

# PLC129 LAB 2.1: LOGIC INSTRUCTIONS

Student Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

## LAB OUTCOMES:

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

## LAB PROCESS:

Download the project “Compact\_Module\_2\_EX1.ACD”, go online and put the CompactLogix into RUN mode.

### Part 1

1. Bitwise AND

At rung 0 – Press PB1 input on the demo board (Local:1:I.Data.1)



What value is tag3? Explain.

Hint: Change instruction tags to binary style

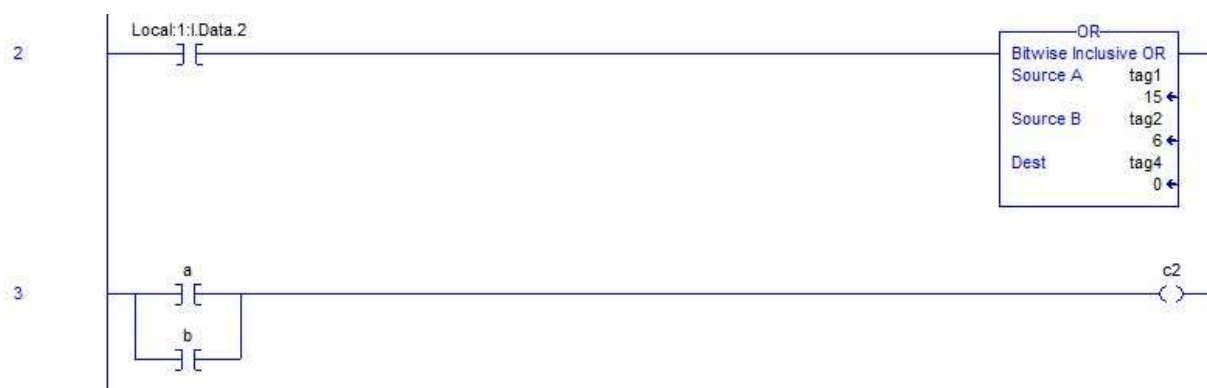
Create a table showing the results of the bitwise AND instruction

Source A - Bit	Source B - Bit	Destination - Bit

Note: Destination tag can be cleared by toggling SW6 – See rung 6

## 2. Bitwise OR

At rung 2 – Press PB2 input on the demo board (Local:1:I.Data.2)



What value is tag4? Explain.

Hint: Change instruction tags to binary style

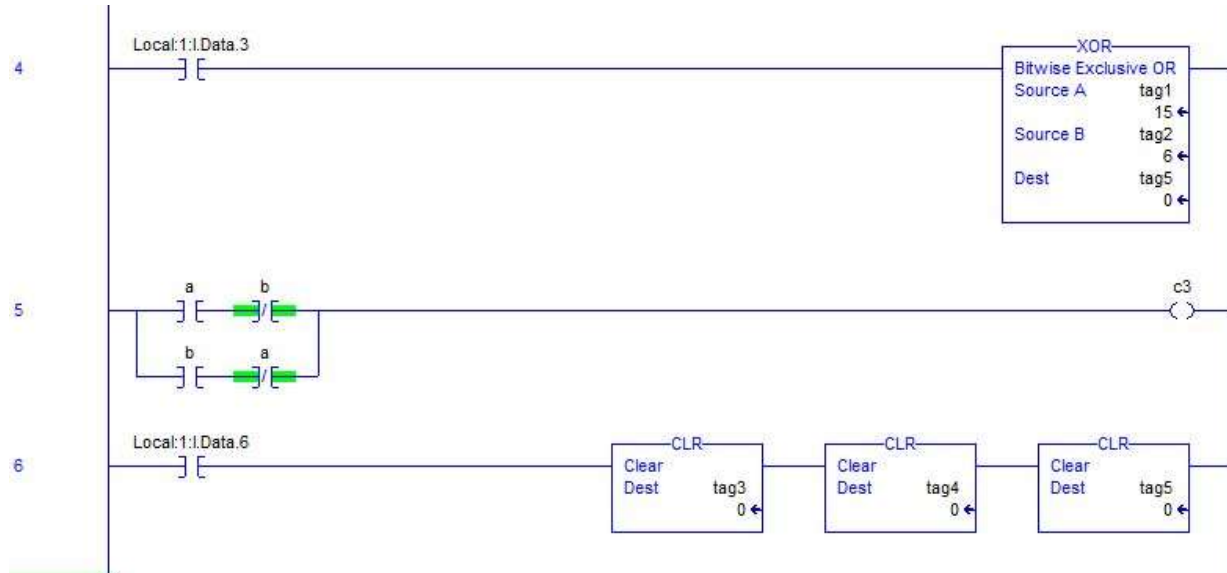
Create a table showing the results of the bitwise OR instruction

Source A - Bit	Source B - Bit	Destination - Bit

Note: Destination 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)



What value is tag5? Explain.

Hint: Change instruction tags to binary style

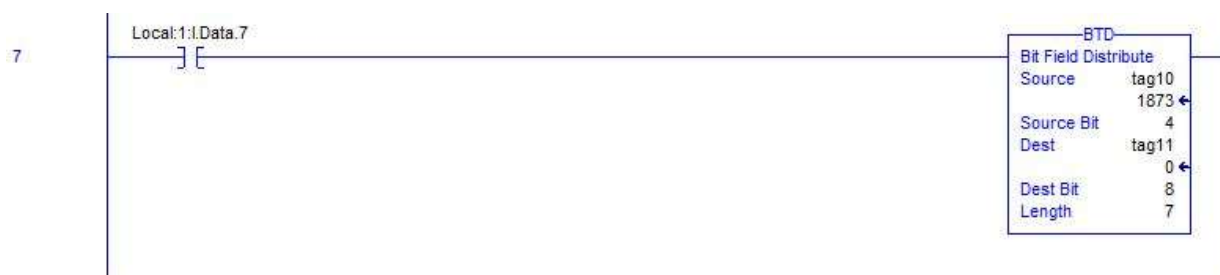
Create a table showing the results of the bitwise XOR instruction

Source A - Bit	Source B - Bit	Destination - Bit

Note: Destination tag can be cleared by toggling SW6 – See rung 6

### 4. BTD – Bit Field Distribute

At rung 7 – Toggle SW7 input on the demo board (Local:1:I.Data.7)



What value is tag11 – Destination? Explain.

Hint: 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?

*The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.*

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: \_\_\_\_\_

Faculty Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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