Binary Instruction Encoding

**Stack Machine: Binary**

.data .data

0x00000000 3 0x0000000000000003

0x00000001 7 0x0000000100000007

0x00000002 5 0x0000000200000005

0x00000003 4 0x0000000300000004

0x00000004 0 0x0000000400000000

.text .text

PUSH 0x00000000 0x0000000000

PUSH 0x00000000 0x0000000000

MUL 0x0300000000

PUSH 0x00000001 0x0000000001

MUL 0x0300000000

PUSH 0x00000000 0x0000000000

PUSH 0x00000002 0x0000000002

MUL 0x0300000000

ADD 0x0200000000

PUSH 0x00000003 0x0000000003

ADD 0x0200000000

POP 0x00000004 0x0100000004

END 0x0400000000

BYTES = 8 bytes(5) + 5 bytes(13) = 105 bytes

**Accumulator Machine: Binary**

.data .data

0x00000000 3 0x0000000000000003

0x00000001 7 0x0000000100000007

0x00000002 5 0x0000000200000005

0x00000003 4 0x0000000300000004

0x00000004 0 0x0000000400000000

.text .text

LOAD 0x00000000 0x0000000000

MUL 0x00000000 0x0300000000

MUL 0x00000001 0x0300000001

STO 0x00000004 0x0100000004

LOAD 0x00000000 0x0000000000

MUL 0x00000002 0x0300000002

ADD 0x00000004 0x0200000004

ADD 0x00000003 0x0200000003

STO 0x00000004 0x0100000004

END 0x0400000000

BYTES = 8 bytes(5) + 5 bytes(10) = 90 bytes

MIPS BYTES = 8 bytes(4) + 5 bytes(9) = 77 bytes