

Hakan Gunerli (John Gunerli)

CSC3210,

Assignment 2

CSC 3210 – Assignment #2 Spring 2021

Due date: 03/01/21 11:59 PM

Objective: Learn memory organization/layout, data transfer concepts and instructions, direct memory access, memory allocation.

Requirements:

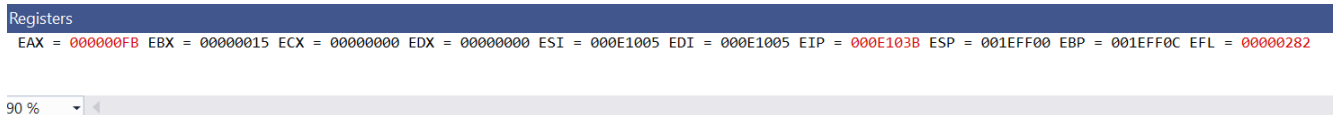
1. **(5 points) Implement the following expression in assembly language:**

$$AL = (val3 + 7) - (var2 + val1) + (5/3)*7$$

- Assume that val1, val2, and val3 are **8-bit integer variables** - Initialize val1 with 12, val2 with 9, and val3 with 2
- You are only allowed to use 8-bit registers.
- Use ONLY mov, add, sub instructions whenever needed. - Use the debugger to verify your answer.

o **Submit the following:**

§ Save your source code as Lastname1.asm and upload the Lastname1.asm
§ Screenshot showing that AL register contains the correct result.



2. **(5 points) Implement the following expression in assembly language:**

$$BX = -val2 + 7 - (-val3 + val1)$$

- Assume that val1, val2, and val3 are **8-bit integer variables**
- Initialize val1 with 12, val2 with 9, and val3 with 2
- You are only allowed to use **16-bit registers** to hold intermediate results, whenever needed.
- Use mov, add, sub, movzx, movzx, or neg instructions whenever needed.
- Use the debugger to verify your answer.

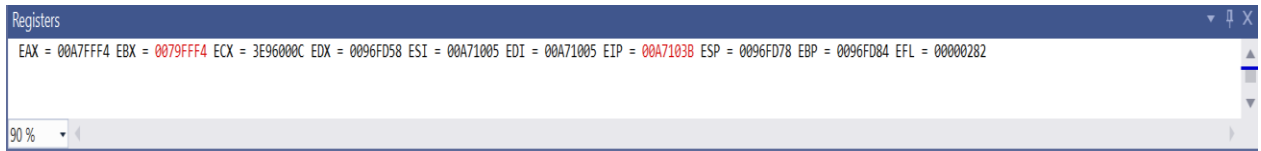
o **Submit the following:**

§ Save your source code as Lastname2.asm and upload the Lastname2.asm
§ Screenshot showing that BX register contains the correct result.

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3. (3 points) True/False

(2.1) The instruction, var BYTE A

Stores character 'A' in to variable named var. **false.**

(2.2) The instruction, var WORD "ABC"

stores the string 'ABC' in to variable named var. **true.**

(2.3) The instruction, var DWORD "ABCD"

stores the characters 'A','B','C','D' in to variable named var. **true.**

4. (2 points) Declare a variable:

Var1 WORD 4 DUP (5 DUP (7))

What is the total size of the array *Var1*? Explain your answer.

4) var1 has 20 elements and each is 1 word long, each word is 2 bytes long thus it is 40 bytes in total.

Note:

- **Submit** your source code by **only** uploading **.ASM file** using **iCollege** in the respective assignment dropbox: \$ Lastname1.ASM, Lastname2.ASM \$

Comment header for .ASM files:

Student: Full name

Class: CSC3210

Assignment#: 2

Description: This program

- Follow the program standards as presented in your book. Pay more attention to code comments and consistent indentation.