# PLC Lab # 3
# TIMERS ON DELAY

**Program:** Electrician Technician

**Course:** EL- 180 – Programmable Logic Controls - Unit 3 Day 1

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

- Define what a PLC is.
- Explain what a timer ON delays.
- Explain what a binary non-retentive latch is.

**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:**

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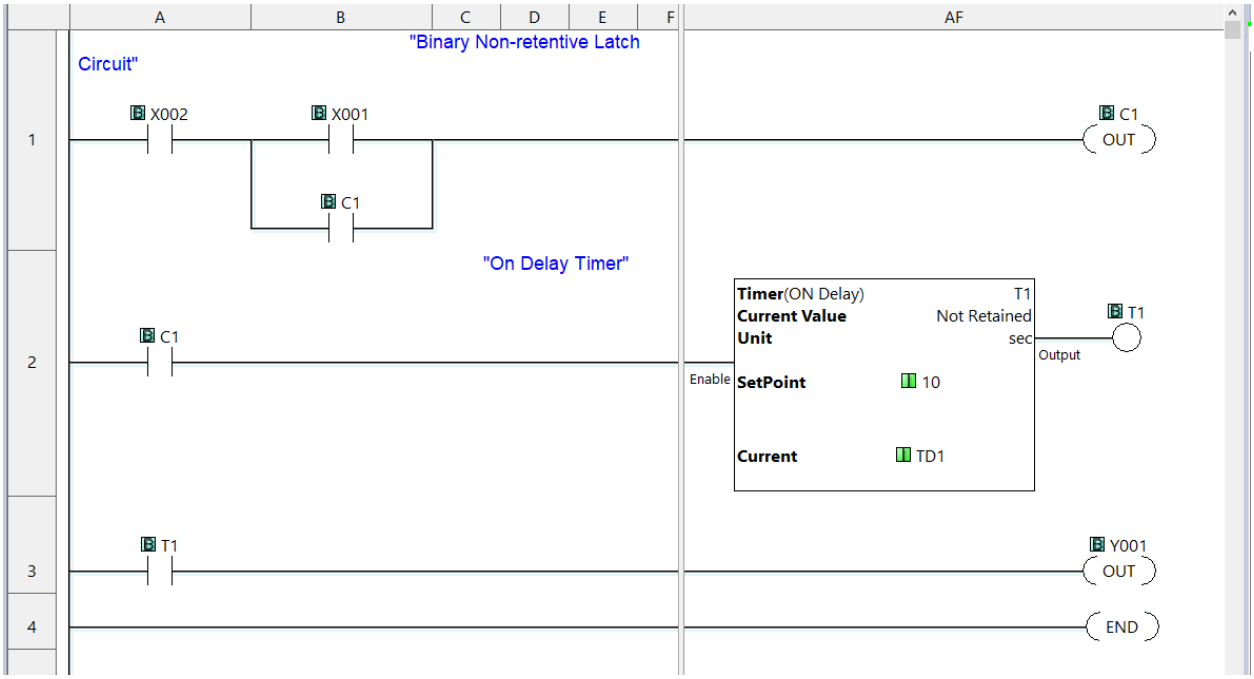
**Exercise 1 –** Binary Non-retentive Latch starts a Timer ON Delay (TON).

Note: *Set the 10 for 10 secs. After the timer times out, the green light should be on.*

**Control Concepts:** Binary Non-retentive latch and Timer On Delay.

**Program and test the following:**




**Exercise 1.1**

Add a red light ON while the Timer is in the OFF condition. The red light stays ON until the Timer times out. Then the RED light goes OUT and the GREEN light turns ON.

