Workshop 1 - SAM Instruction Set Architecture

Discuss and answer the following questions about the SAM Instruction Set Architecture (ISA).

1. List all the elements in the SAM ISA machine state. This is the list of programmer-visible storage elements in the SAM.

2. Write a SAM program to perform and output the calculation ((w+x)-y) where w=123, x=-1, y=3. Give the assembly language for the program along with a symbol table mapping and then give the machine code translation in both hexadecimal and binary in the format shown in the text. Programs must start at location 0 in the SAM. Data should be placed in high memory starting at location 15 and working down, although this is not a requirement.

Assembly language Machine code translation

Label Instr Loc Hex Bin

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0

1

2

3

4

Dat 13

Dat 14

Dat 15

Symbol Table

Label | Addr

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3. Give an exection trace for the assembly program in the previous problem.

Current | Next machine state

## PC instr| PC ACC OUT hex memory contents 16 locations (xx means don't care)

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0 | 0 - -

|

1 0 Lda |

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2 |

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