COURSE – PLC AND SCADA **COURSE CODE – 18INT52**

Experiment Number – 2
Duration - 2 Hours

Title of Experiment –

1. Understanding of Timers used in PLC Programming – ON DELAY / OFF DELAY / RETENTIVE Timers
2. PLC Programming of Timers

Objective of the Experiment

The students are required to understand the following –

- Functioning of Timers
- Problem solving of all three types of timers

Intended Learning Outcomes : At the end of the experiment the student should be able to do

1. PLC Programming – ON DELAY / OFF DELAY / RETENTIVE TIMERS

Software/Equipment/Tools Required:
PC, PLC Software,

Problem 1 –

ON DELAY TIMER – EXAMPLE

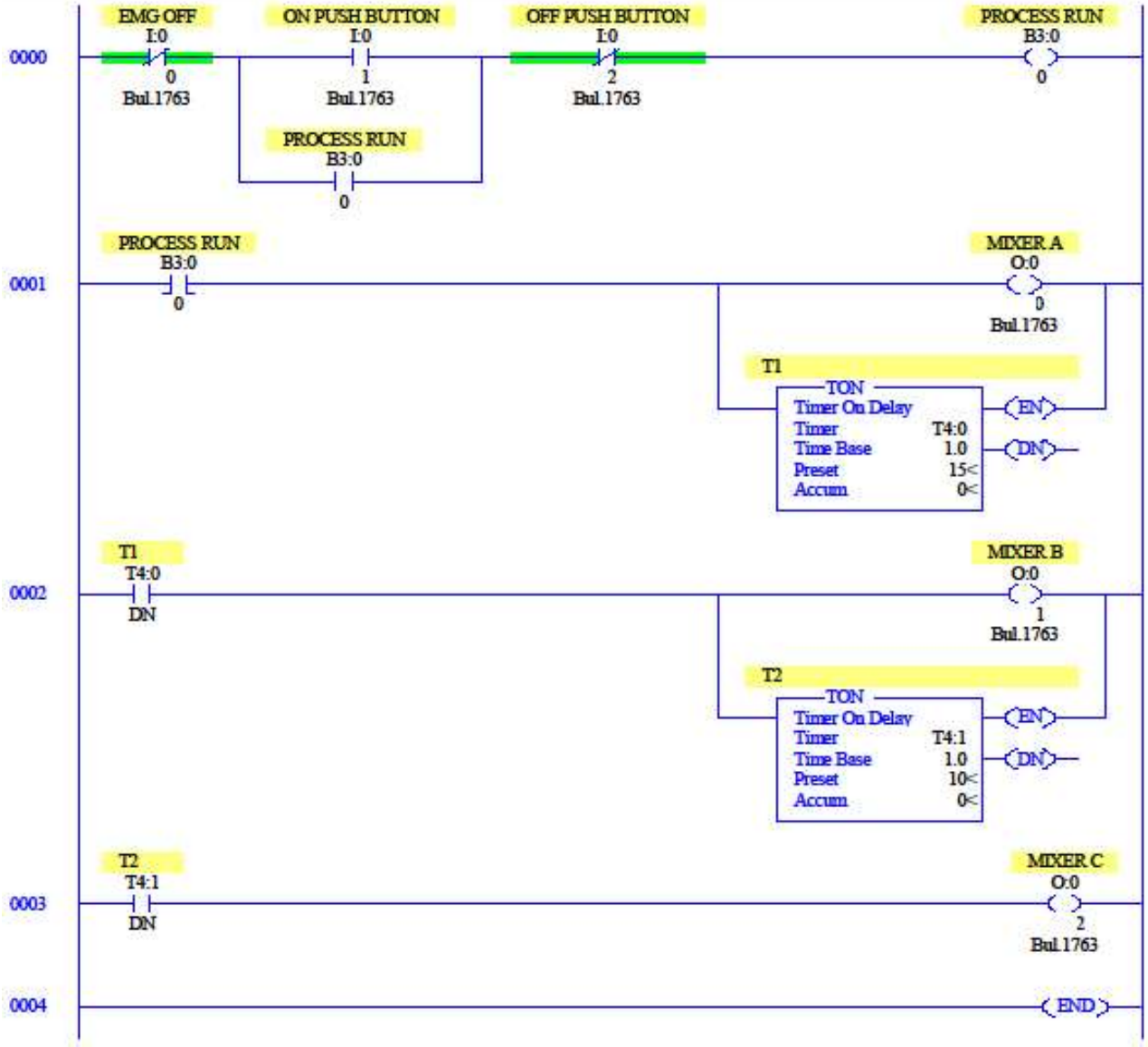
