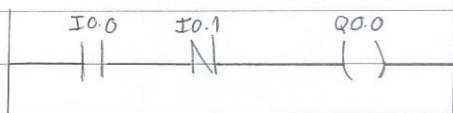
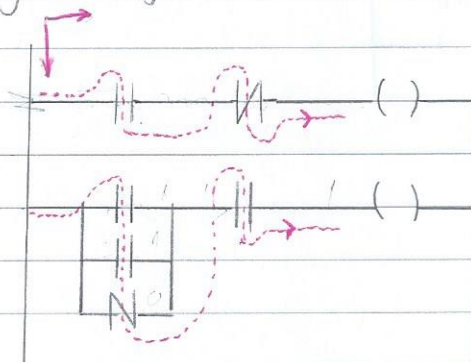


# AUTOMAÇÃO INDUSTRIAL - TRABALHO 16/06

LINGUAGEM LADDER

IEC 61131-3

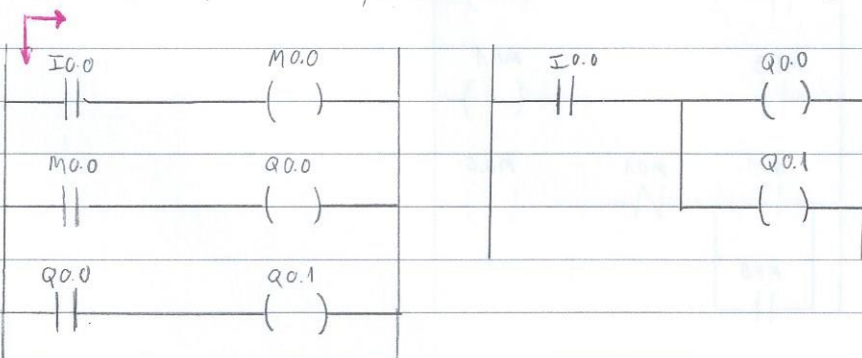
Linguagem Gráfica



- I - Contato normal aberto (NA): enquanto I0.0 é 0 o contato NA está aberto e enquanto I0.0 é 1 o contato NA está fechado.

- V - Contato normal fechado (NF): enquanto I0.1 é 0 o contato NF está fechado e enquanto I0.1 é 1 o contato é aberto.

- ( ) - Bobina: quando há passagem de corrente fictícia pela bobina o valor de Q0.0 é 1, caso contrário o valor de Q0.0 é 0.

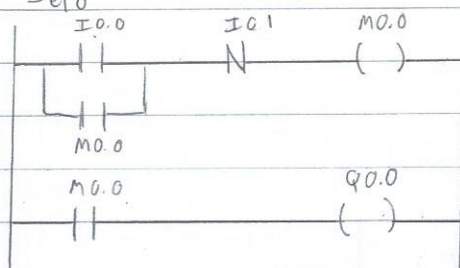


Obs: Não usar a mesma saída em lugares diferentes



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Selo

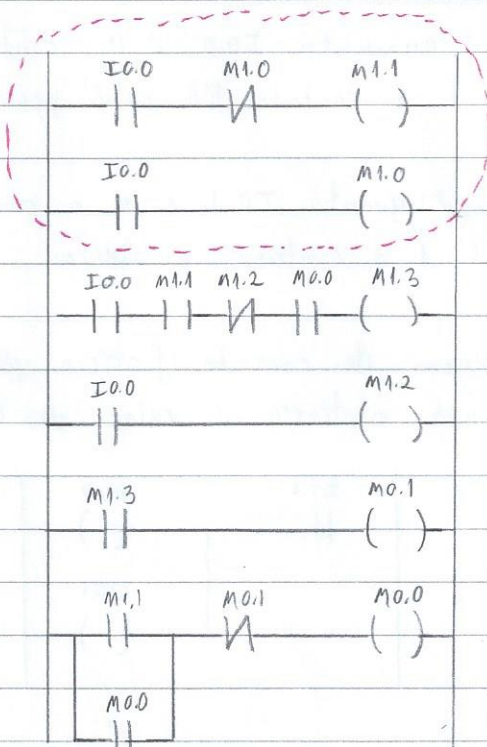
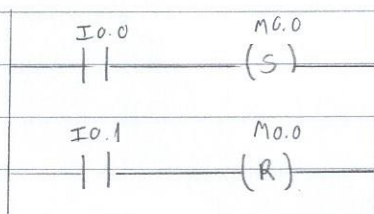


-(S)- set

-(L)-

-(R)- reset

-(U)-



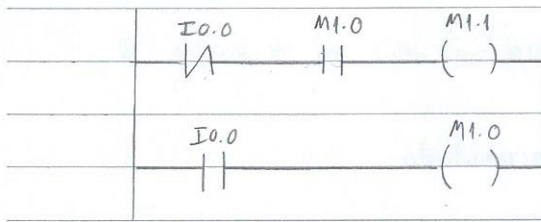
Detecto de borda de subida



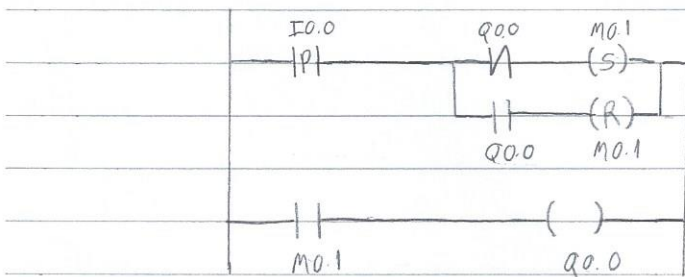
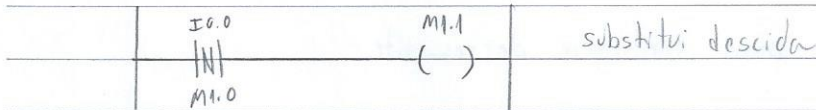
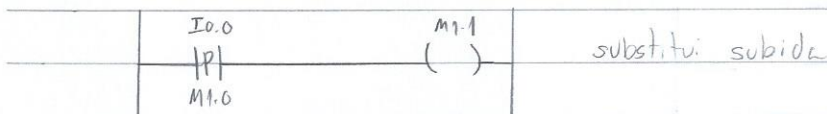
16/06/2015



Detector de bordo de descida

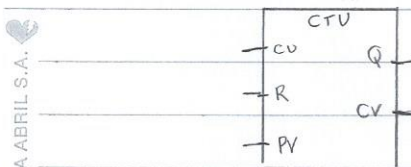


Contador tipo P e tipo N



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Contador Crescente







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CU (Count Up): entrada para contagem (borde de subida)

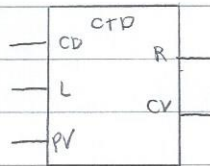
R: Reset

PV (Preset Value): valor para atribuir um à saída Q

Q: saída

CV (Counter Value): valor acumulado

### Contador Decrescente



CD (Count Down): entrada para contagem decrescente

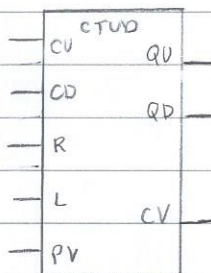
L (load):

PV (Preset Value):

CV (Counter Value)

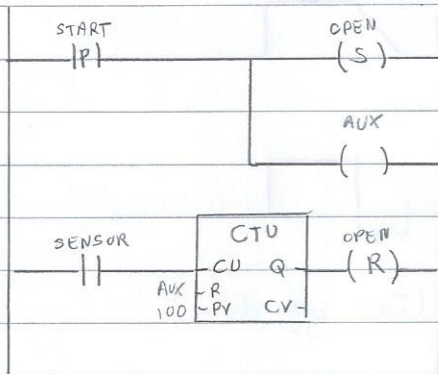
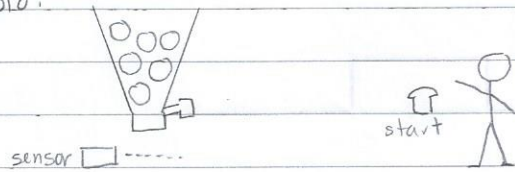
Q: saída

### Contador Bidirecional

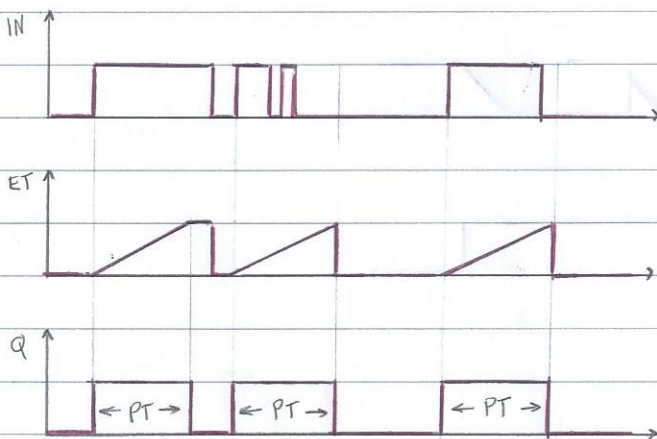
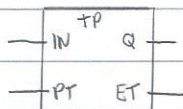


