ÇANKAYA UNIVERSITY
COMPUTER ENGINEERING DEPARTMENT

Microprocessors Course (CENG329) Laboratory Manual

Experiment 5
JUMP INSTRUCTIONS

OBJECTIVE
Learn about how to use jump instructions available on eZ8 CPU.

The following table shows jump instructions:

Mnemonic	Operands	Instruction
JP	dst	Jump
JP	cc dst	Jump Conditional
JR	DA	Jump Relative
JR	cc DA	Jump Relative Conditional

Condition Codes:

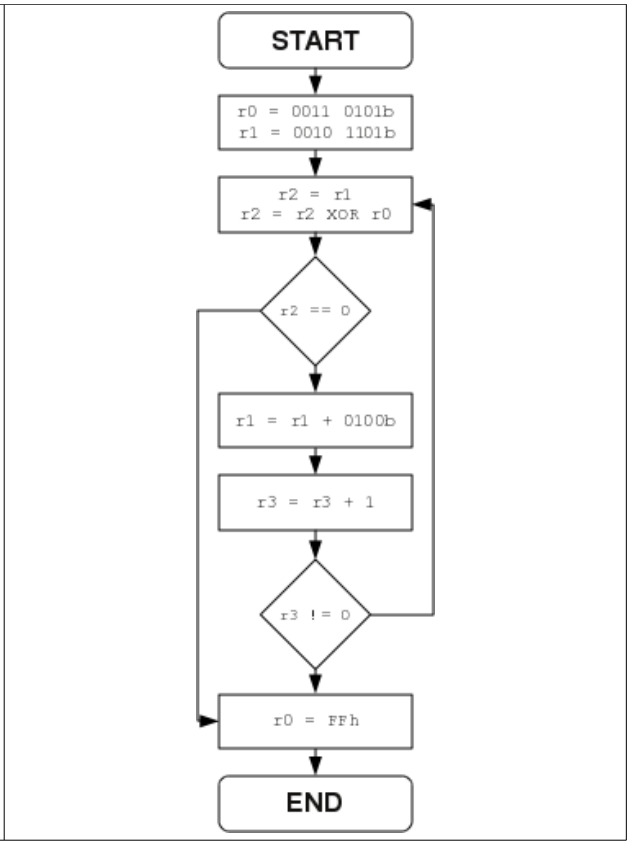
Assembly Mnemonic	Definition	Flag Test Operation
F	Always False	–
LT	Less Than	(S XOR V) = 1
LE	Less Than or Equal	(Z OR (S XOR V)) = 1
ULE	Unsigned Less Than or Equal	(C OR Z) = 1
OV	Overflow	V = 1
Ml	Minus	S = 1
Z	Zero	Z = 1
EQ	Equal	Z = 1
C	Carry	C = 1
ULT	Unsigned Less Than	C = 1
T (or blank)	Always True	–

Condition Codes (cont'd):

Assembly Mnemonic	Definition	Flag Test Operation
GE	Greater Than or Equal	(S XOR V) = 0
GT	Greater Than	(Z OR (S XOR V)) = 0
UGT	Unsigned Greater Than	(C = 0 AND Z = 0) = 1
NOV	No Overflow	V = 0
PL	Plus	S = 0
NZ	Non-Zero	Z = 0
NE	Not Equal	Z = 0
NC	No Carry	C = 0
UGE	Unsigned Greater Than or Equal	C = 0

