

PLC210 Lab Exercise 3: Logical Instructions

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

1. Explain the function and operation of the Logic Instructions
2. Explain how to convert the data style from decimal to binary
3. Explain how an Exclusive OR (XOR) instruction operates
4. Interpret the bit pattern within a Tag based on the data style
5. Explain how the Bit Field Distribute (BTD) instruction operates

Download the project Compact_Module_2_EX1.ACD, go Online and put the CompactLogix into the Run mode to do the following lab.

1. Bitwise AND

At Rung 0 – Press PB1 input on demo board - Local:1:I.Data.1



Figure 1. The AND instruction.

What value is tag3?

Explain – Hint use procedure on pages 3-5 in Module 1 –

Exercise #1 to change instruction tags to Binary Style.

Create a Table showing the results of the bitwise AND instruction.

Source A - Bit	Source B - Bit	Destination - Bit

Note: Dest tag can be cleared by toggling SW6 – See Rung 6

2. Bitwise OR

At Rung 2 – Press PB2 input on demo board - Local:1:I.Data.2

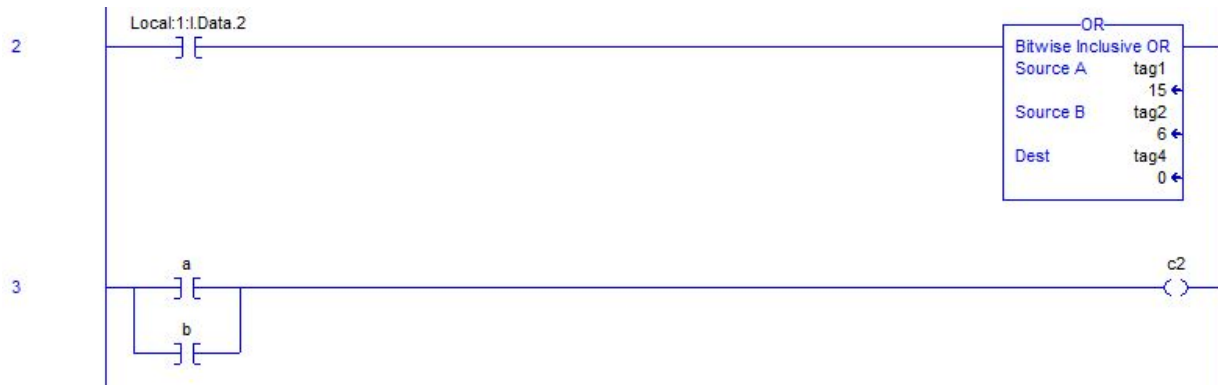


Figure 2. The OR instruction.

What value is tag4?

Explain – Hint use procedure on pages 3-5 in Module 1 –

Exercise #1 to change instruction tags to Binary Style.

Create a Table showing the results of the bitwise AND instruction.

Source A - Bit	Source B - Bit	Destination - Bit

Note: Dest tag can be cleared by toggling SW6 – See Rung 6

3. Bitwise XOR

At Rung 2 – Press PB3 input on demo board - Local:1:I.Data.3

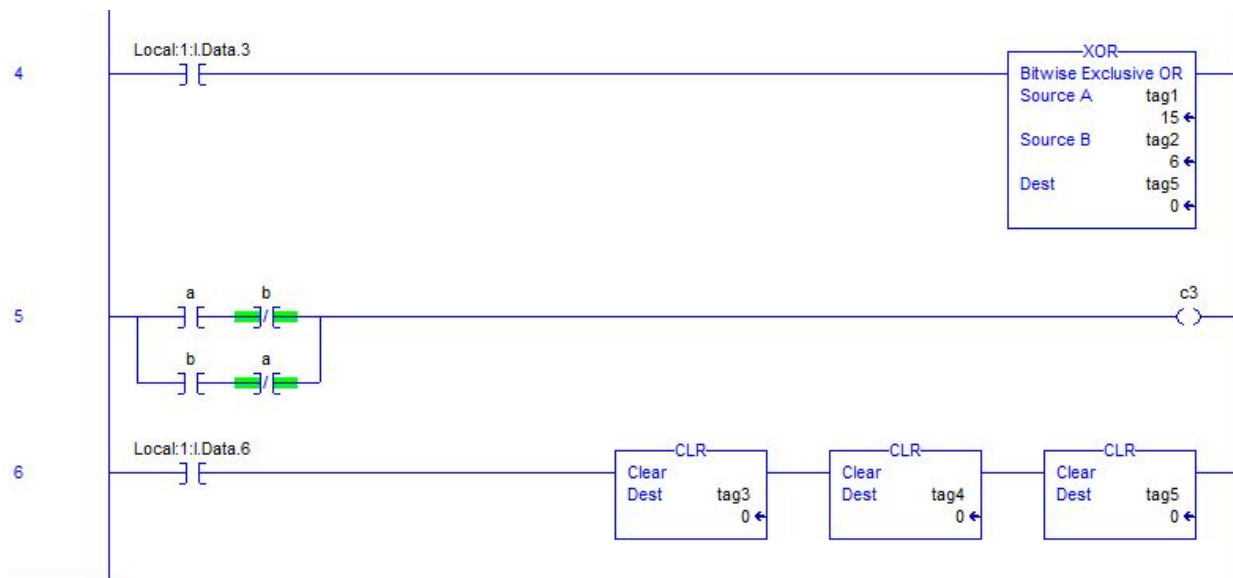


Figure 3. The XOR instruction.

What value is tag5?

Explain – Hint use procedure on pages 3-5 in Module 1 –

Exercise #1 to change instruction tags to Binary Style.

Create a Table showing the results of the bitwise AND instruction.

Source A - Bit	Source B - Bit	Destination - Bit

Note: Dest tag can be cleared by toggling SW6 – See Rung 6

4. BTD – Bit Field Distribute

At Rung 7 – Toggle SW7 input on demo board - Local:1:I.Data.7



Figure 4. The BTD instruction.

What value is tag11 - Dest?

Explain – Hint use procedure on pages 3-5 in Module 1 –

Exercise #1 to change instruction tags to Binary Style.

What is the pattern of the group of bits that are being shifted?

The lowest order bit in the Source that is being shifted is bit number _____.

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