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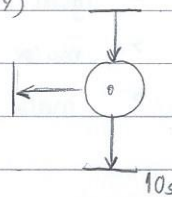
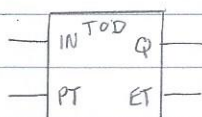
Exemplo:



Temporizador de Pulso

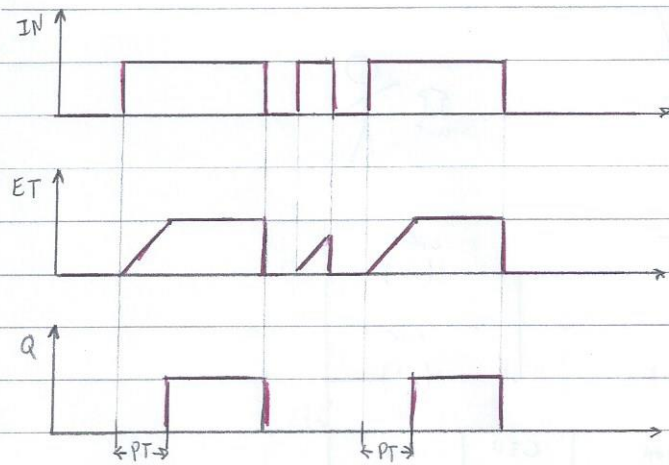


Temporizador com atraso para ligar (Timer on delay)

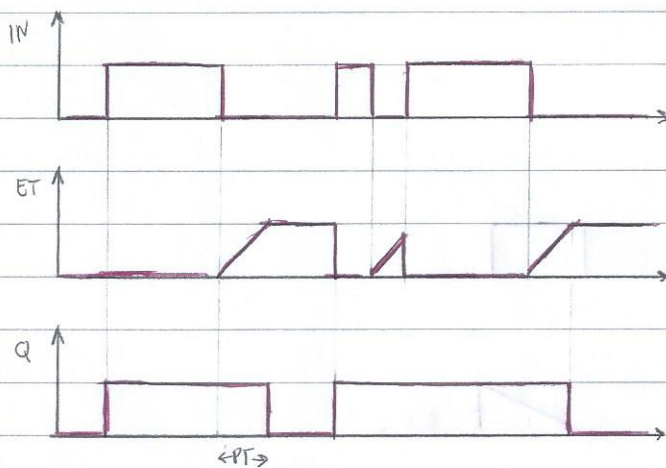
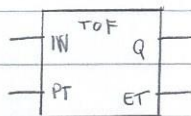




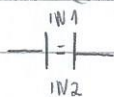
18/06/15



Temporizador com atraso para desligar (Time off delay)



Instruções de Comparação



= igual

>= maior ou igual

> maior

<= menor ou igual

< menor

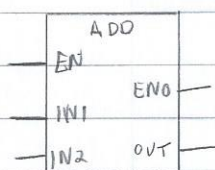
<> diferente





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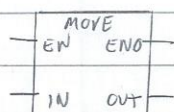
## Instruções Matemáticas



$$OUT = IN1 + IN2$$

ENO → quando termina a conta sai 1

## Instruções para Mover dados



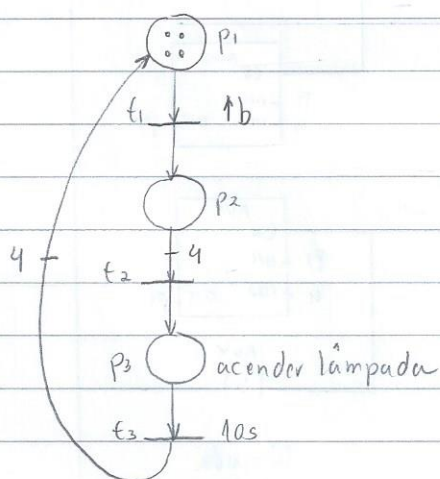
$$OUT = IN$$

## Conversão de RPIC para Ladder

- Ideia básica: dividir o Ladder em módulos

- i) módulo de eventos
- ii) " das condições para o disparo das transições
- iii) " da dinâmica
- iv) " de inicialização
- v) " das ações

## Exemplo: Lâmpada





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