

Assembly Language

Assignment 3

In this assignment you will learn how to write and run a simple 16bit assembly program with 16 bit assembly utilities, and then you will move to a better, friendly environment by using MS visual studio.

Note: this task is not a group task; every student should complete this task by himself and show a running version of each part to the Lab instructor.

Part 1: 16 bit assembly utilities (worth 10 points)

Environment configuration:

- a. 32bit "x86" Windows (mostly winxp)
 - i. Start the command prompt [run utility>cmd]
- 64 bit windows
 - i. Download DosBox ([download](#))
 - ii. Install and start DosBox and mount specific drive (e.g. D) as following [mount d d:\ ↵]
- b. Download 8086.rar ([download](#))
- c. Extract 8086.rar to specific drive for example D:\
- d. Change directory to drive D as following [d:\8086 ↵]

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1. Using notepad (or any equivalent editors), save the following 16 bit assembly basic program into a file with extension ".asm" (e.g. 1.asm). *Note: save the file in "8086" folder*

```
Title 16-bit sample
.model small
.stack 64
.data

.code
main PROC
    mov ax,7fffh

main EndP
END main
```

2. In the command prompt run the following instruction [d:\8086> masm 1.asm]. This will assemble the program and generate the object file (machine code file: "1.obj"). *Note: "masm" is the Microsoft assembler V5.*
 - a. For "object filename" write [1 ↵]
 - b. For "source listing" write [1 ↵]
3. In the command prompt run the following instruction [d:\8086> link 1.obj]. This will generate the ".exe" file of the program.
4. In the command prompt run [d:\8086>debug 1.exe]
5. In the command prompt run [p ↵], and note the registers' values.
6. Open "1.lst" and describe its contents.

Part 2: Assembly with Visual Studio (worth 10 points)

Please visit:

[Getting Started with MASM - Visual Studio](#)

Follow the instructions to configure Visual Studio 2010. Specifically follow the instructions to:

- I. Install the Book's Example programs (*download the last version*)
- II. Set up Visual Studio
- III. Build the "AddSub.asm" Assembly Program and run without debugging
- IV. Run "AddSub.asm" program in Debug Mode