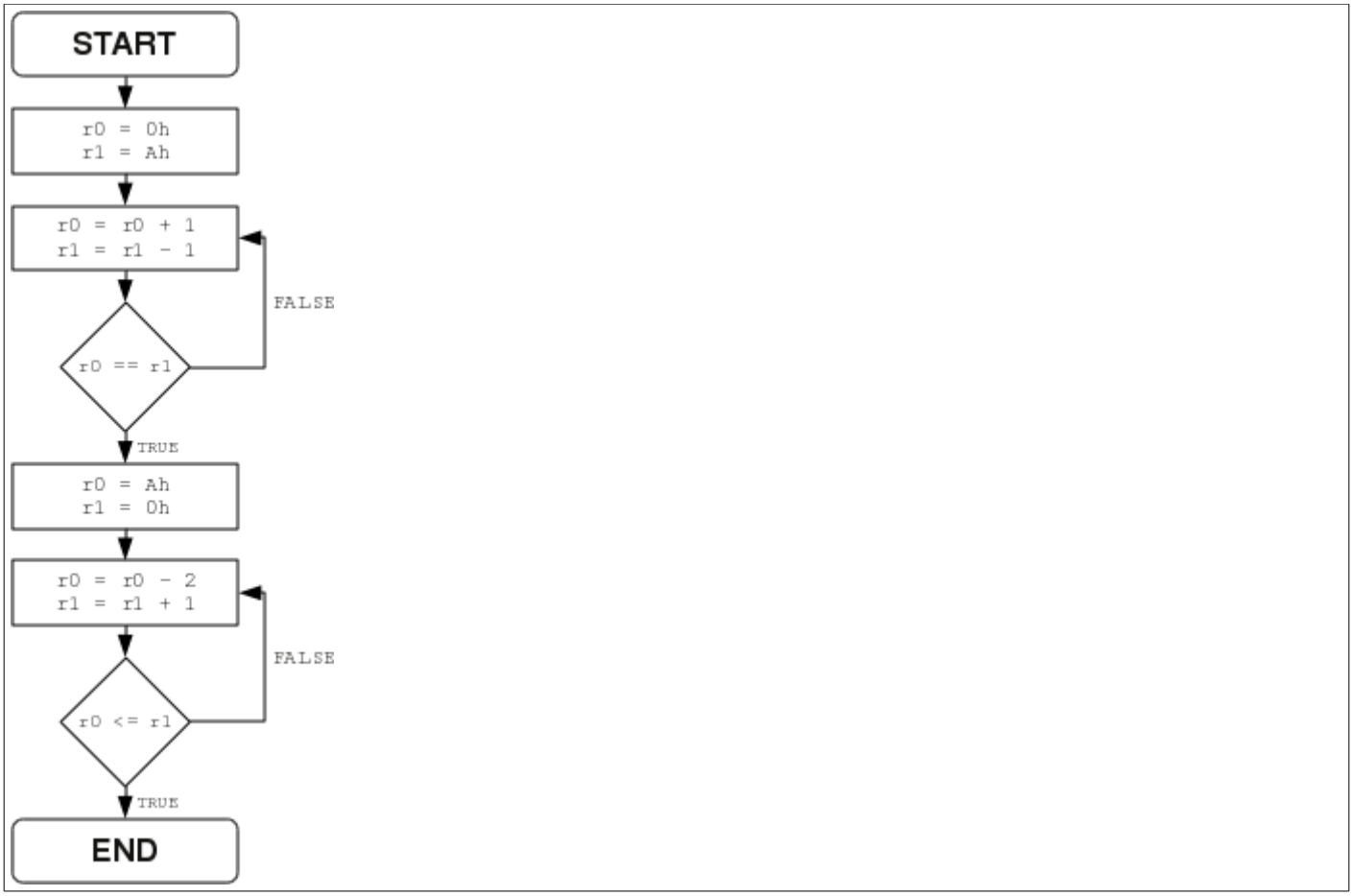
The following code shows briefly how to use jump instructions. Study the code and its flow chart.

```
vector reset = startup
org %1000

startup:
srp #00

part1:
ld r0, #00110101b
ld r1, #00101101b
jr part3     ; Jump to 'part3'

part2:
add r1, #100b
jr part4     ; Jump to 'part4'

part3:
ld r2, r1
xor r2, r0
jr z, part5  ; If R2 is zero, jump to 'part5'
jp 1008h     ; Jump to the instruction with PC = 1008h

part4:
inc r3
jp nz, 100dh ; If R3 is not zero, jump to
             ; the instruction with PC = 100Dh
part5:
ld r0, #ffh
```



EXPERIMENTAL WORK

Study the following flow chart and convert it to assembly code using the methods you have learned so far.



Hint: One of the instructions from last week's arithmetical instructions table will be useful when checking values of two registers.