PLC Lab #2
Binary Logic Programming

Program: Electrician Technician

Course: EL180 – Programmable Logic Controls

Objectives: Under the supervision of your instructor, you should be able to do the following**:**

- Define and describe PLCs and compare them to hardwired systems.
- Describe and explain the function of various PLC hardware components.
- Describe the various number systems that correspond with the digital operation of PLCs.
- Describe and connect diodes.
- Describe and connect light-emitting diodes (LEDs).
- Describe how to connect silicon-controlled rectifiers (SCRs)

Lab Equipment:
- Click PLC
- Computer system

Required Tools:
- N/A

Material:
- N/A

Safety:
- **N/A**

Resources:
- N/A

Instructors Notes:
- N/A

Required time: 240 minutes.

Shop Maintenance:
- All work will cease 20 minutes prior to the end of class.
- All work areas must be cleaned.
- Tools and equipment must be cleaned and returned to the designated areas (cage, tool room, cabinets etc.)
- Any broken or missing tools must be reported immediately.
- Tools and equipment are students' responsibility.

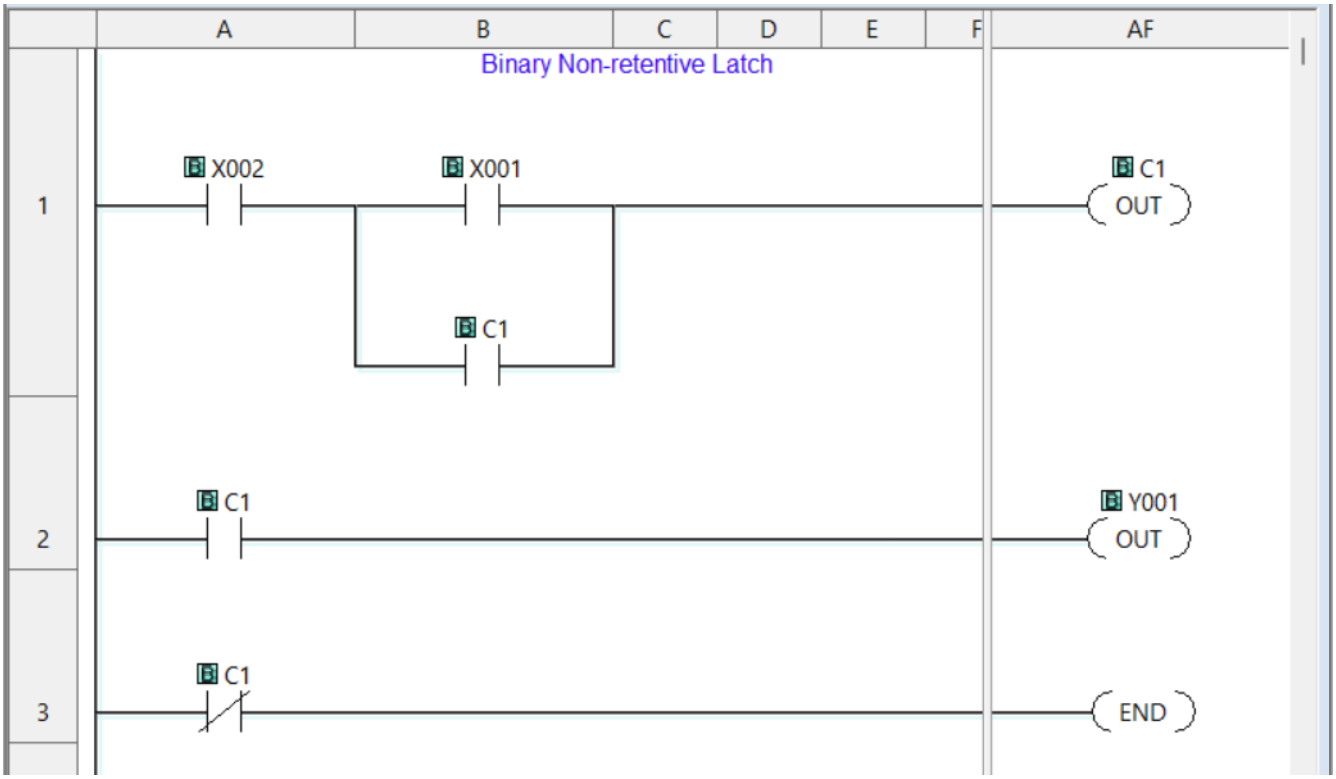
Procedures:

Exercise 1 – Binary Non-retentive Latch circuit.

