CSS 422: Hardware and Computer Organization

Exercise Set: 68K Manual Assembly

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## Student Name:

# Manually assemble the following 68k Code. Provide the binary (machine code) translation and the hex equivalent.

1. ADDI.B #9, D0

In binary: 0000 0110 0000 0000 0009

In hex: 0600 0009

1. ADDI.B #3,D0 (Tricky question, check ADDQ vs ADDI)

In binary: 0101 0110 0000 0000

In hex : 5600

1. MOVE.W #9, $00002312

In binary: 0011 0001 1111 1100 0000 0000 0000 1100 0010 0011 0001 0010

In hex: 31FC 000C 2312

1. LEA $00004320,A1. Assuming that the statement is: MOVE.B #3, $00004320. What does A1 have now?

In binary: 0100 0011 1111 1000 0100 0011 0010 0000

In hex: 43F8 4320

A1 now has: 00004320

1. NOP

In binary: 0100 1110 0111 0001

In hex: 4E71

# Illegal Assembly Operations

The following assembly instructions refuse to compile; explain the error without using the emulator and in your own words.

1. MOVEA.B $00004900, A3

Answer: MOVEA does not support byte

1. MOVEA.B $00004500, $00003650

Answer: Destination is not an address register

1. ADDQ.W #9,D3

Answer: The immediate data exceeded 8

1. MULU.B #3, D3

Answer: MULU does not support byte

1. ADDI.B #11232, D3

Answer: The value to be added exceed 8 bits

1. ADDQ.B $12,D3

Answer: The value to be added is not an immediate data

1. ORG $1007 ( A warning will pop up)

Answer: The program start at an odd address