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CSE 2130

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Homework #3a

Lab 1 - ALU Operations:

Assembly Code:

.ORIG x3000

LEA R2, xFF

LDR R1, R2, x0

LDR R3, R2, x1

;x+y

ADD R4, R1, R3

STR R4, R2, x2

;x AND y

AND R4, R1, R3

STR R4, R2, x3

;x OR y

NOT R5, R1

NOT R6, R3

AND R4, R5, R6

NOT R4, R4

STR R4, R2, x4

;NOT(x)

NOT R4, R1

STR R4, R2, x5

;NOT(y)

NOT R4, R3

STR R4, R2, x6

;x+3

ADD R4, R1, #3

STR R4, R2, x7

;y-3

ADD R4, R3, #-3

STR R4, R2, x8

;x even or odd

AND R4, R1, x1

STR R4, R2, x9

HALT

.END

.ORIG x3100

.FILL #

.FILL #

.END

Lab 1 Outputs:

Graphical user interface

Description automatically generatedX=9 & Y=-13:

A picture containing text, road

Description automatically generatedX=10 & Y=20:

A picture containing text, road, electronics

Description automatically generatedX-11 & Y=15:

A picture containing graphical user interface

Description automatically generatedX=15 & Y=-11:

A picture containing text, electronics

Description automatically generatedX=9 & Y=12:

Lab 2 - Arithmetic functions:

Assembly Code:

.ORIG x3000

LDI R1, X

LDI R2, Y

;X-Y

NOT R4, R2

ADD R4, R4, #1

ADD R4, R1, R4

STI R4, x\_2

;|X|

ADD R3, R1, #0

BRzp ZP1

NOT R3, R3

ADD R3, R3, #1

ZP1 STI R3, absX

;|Y|

ADD R4, R2, #0

BRzp ZP2

NOT R4, R4

ADD R4, R4, #1

ZP2 STI R4, absY

;|X|&|Y| GREATEST

NOT R5, R4

ADD R5, R5, #1

ADD R5, R3, R5

BRz ZERO

BRp ONE

ADD R5, R3, R5

ADD R5, R4, #0

BRn TWO

ADD R5, R3, R5

ADD R5, R4, #0

ZERO ADD R6, R6, #0

ONE ADD R5, R6, #1

TWO ADD R6, R6, #2

STI R6, Z

HALT

X .FILL X3120

Y .FILL X3121

X\_2 .FILL X3122

absX .FILL X3123

absY .FILL X3124

Z .FILL X3125

.END

Lab 2 Outputs:

A picture containing background pattern

Description automatically generatedX=9 & Y=-13:

A picture containing graphical user interface

Description automatically generatedX=10 & Y=20:

A picture containing background pattern

Description automatically generatedX=-11 & Y=15:

A picture containing graphical user interface

Description automatically generatedX=15 & Y=-11:

Background pattern

Description automatically generated with medium confidenceX=12 & Y=12: