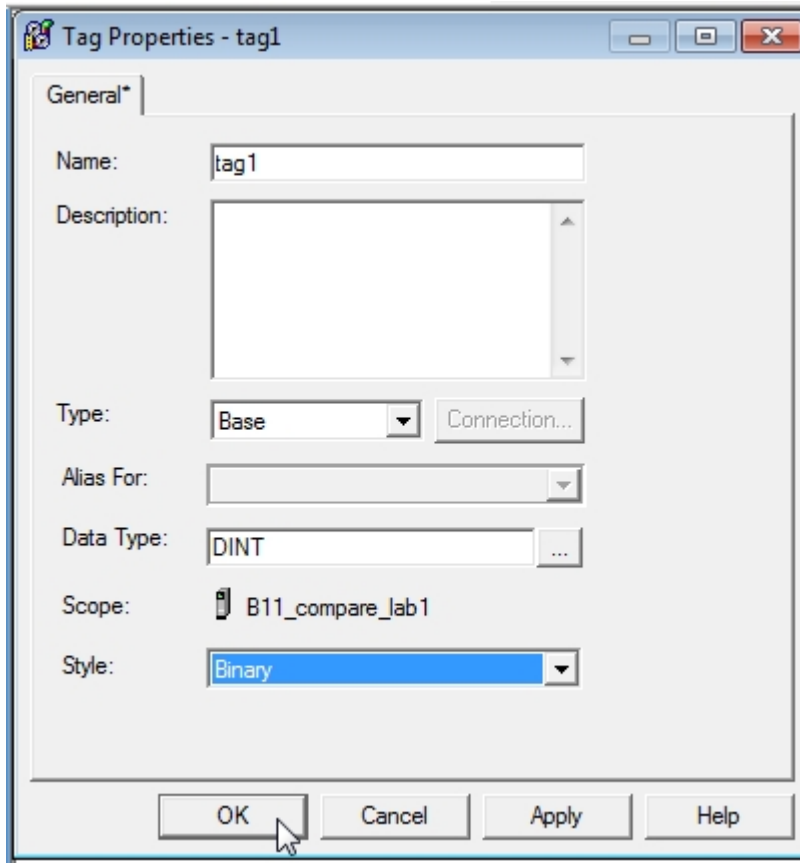
Step 3

Click the OK button

Figure 6. Choosing to view the data of a tag in Binary.

Step 4

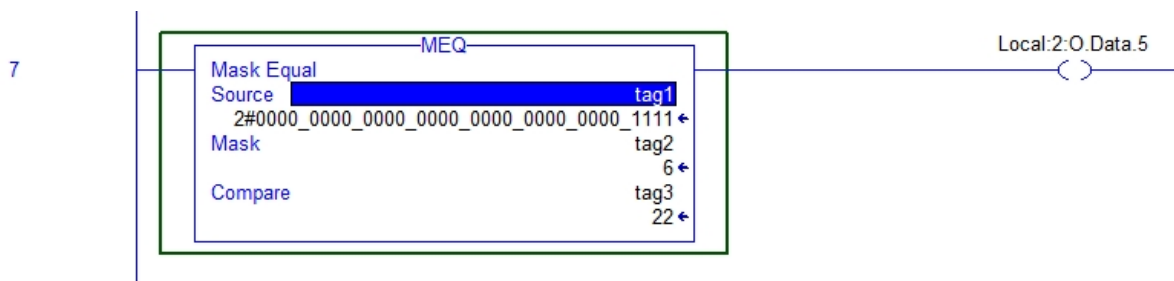Tag1 data will appear as Binary Style on Ladder instruction

Figure 7. The tag value displayed in a binary format.

Convert tag2 and tag3to Binary Style.

Do a bit by bit comparison with the bits that align with the one bits in the Mask

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