1. Q: Name the Control Concepts used in this program:

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_____

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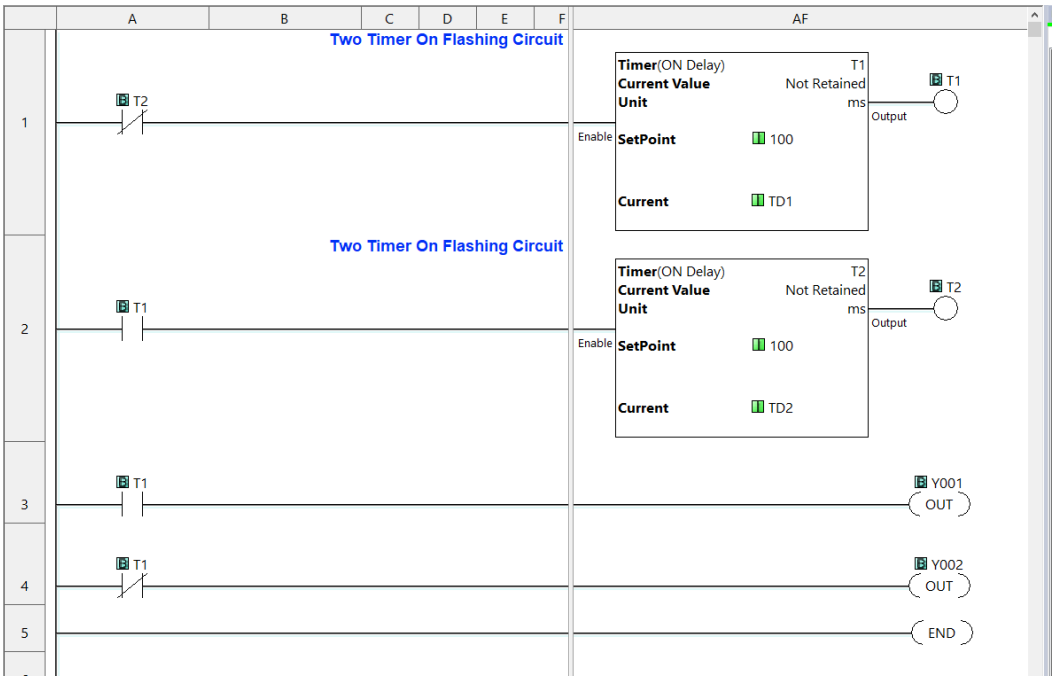
**Exercise 2** Two Timer-On FLASHING circuit. (Think Train Crossing Lights!)

**Control Concept –** Flip Flop Circuit

**Program and test the following:**




1. Q: Describe exactly how the two TIMER ON circuit works.

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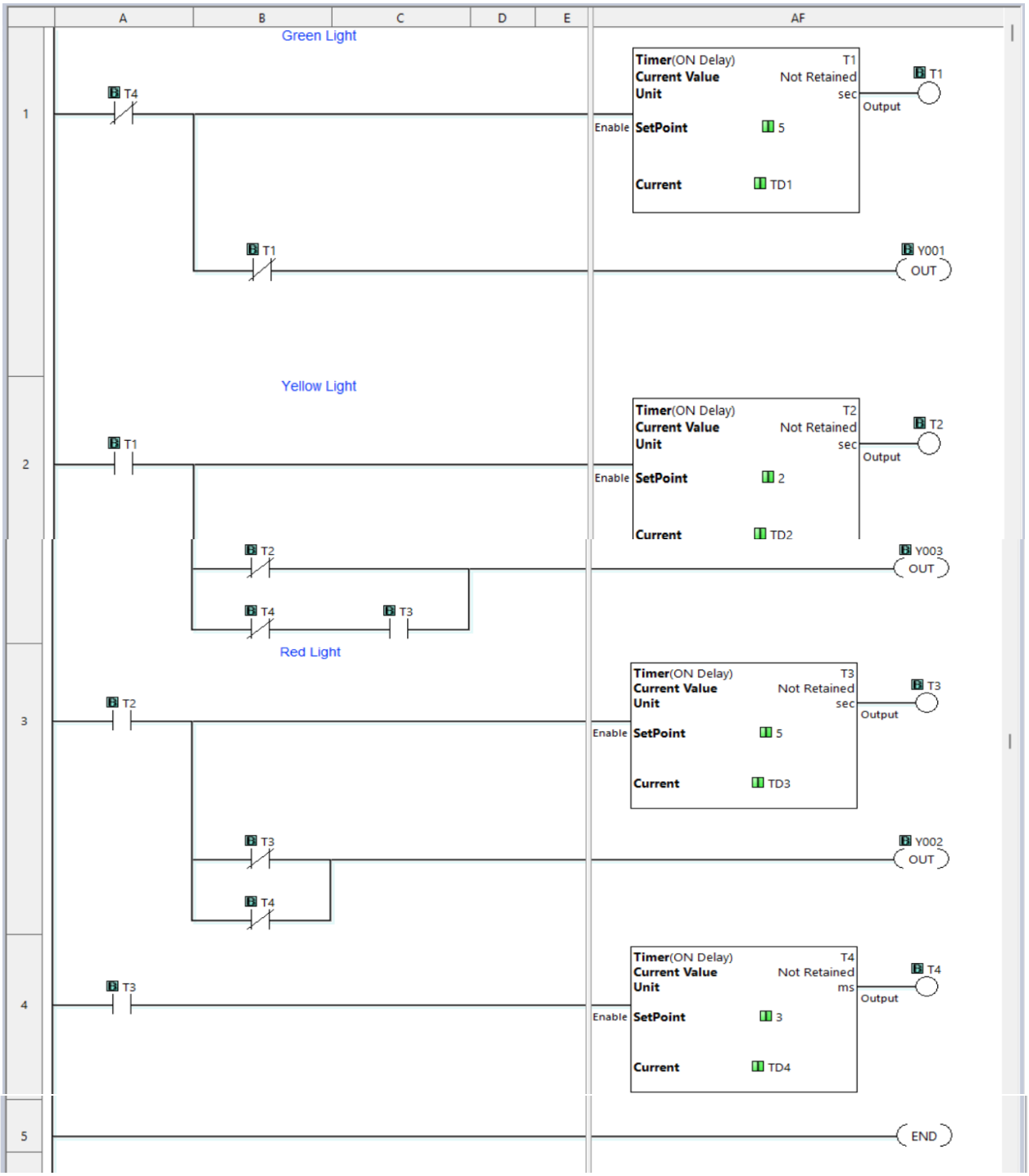
**Exercise 3 –** Traffic Lights Exercise

