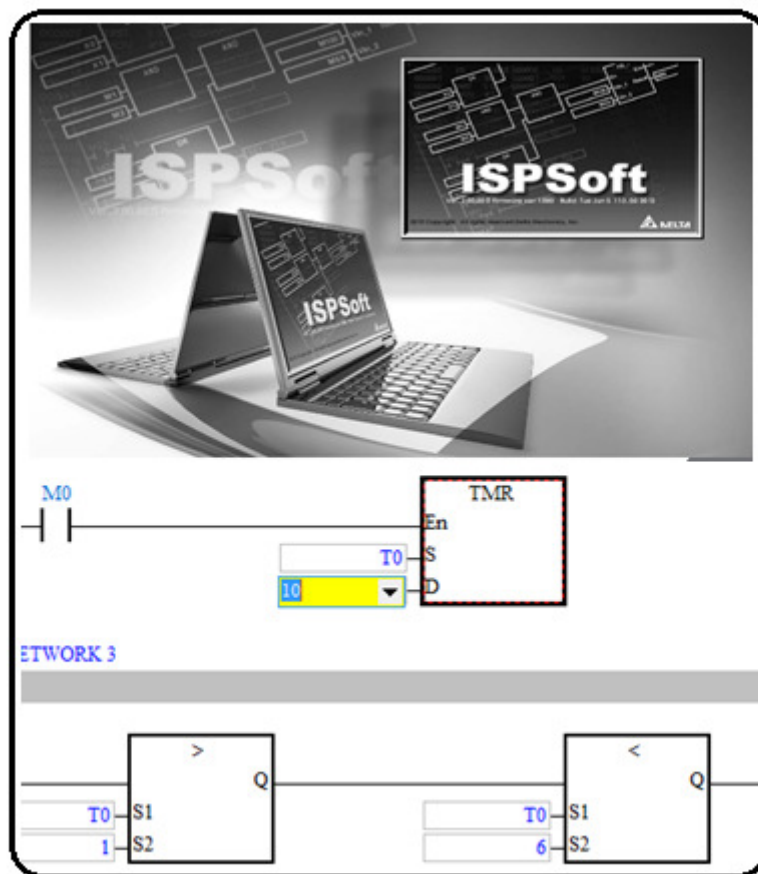# Industrial Automation - PLC

Applications of Timers with Comparisons Instructions

Demonstration a Program in Ladder Programming on ISPSoft Software for DELTA PLC.
Assume all the Push Buttons are "NO" Normally Open. Program should work as below.

Sr. No.	Input	Output	Other Status
1	If X0 is Pressed	Y0 Continuously ON- OFF	
2	If X1 is Pressed	Y1 Continuously ON- OFF	Y0 - ON
3	If X2 is Pressed	Y2 Continuously ON- OFF	Y0,Y1, - ON
4	If X3 is Pressed	Y3 Continuously ON- OFF	Y0, Y1, Y2 - ON

This is Total 16 Networks Program. But we will discuss Step by Step for Each Network .
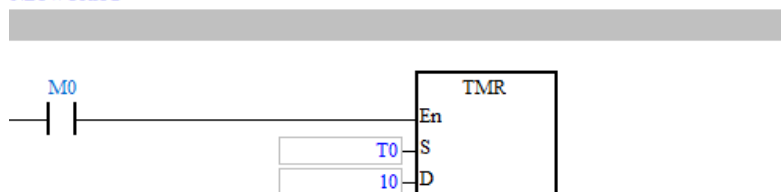So Program is divided by Four Parts as below.

Part 1:
> Network 1) When **X0** is Pressed, **M0** Memory Bit
> Network 2)   **M0** Enable to On Timer **T0 (Destination Up to 10).**
> Network 3) When Value of **T0** is in between (1 to 6) . **Y1 – ON** else **Y1 – OFF**
> Network 4) **T0** Reset when time elapsed.
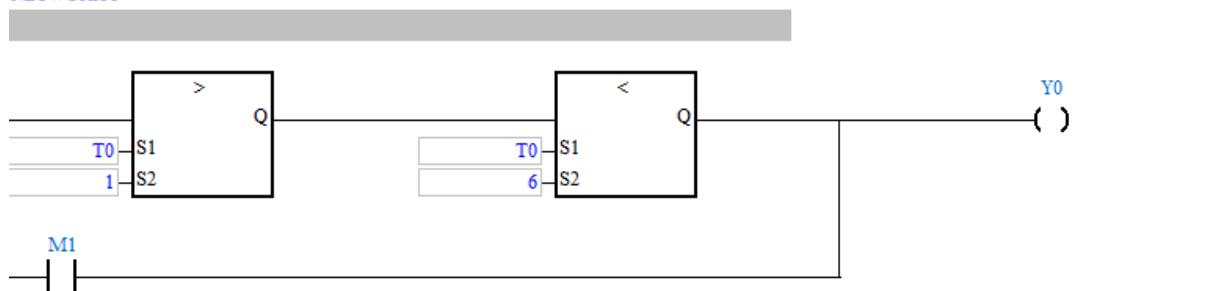
NETWORK 1

