SSN College of Engineering
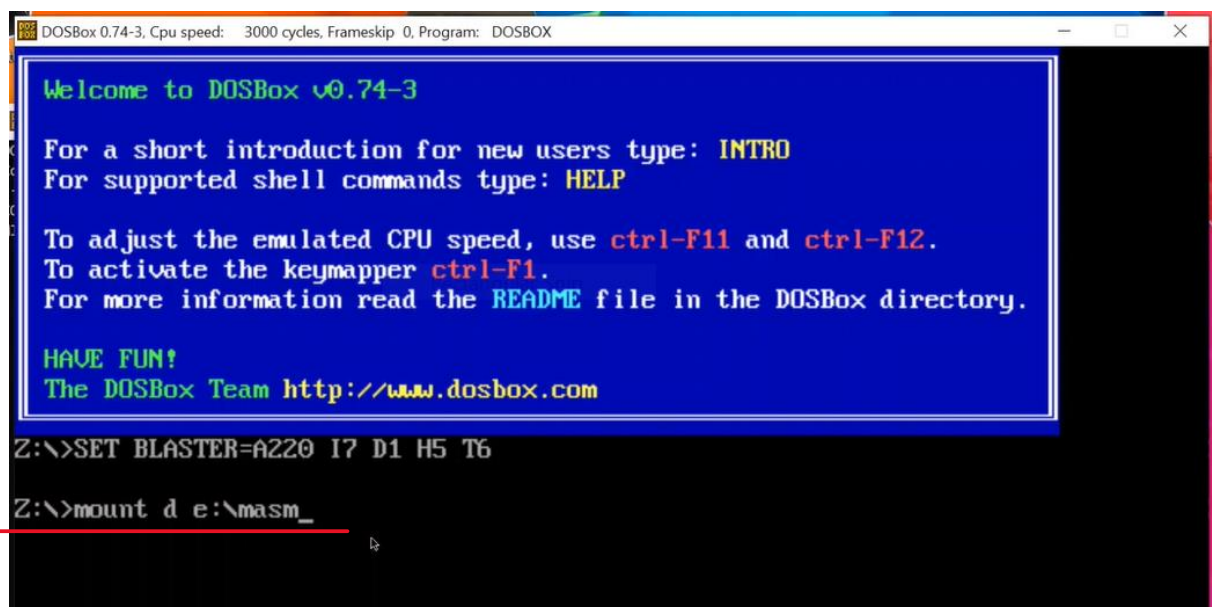# Department of Computer Science and Engineering
III year - UCS1512 – Microprocessors Lab

Procedure for executing 8086 programs in MASM assembler

1. Install the software DOSBox 0.74-3

   (The setup file for windows can be downloaded from the **lab LMS page** or from the following link   https://www.dosbox.com/download.php?main=1)

2. Download the masm.zip file from **lab LMS page** and unzip all files to the folder "masm" (eg: E:\masm\)

3. Run Dosbox and mount your masm folder to a drive in dosbox
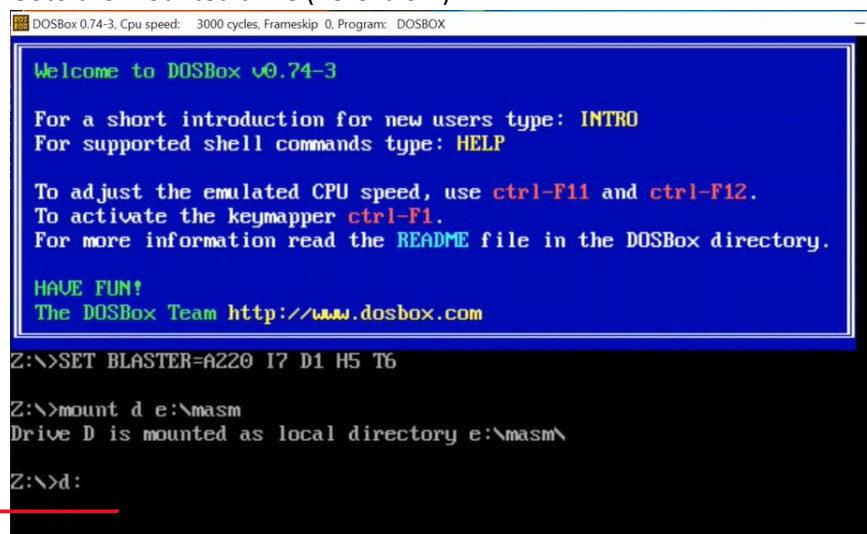
4. Goto the mounted drive (here it is D)

