Branch

Address   Instructions

PC

x3000
x3001
x3002
.
.
.

PSR: **NZP**

Processor
status
Register

— Changes
when status
changes.

cond

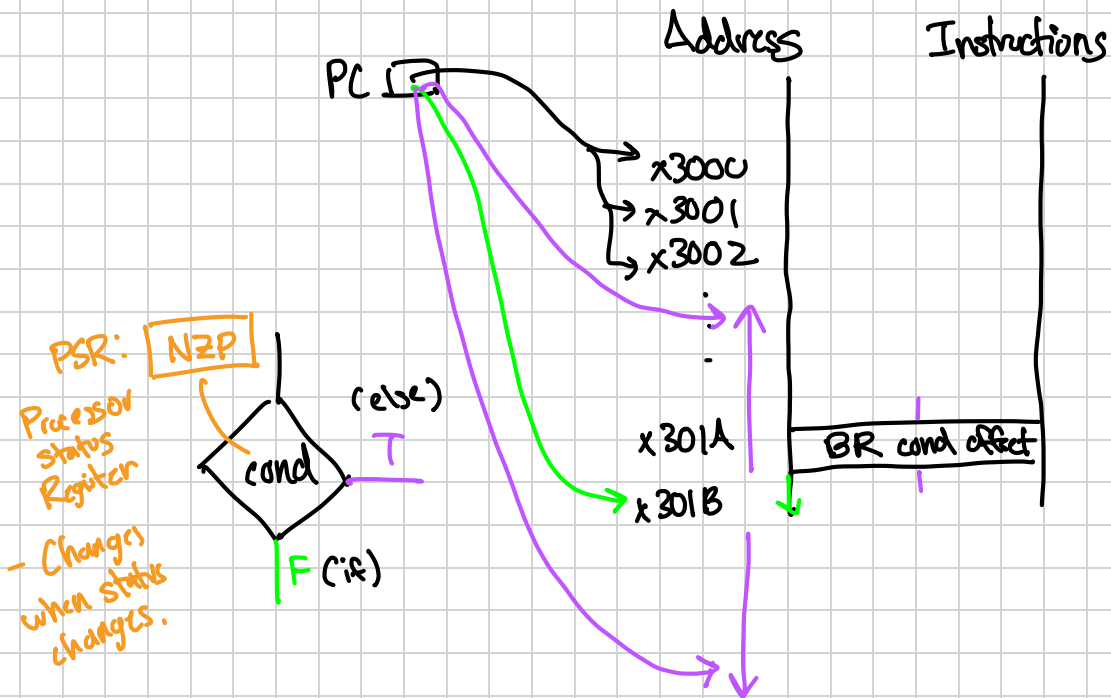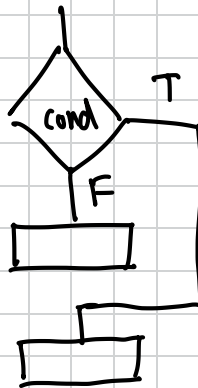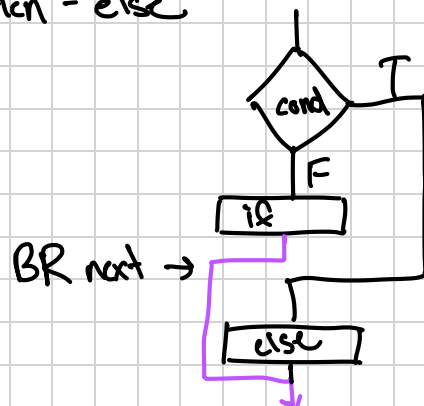(else)

T

F (if)

x301A

x301B

BR cond offset

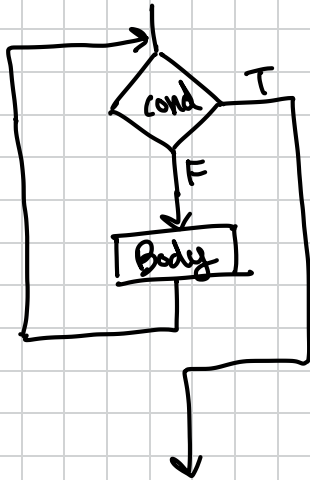# Condition Code (cc) Modifying Instructions

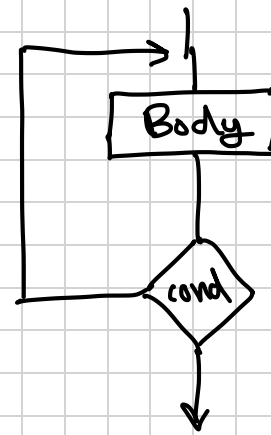# Branches Use
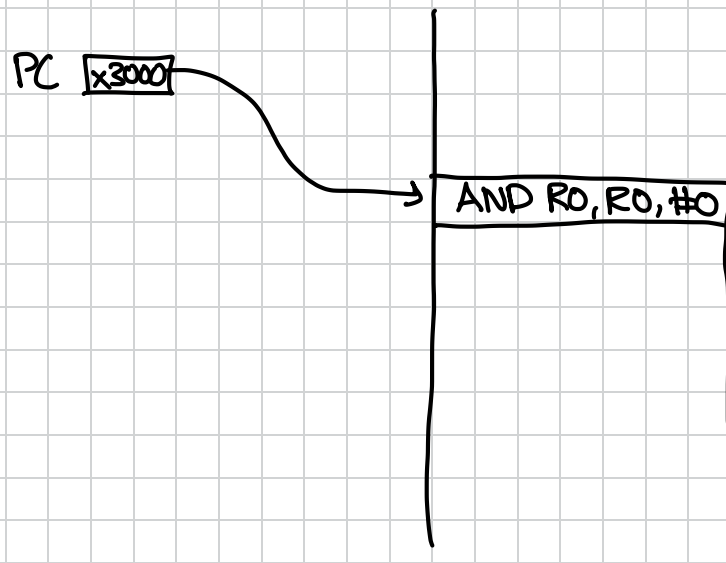
①   if - then

cond   T

F

②   if - then - else

cond   T

F

if

BR next →

else

③

loop

while (cond) {
    Body
}

do-while

while (cond) { Body } diagram:

A flowchart with a decision diamond labeled "cond". The T (true) branch loops to the right and down, and the F (false) branch leads down to a "Body" box. The cond evaluates, and on T exits down to the arrow.

do-while diagram:

A flowchart starting with a "Body" box, leading down to a decision diamond labeled "cond", which loops back up to the Body and exits downward.

Hardware

PC [x3000] → | AND R0, R0, #0 |

- fetch instruction

1 clock cycle	①	$MAR \leftarrow PC$
		$PC \leftarrow PC + 1$
2	②	$MDR \leftarrow M[MAR]$ $R_{/W} \leftarrow 0$
3	③	$IR \leftarrow MDR$

- decode

$IR[15:12]$ ≡ [4 to 16 decoder]

| N | Z | P |