

Hands-on Assignment
Full Marks = 5 points

Due date: September 30, 2016

This assignment is to explore MASM assemble program in visual studio. Download Microsoft Visual C++ Express Edition 2015, which contains Microsoft Assembler (MASM), install the Irvine library, and then assemble and run a small example program. (25 points)

1. If you do not already have Visual Studio 2015 or Visual C++ 2015, go to this URL: <http://www.microsoft.com/express/downloads/> and download and install Visual C++ 2015 Express Edition.
2. Go to this URL: <http://kipirvine.com/asm/> and Click on the link marked "Getting Started with MASM and Visual studio 2015". Click the link to install the book's example programs.
3. Follow the directions about opening Visual C++ Express and loading the sample project from directory C:\Irvine\Examples\Project_sample. Locate main.asm under the Solution Explorer window and open main.asm as a program in the editor window where you may examine its lines.
4. Locate the line in main.asm that says "MASM program example" and change the text between the quotes to show your course number (CIS 335), followed by your name and CSU student ID number, for example: "CIS 335 Jason Jones 2345678"
5. Follow the directions to build and run the program. When you see the console window with your name in it, capture and print it. Turn this in as evidence that you have completed this assignment.
6. Build and run the following Hello world program and turn in your output.

```
section .text
    global _start ;must be declared for linker (ld)

_start:
    ;tells linker entry point
    mov     edx,len    ;message length
    mov     ecx,msg    ;message to write
    mov     ebx,1      ;file descriptor (stdout)
    mov     eax,4      ;system call number (sys_write)
    int     0x80       ;call kernel

    mov     eax,1      ;system call number (sys_exit)
    int     0x80       ;call kernel

section .data
    msg db 'Hello, world!', 0xa ;string to be printed
    len equ $ - msg    ;length of the string
```