Write the PLC Programme,

a) There are three mixing device motors in processing lines A, B, and C.
b) After the process begins, mixer A is to start
c) After 15 seconds of starting mixer A, the next mixer B is to start
d) After 10 seconds of starting mixer B, the next mixer C to start.
e) The entire mixer stops after pressing the master switch.

Write the Ladder Programme -

ON DELAY TIMER - EXAMPLE

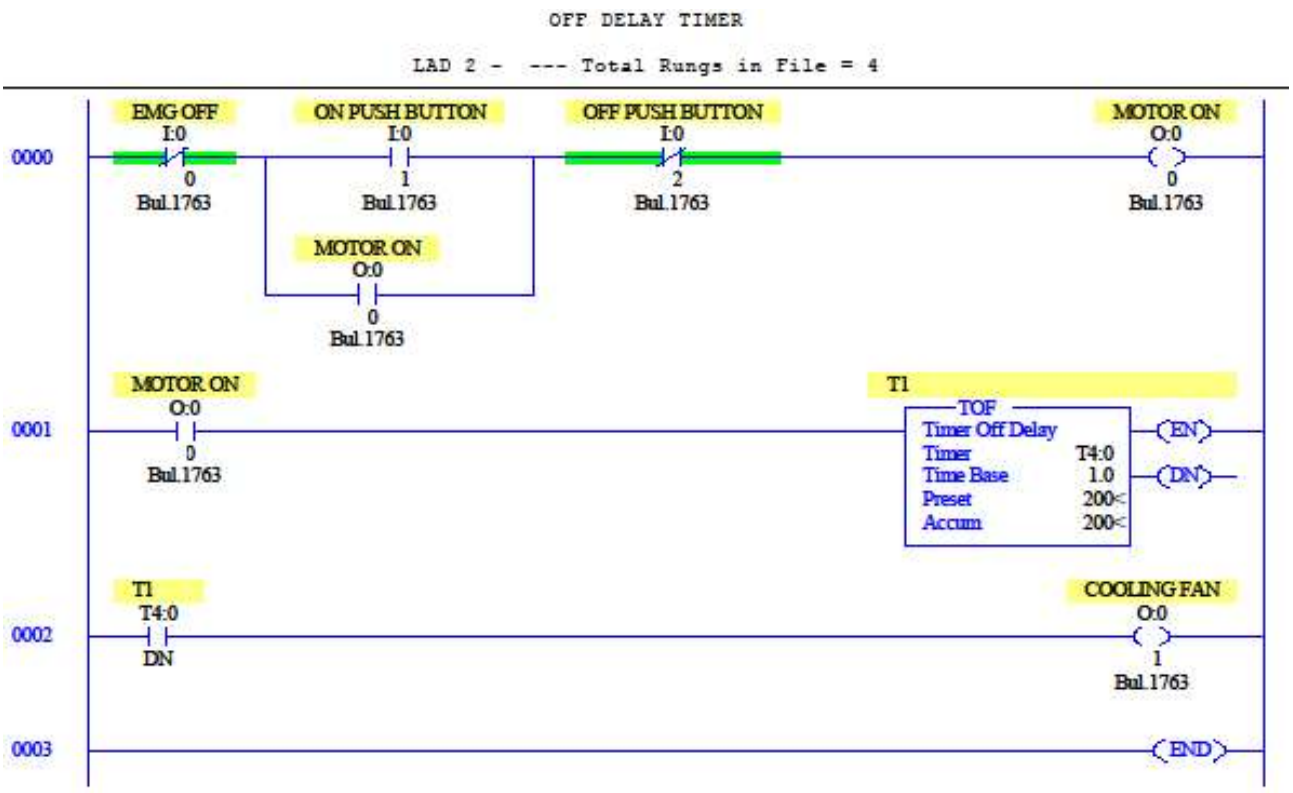
LAD 2 - --- Total Rungs in File = 5



Problem 2 - OFF DELAY TIMER – EXAMPLE

An external cooling fan had to run when the motor was running.
After the motor was stopped the cooling fan continues running for 200sec.
Solve the above problem using a TOF timer.