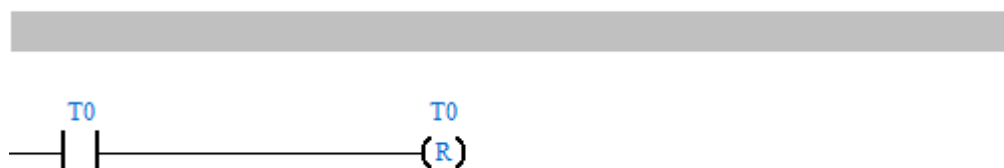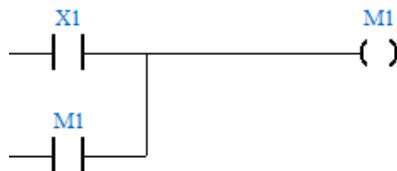

NETWORK 2

NETWORK 3

NETWORK 4

Part 2:

        Network 5)   When **X1** is Pressed, **M1** Memory Bit , and **Y0 - ON**

        Network 6)   **M1** Enable to On Timer **T1 (Destination Up to 10).**

        Network 7)   When Value of **T1** is in between (1 to 6) . **Y1 – ON** else **Y1 – OFF**
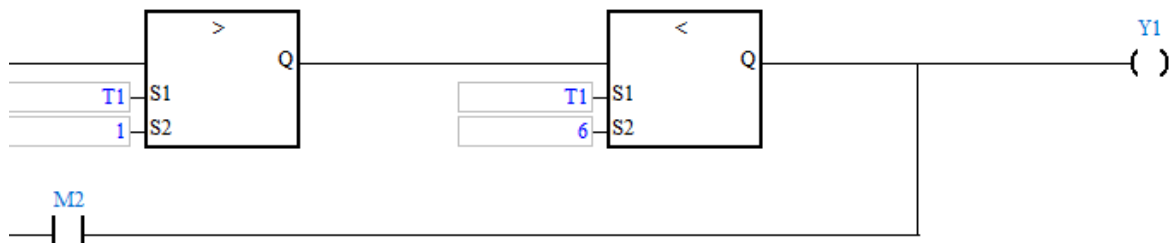
        Network 8)   **T1** Reset when time elapsed.

NETWORK 5

```
      X1                    M1
   ---| |----+----------( )
      M1     |
   ---| |----+
```

NETWORK 6

```
      M1              +-----TMR-----+
   ---| |-------------|En           |
                 T1 --|S            |
                 10 --|D            |
                      +-------------+
```

NETWORK 7

```
         +-----> -----+            +-----< -----+
         |          Q |            |          Q |
   ------|            |------------|            |-------+------( )
     T1--|S1          |        T1--|S1          |       |       Y1
      1--|S2          |         6--|S2          |       |
         +------------+            +------------+       |
      M2                                                |
   ---| |------------------------------------------------+
```

NETWORK 8

```
      T1                    T1
   ---| |----------------(R)
```

Part 3:

Industrial Automation - PLC SCADA Training in Ludhiana Punjab India
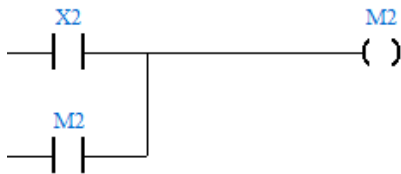**IMBUENT TECHNOLOGIES PVT. LTD**
www.imbuent.com