Control Concept - Binary Non-retentive Latch.

Now things are getting good. Binary instructions, both Inputs and Outputs, are like Jokers in a deck of cards. We can use them for anything!

Program and test the following:

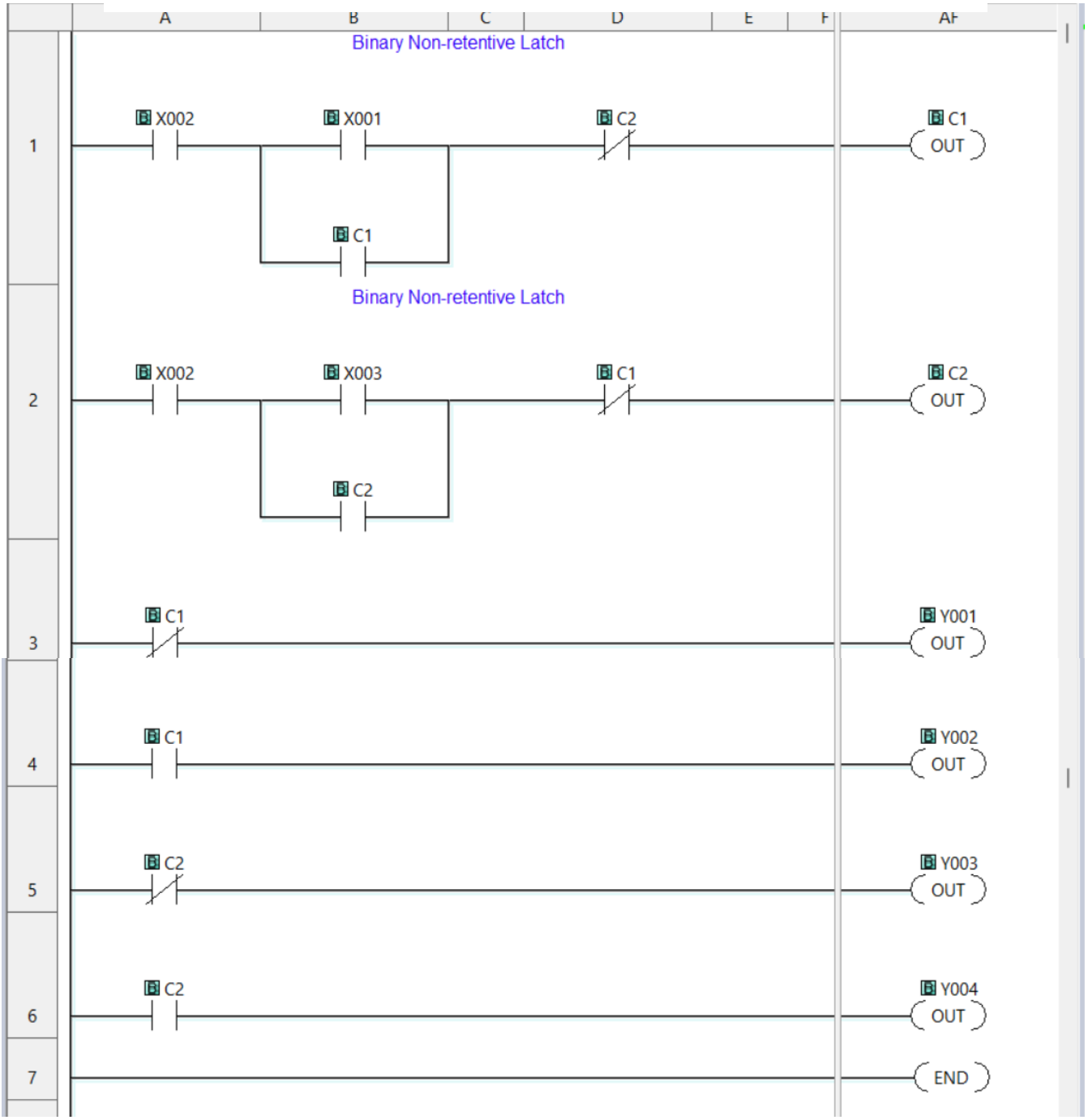


1. Q: What is the benefit of using Binary Bits in PLC logic?

Exercise 2 Binary Non-retentive with interlocks.

Control Concept(s) = Binary Bit Logic, Non-Retentive and Interlocks.

Program and test the following:

