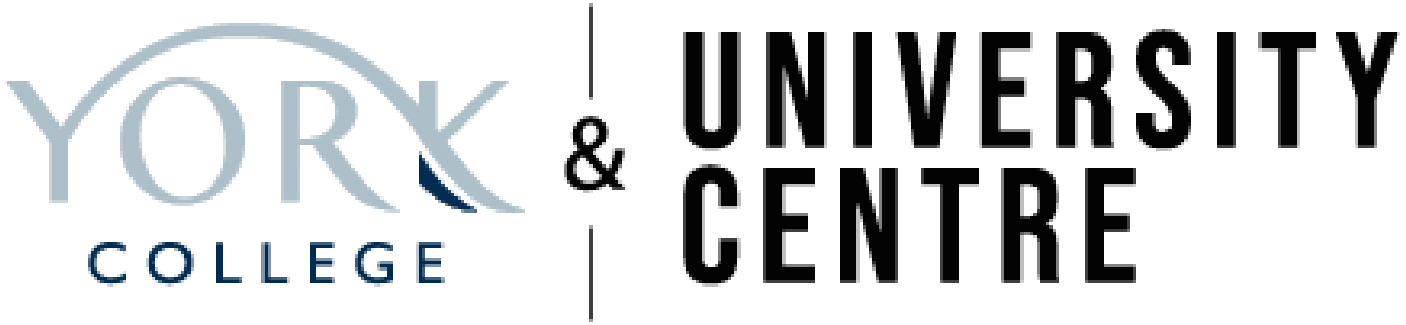
Ladder Logic Functions



Parts of a ladder logic circuit

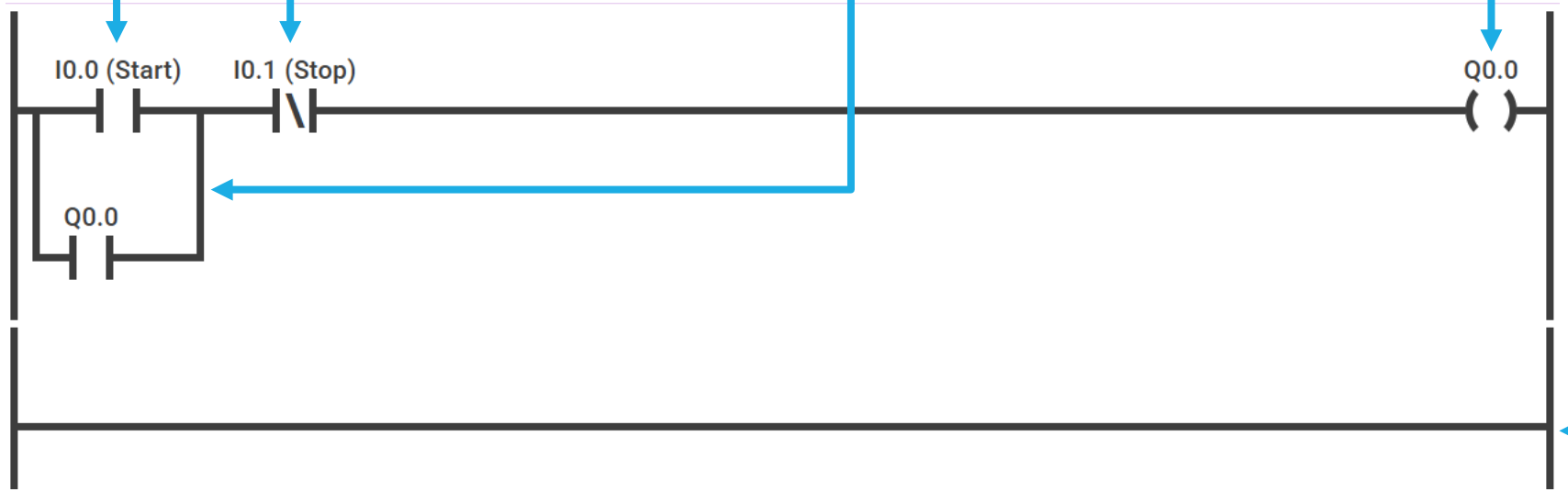
Contact checking for input to complete the line

Contact looking for input to break the line

Branch meaning both things happen

Coil which outputs to a variable
(all rungs must end with a coil)

A rung is a section of code; lower rungs have the power to overwrite values from upper rungs as they are done afterwards



Latching

- Latching allows us to take a pulse input (like the press of a button) and turn it into a continuous on

- It does this using an output value which is then also assigned to a contact on a separate branch

Name	Type	Value
I0.0 (Start)	Bool	False
Q0.0	Bool	False
I0.1 (Stop)	Bool	False

Counters

- Counters allow us to count pulses
- Theres two variables to do with Counters:
  - CV is the control variable or in this term the counter
  - PV is the process variable or in this term the value which the counter will activate when above
- There are 2 main types of counters:
  - CTU increases by 1 every pulse and completes the line when above PV
  - CTD decreases by 1 every pulse and completes the line at 0

Name	Type	Value
I0.0	Bool	False
DB1	Counter	
PV	Number	6
CV	Number	0
CU	Bool	False
CD	Bool	False
R	Bool	False
LD	Bool	False
QU	Bool	False
QD	Bool	True

Timers

- Timers allow us to delay an action happening
- Theres two variables to do with Counters (both in milleseconds):
  - ET is the elapsed time (the time since the timer was activated)
  - PT is the preset time (the value after which the timer will activate)
- There are 2 main types of counters:
  - TON turns on after a set time and turns off instantly when it loses input
  - TOF turns on instantly then turns off after a set time when it loses power

Name	Type	Value
I0.0	Bool	False
Q0.0	Bool	False
Q0.1	Bool	False
DB1	Timer	
PT	Time	2000
ET	Time	0
IN	Bool	False
R	Bool	False
Q	Bool	False
DB2	Timer	

Pulse Clock

- Typically, a pulse or clock would be determined by the scan cycle or the sensors on an external component

- However, if you wish to make an artificial pulse for the purpose of simulating something you can use a TON alongside some contacts to make a pulse