Week 2 | Lab Assignment

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**Understand the Program’s Purpose**

The objective of this lab was to simulate the usage of the MC9S12 in the CodeWarrior software and develop on top of the skills we learned week one. The way we develop more of our skillset this week is by examining assembled language labels, directives, and instructions that transfer data between two internal registers (Register A, Register B, Register D) and between memory locations and one internal register (A, B, and D of course). We learn how CodeWarrior organizes sections for proper memory mapped storage. Like the RAM and Constants section. Luckily the hardware we needed for this lab was just our laptop with CodeWarrior pre-installed. The steps needed to write and perform the code were performed when following along with the lab instructions. The lab was divided into a warmup and 3 parts. The output can be seen in the debug window.

**Program Logic**

* All parts consist of a variable both in the constants and ram section and are declared memory. Each command loads register A and stores it to the RAM section of memory. In later parts of the lab, we add a branch command and branch to the beginning of the code.
* Flow Chart

Load register A with constant

Store Accumulator A in RAM ($2100)

* Code written in CodeWarrior.
* ;warm-up

;ldaa #FirstOffset

;staa MyOffset

;nop

;Part I

;ldaa const1 ;Instruction 1

;staa var1 ;Instruction 2

;ldaa #const2 ;Instruction 3

;staa var2 ;Instruction 4

;ldaa #$22 ;Instruction 5

;staa var2+1 ;Instruction 6 ;the next instructions help determine the

;program ends when debugging.

;nop

;Part II

;ldaa #value1 ; 1

;staa var3 ; 2

;adda value2 ; 3

;staa var3 ; 4

;adda value2+1 ; 5

;staa var3 ; 6

;nop ; 7

;bra Entry ; 8

;Part III

ldaa local1 ;1

adda local2 ;2

adda local3 ;3

staa result ;4

nop ;5

BRA Entry ;6

* Screenshots
  + A screenshot of a computer

    Description automatically generated
  + A screenshot of a computer program

    Description automatically generated
  + A screenshot of a computer

    Description automatically generated