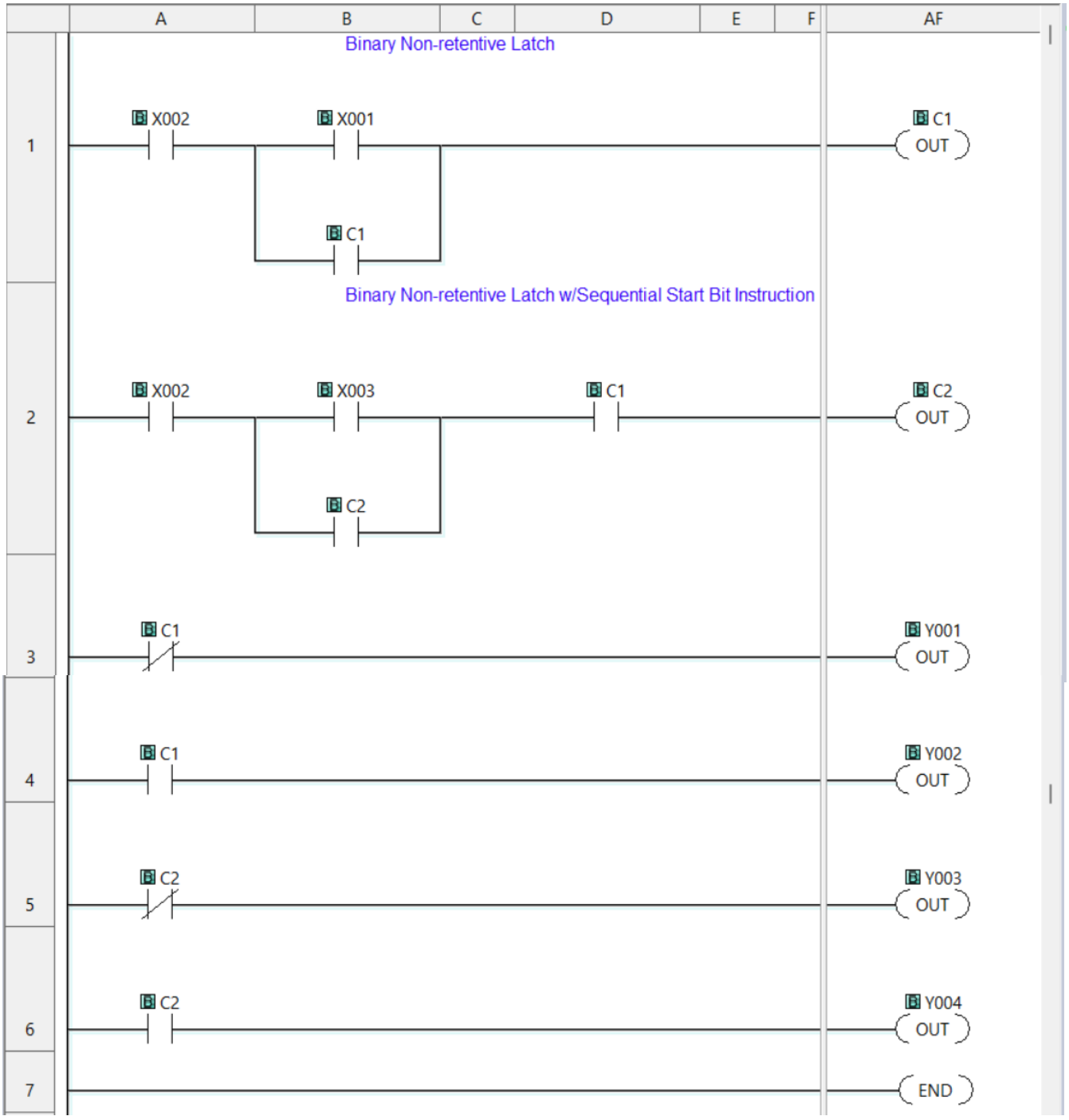


1. Q: What is the principal advantage of using INTERNAL BITs or BINARY BITs in PLC programming?

Exercise 3

Control Concept(s) - Binary Bits and Non-retentive Latches

Program and test the following:



1. Q: Which Instruction is doing the Sequential Start? _____

2. Q: Name the various Control Concepts present in this program logic.

_____

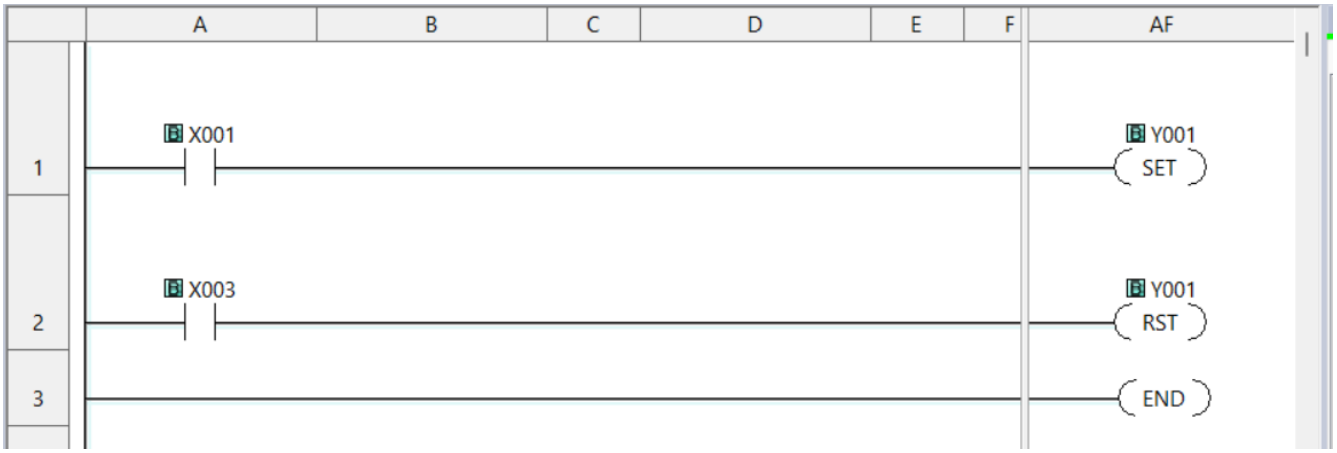
_____

Exercise 4 Set and Reset Instructions. Retentive Bits.

Control Concept - Set and Reset Instructions (Known as Retentive Bits)

NOTE*: These things are Dangerous and largely not necessary. Always avoid*.

Program and test the following:



1. Q: Why are Retentive Bits (SET and RESET) so dangerous?

Exercise 5 Set and Reset bits with binary outputs.

Control Concept(s) - Set, Reset, Binary Bit Instructions.

Program and test the following:

1. Q: Is the use of Binary Bits in this program necessary, and if so, why?