**Control Concepts:** Cycling Timers, Timers ON

**Program and test the following:**




**1.** Q: Explain how the Traffic Light Program works. _____

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**If Time allow complete the following:**

**3.2** Add and program the "BLUE LIGHT" as a WALK light. Keep in mind when the lights are cycling when the WALK pedestrian light appears**.**

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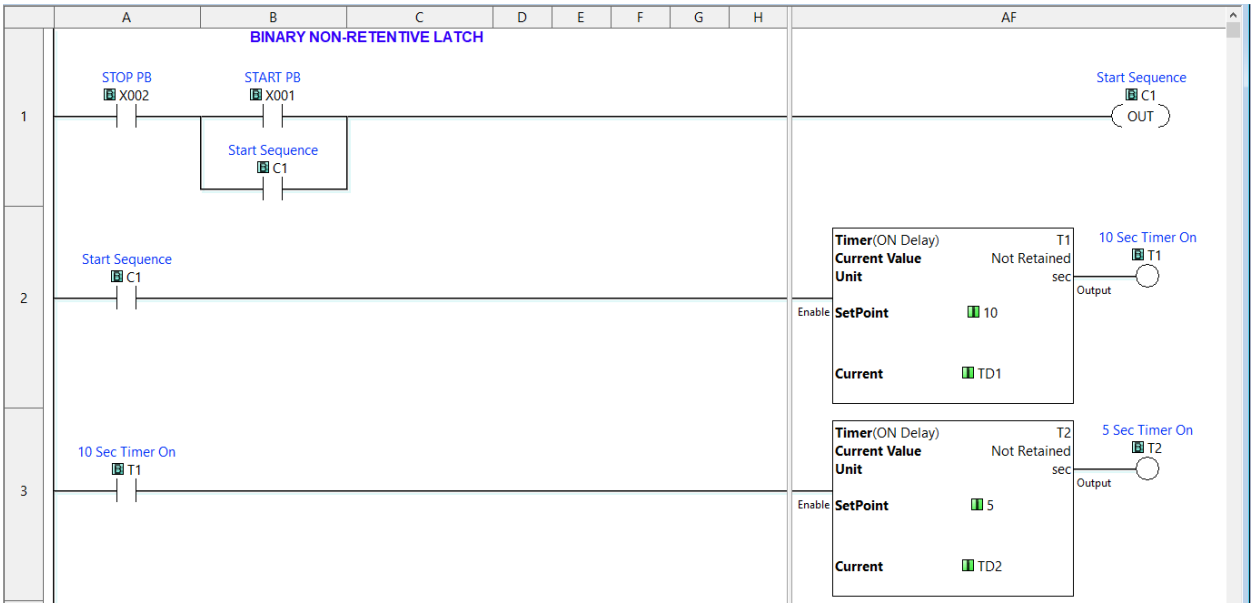
**Exercise 4 –** Sequential Timer On

**Control Concepts** – Timer On 3 Timers, Binary Non-retentive latch, Timer Flashing (Flip/Flop) circuit. Program and test the following:

PB X001 starts a binary non-retentive latch starts Timer 1 (T1).
After 10 seconds the BLUE light comes on and is flashing.
After another 5 seconds the YELLOW Light comes ON and is flashing.
After another 3 seconds the RED light comes ON and all other lights are OFF.
The Stop button (X002) stops the circuit, and ALL lights are OFF.

Use two TIME ON DELAY timers to make the flashing bit. Use timers T10 and T11**.**

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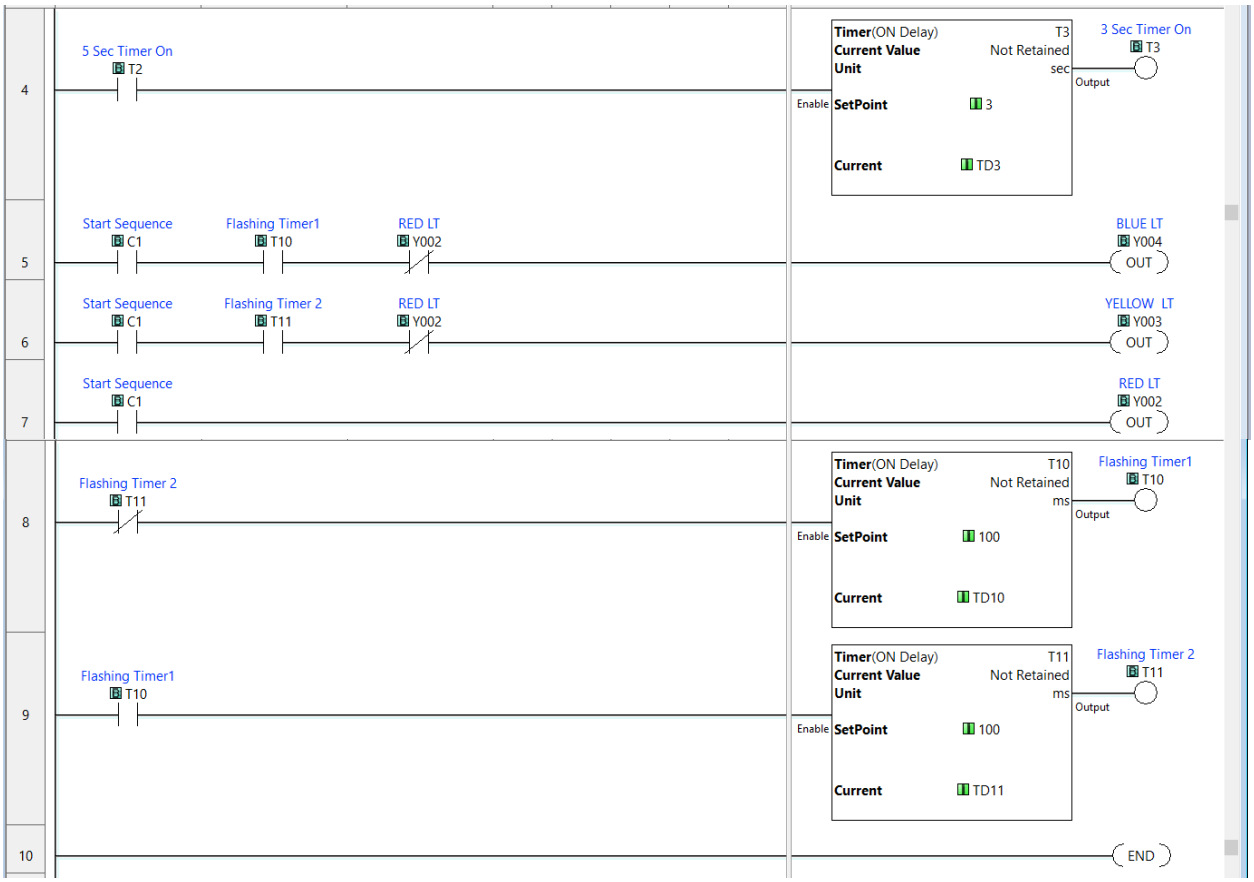


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