5. Save the 8086 program with extension .asm in the same folder using command "edit".

```
EDIT       EXE           81,864 23-03-2001  1:20
LINK       EXE           42,330 08-07-2009 14:15
MASM       EXE           49,152 19-08-1993 18:50
ML         ERR            9,287 24-09-1993  8:21
ML         EXE          388,608 24-09-1993  8:25
    8 File(s)           986,247 Bytes.
    2 Dir(s)        262,111,744 Bytes free.

D:\>edit 8bitadd.asm
```
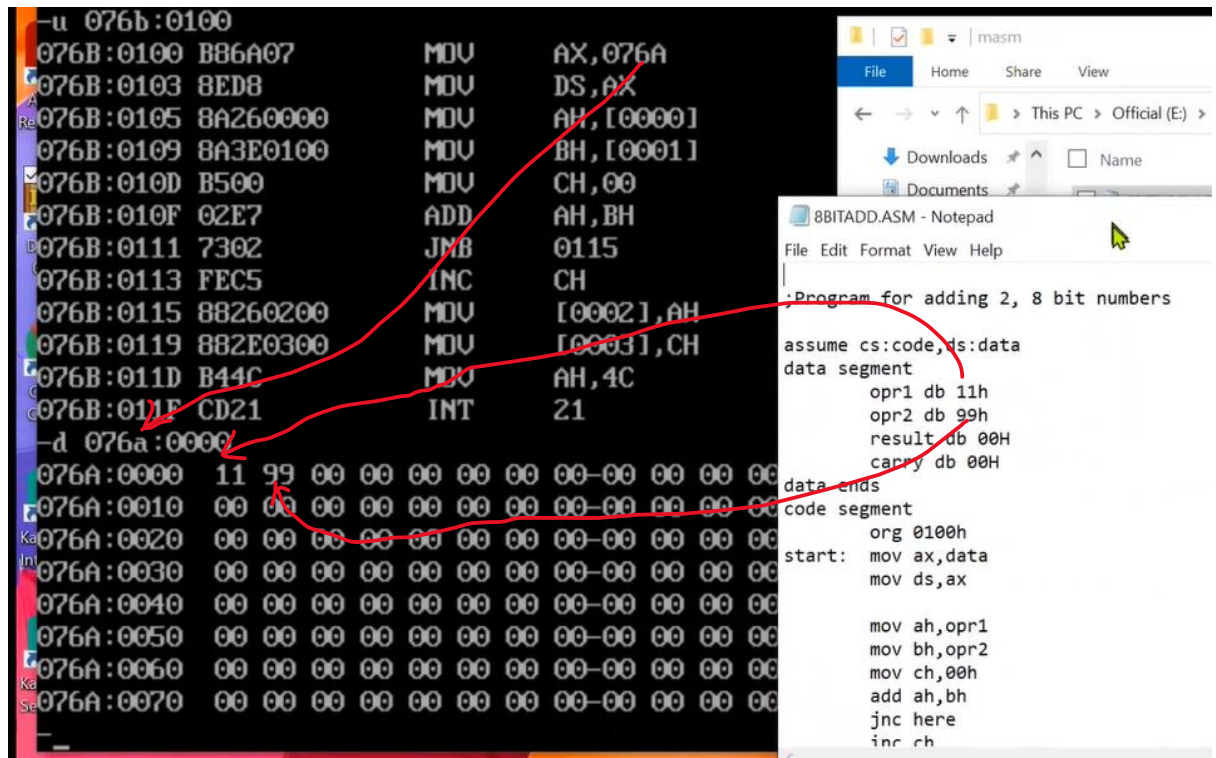
6. After creating the file, assemble it using the command "masm filename.asm"

```
D:\>masm 8BITADD.ASM
Microsoft (R) MASM Compatibility Driver
Copyright (C) Microsoft Corp 1993.  All rights reserved.

 Invoking: ML.EXE /I. /Zm /c /Ta 8BITADD.ASM

Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993.  All rights reserved.

 Assembling: 8BITADD.ASM

D:\>
```

7. Link the file using the command "link filename.obj;"

```
D:\>link 8bitadd.obj;

   Microsoft Object Linker V2.01 (Large)
(C) Copyright 1982, 1983 by Microsoft Inc.

Warning: No STACK segment

There was 1 error detected.

D:\>
```

This warning and error can be neglected as the stack segment is not being used in this program.

8. Use debug command with filename.exe to execute and analyse the memory contents, "debug filename.exe".

9. In debug, command "u" will display the unassembled code

10. