



# Andhra Pradesh State Skill Development Corporation



The image is a composite of two parts. On the left, there is a teal-colored graphic illustrating a Learning Management System (LMS). It features a central computer monitor displaying the 'LMS' logo, surrounded by various icons and labels: 'courses', 'documentation', 'tracking', 'e-learning management', 'education', 'system', 'software', and 'courses'. On the right, there is a photograph of three individuals (two men and one woman) wearing headsets and working on desktop computers in what appears to be a call center or customer service environment.

## Basics of PLC

## Rules of Ladder Logic Programming



## Rules of Ladder Logic programming

1. Input instructions are always connected near to 24VDC vertical line and output instructions are always connected near to OVDC vertical line.
2. Input instructions can be connected in series or in parallel whereas output instructions should always be connected in parallel.
  - The number of inputs (I1, I2, I3, I4, .....In) can link with different outputs (Q1, Q2,.....Qn) by using series or parallel connection.
  - The three Inputs (I1, I2, and I3) are connecting in series and four Inputs (I1, I2, I3 and I4) are connecting in parallel with the Single output (Q1 and Q2) respectively.
  - According to the second rule, outputs (Q1, Q2, Q3, Q4, .....Qn) are connected in parallel along with the single input (I1).
  - If the single input (I1) is normally closed (NC contact) then all outputs (Q1, Q2, Q3, Q4,....Qn) will be activated (On).
3. Input address can be repeated but output address can never be repeated except in case of set and reset.
  - **In latch/unlatch function**, working is the same as set/reset function. The only difference is, the first input (I1) is normally opened (NO) and the second input (I2) is normally closed (NC).
4. The lanch/unlatch function is useful for the cycling process.
5. Output address can be used as Input address but Input address can never be used as Output address.
  - The same input address can be used as multiple inputs. And it can not be used as output.
  - The last rule is for the cycling process (i.e. process continuous from start to end).
  - The output coil works as the input coil with the use of latch/unlatch function.

Surely, you will find these rules for PLC ladder diagram programming useful when you start actually working on PLC programming.

Make a practice of following these rules and writing the PLC programs as per your requirements by using the logic gate programming concept.