## COLLEGE OF Engineering – department of computer science

Marie 5 – More loops

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Remember that you can find the ISA here:

<https://github.com/MARIE-js/MARIE.js/wiki/MARIE-Instruction-Set-(with-Opcodes)>

**Task 1:**

Write a Marie program implementing the following code:

Get (x)

While x > 0

If x > 1000

Print(x)

Get(x)

input

store 60

while, skipcond 800 /if x is positive, proceed, else, jump to end

jump end

load 60

subt THOUSAND

skipcond 800 /check if x is more than 0, if not, jump to newx

jump newx

load 60

output

newx, input /update value of x, then return to loop

store 60

jump while

end, halt

THOUSAND, dec 1000

**Task 2:**

Write a Marie program implementing the following code:

Get(x)

Get(y)

While x is different than y

Print(x)

Print(y)

x=x+1

y=y-1

Will this loop always end?

input

store 70

input

store 71

test, load 70 /test to see if the two numbers are equal

subt 71

skipcond 400

jump loop /if they're unequal, go to loop

jump end /if they're equal, jump to end and halt

loop, load 70 /load x and y and add 1 and subt 1, then output

output

load 71

output

load 70

add ONE

store 70

output

load 71

subt ONE

store 71

output

jump test /return to test

end, halt

ONE, dec 1

The loop will never begin if the two inputs are equal. However, if the inputs are different, then it could work either way. Depending on the input, the loop might be infinite, or finite.