Network 9)   When **X2** is Pressed, **M2** Memory Bit , and **Y1 - ON**
Network 10)   **M2** Enable to On Timer **T2 (Destination Up to 10).**
Network 11)   When Value of **T2** is in between (1 to 6) . **Y2 – ON** else **Y2 – OFF**
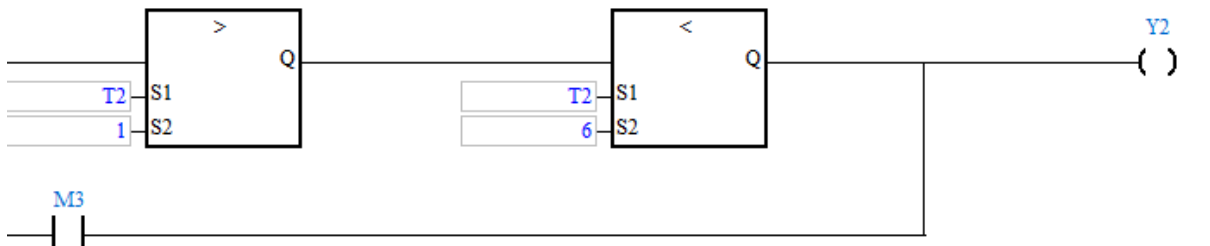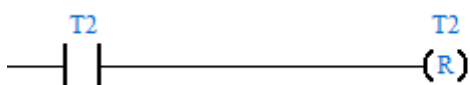Network 12)   **T2** Reset when time elapsed.

NETWORK 9

```
      X2                      M2
   ──┤ ├──────────────────────( )

      M2
   ──┤ ├───
```

NETWORK 10

```
      M2                  ┌──────────┐
   ──┤ ├──────────────────┤    TMR   │
                          │En        │
                  T2 ─────┤S         │
                  10 ─────┤D         │
                          └──────────┘
```

NETWORK 11

```
           ┌──────────┐               ┌──────────┐              Y2
           │    >     │               │    <     │
           │        Q ├───────────────┤        Q ├──────┬───────( )
      T2 ──┤S1        │          T2 ──┤S1        │      │
       1 ──┤S2        │           6 ──┤S2        │      │
           └──────────┘               └──────────┘      │
      M3                                                 │
   ──┤ ├────────────────────────────────────────────────┘
```

NETWORK 12

```
      T2                      T2
   ──┤ ├──────────────────────(R)
```
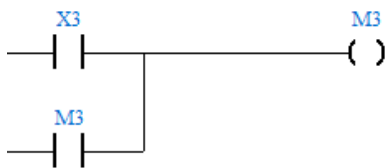
Part 4:

Network 13)   When **X3** is Pressed, **M3** Memory Bit , and **Y2 - ON**

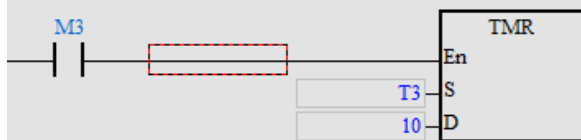Network 14)   **M3** Enable to On Timer **T3 (Destination Up to 10).**

Network 15)   When Value of **T3** is in between (1 to 6) . **Y3 – ON** else **Y3 – OFF**

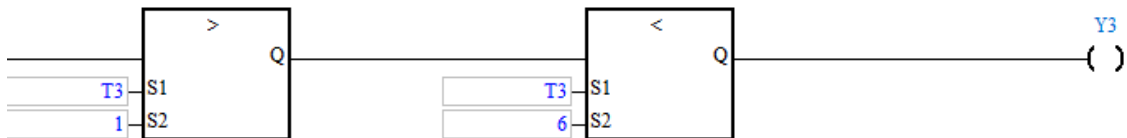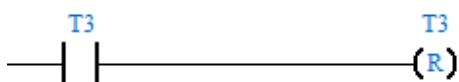Network 16)   **T3** Reset when time elapsed.

NETWORK 13

```
      X3                          M3
 ─────┤ ├──────┬──────────────────( )
      M3       │
 ─────┤ ├──────┘
```

NETWORK 14

```
      M3                        ┌──────────┐
 ─────┤ ├────[          ]───────┤   TMR    │
                                │En        │
                         T3─────┤S         │
                         10─────┤D         │
                                └──────────┘
```

NETWORK 15

```
         ┌──────────┐              ┌──────────┐
         │    >     │              │    <     │              Y3
─────────┤        Q ├──────────────┤        Q ├──────────────( )
   T3────┤S1        │       T3─────┤S1        │
    1────┤S2        │        6─────┤S2        │
         └──────────┘              └──────────┘
```

NETWORK 16

```
      T3                          T3
 ─────┤ ├──────────────────────────(R)
```

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