

**EM&CP Blk Tuesday, March 29, 2022**

if <sup>"True" or "False"</sup> <Condition> : Processing — must be a boolean

Python  
if (1):  
    <here>

True  
run

Processing  
if (1):  
    < >  
if (x >= 10) {  
    }  
}

error — must evaluate to true or false  
true or false  
✓

if something is True

if something is True  
number = number + 1

else  
number = number

# Logic — Truth Tables

Symbol for 'and'

$p$	$q$	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

$p$	$\sim p$
T	F
F	T

"negation of p"  
"not p"

Python  $\rightarrow$  0 and 1  
never evaluated  
and

not

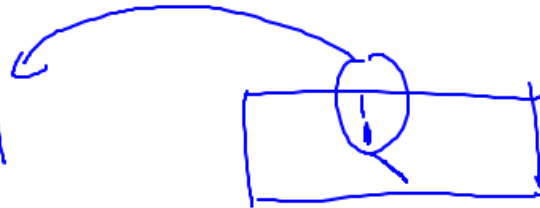
processing &&

OR "V" — symbol for "OR"

P	Q	P V Q
T	T	T
T	F	T
F	T	T
F	F	F

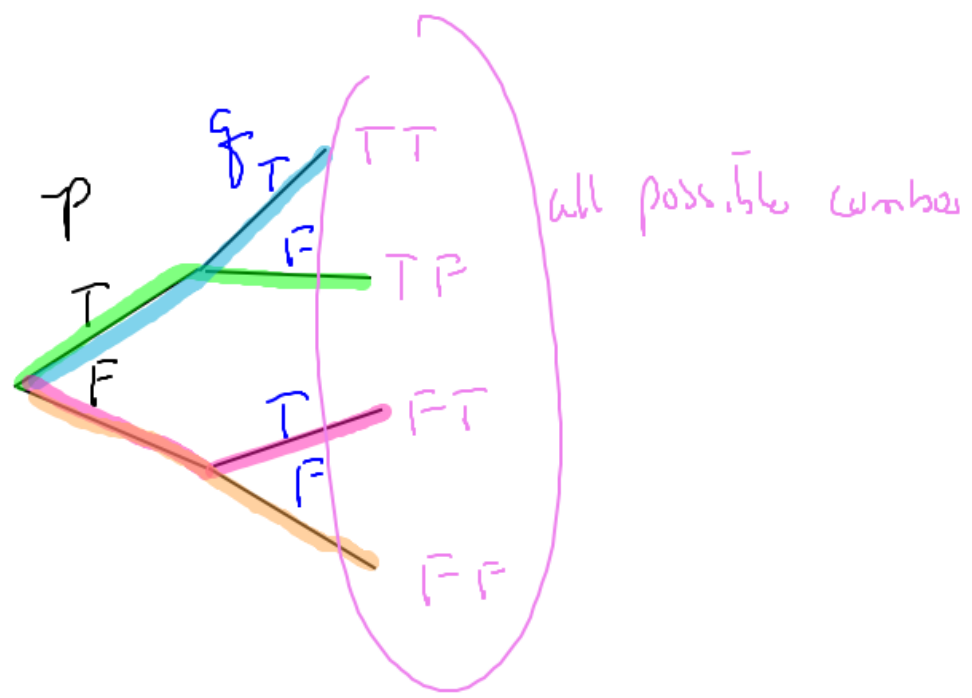
python → or

processing → ||

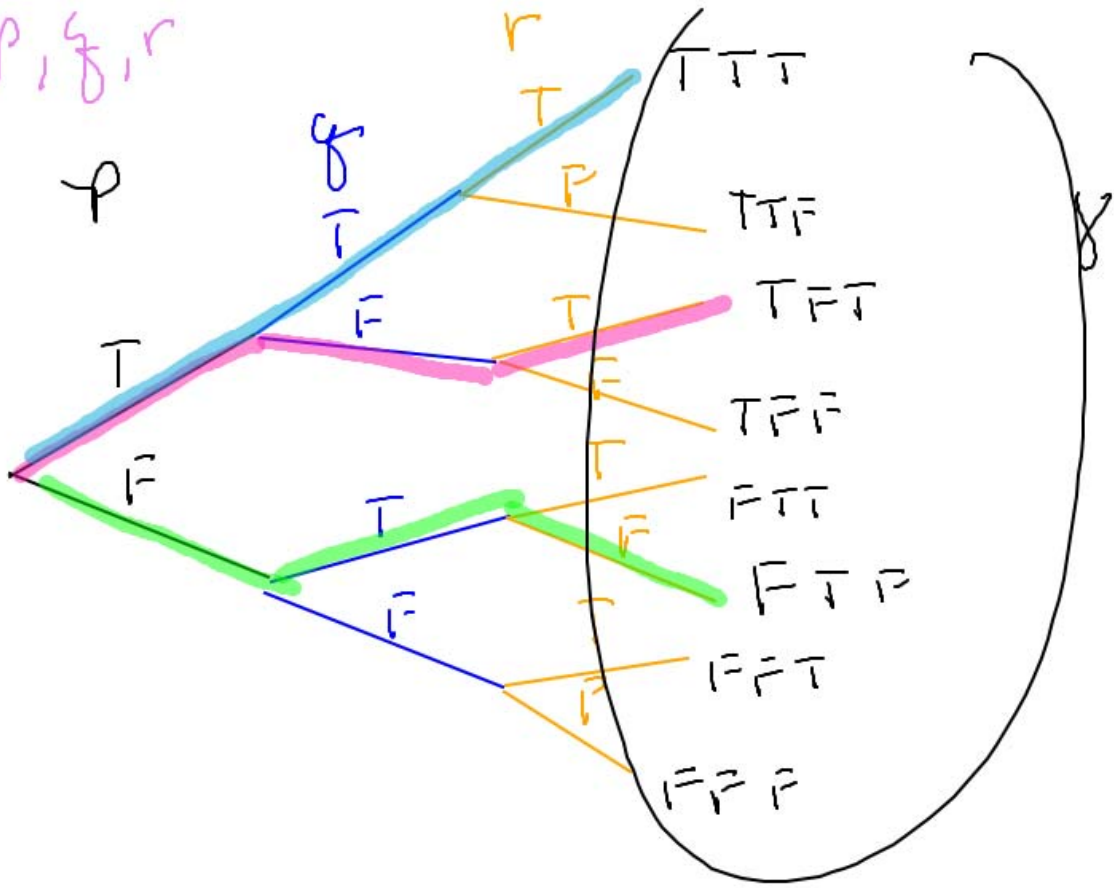


TT  
TF  
FT  
FF

TTT TTF TFT FTT TFF FTF FFT  
FFF 8 Combs



$p, q, r$



$$(\sim p \wedge q) \vee (\sim q)$$

Truth Table

$p$	$q$	$\sim p$	$\sim p \wedge q$	$\sim q$	$(\sim p \wedge q) \vee (\sim q)$
T	T	F	F	F	F
T	F	F	T	T	T
F	T	T	T	F	T
F	F	T	F	T	T

(OR)



$(\sim p \vee \sim q) \wedge (\sim (q \wedge r))$  r, p, q  
 Truth Table

p	q	r	$\sim p$	$\sim q$	$\sim p \vee \sim q$	$q \wedge r$	$\sim (q \wedge r)$	$(\sim p \vee \sim q) \wedge (\sim (q \wedge r))$
T	T	T	F	F	F	T	F	F
T	T	F	F	F	F	F	T	F
T	F	T	F	T	T	T	F	F
T	F	F	F	T	T	F	T	T
F	T	T	T	F	T	T	F	F
F	T	F	T	F	T	F	T	T
F	F	T	T	T	T	T	F	F
F	F	F	T	T	T	F	T	T

you do when you do