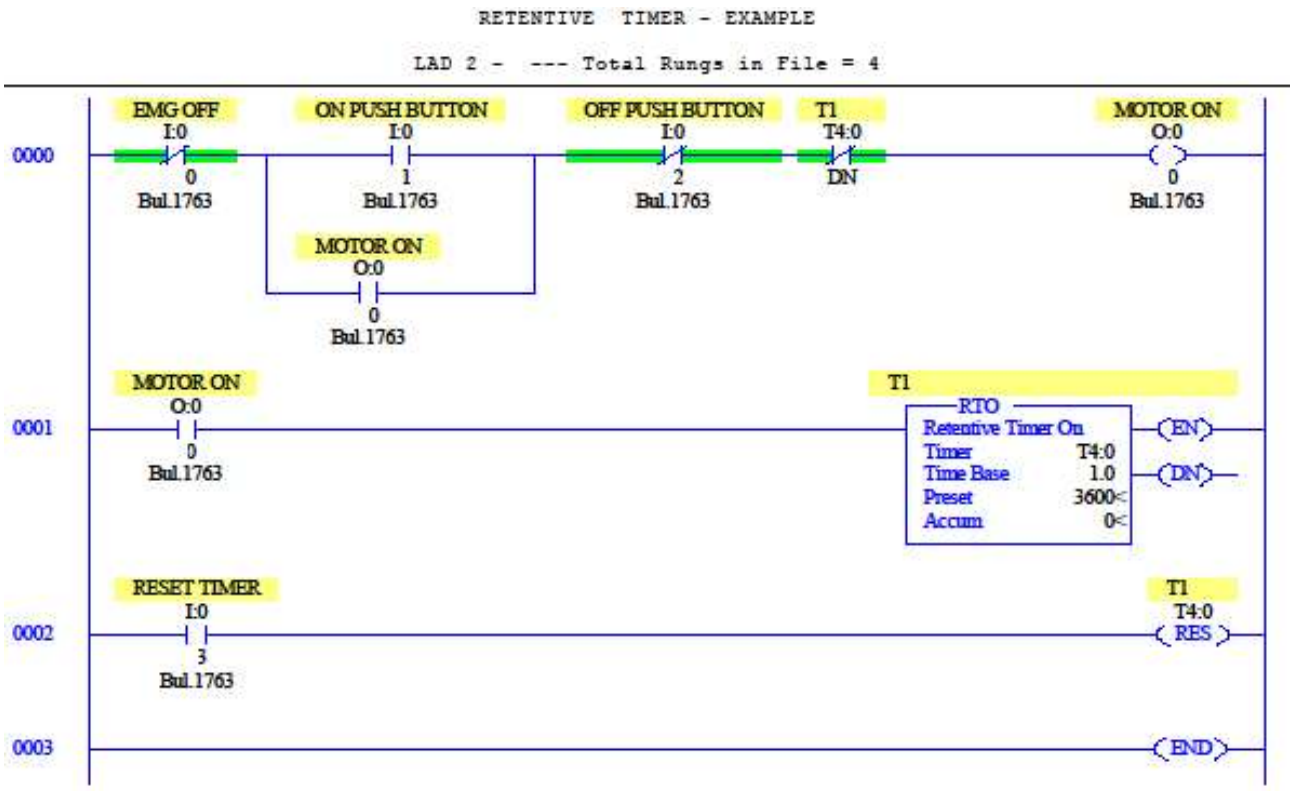
Write the Ladder Programme -



Problem 3 - RETENTIVE TIMER - EXAMPLE

A motor needs maintenance after 3600 seconds or after 1 hour.
Each time the Motor gets on and off, the timer needs to remember the Motor's total elapsed running time. Whenever the Motor gets on, the timer will increase the accumulated running time from where it is left off. When the total accumulated motor running time reaches the maintenance time, a maintenance remainder pilot light will get lit.

Write the Ladder Programme -



Precautions: Students must use proper type and range of the meters. They must show the wiring connections before switching the supply on.

Conclusion/Critical Observation: Students learn the following

1. Basic PLC Programming – Timers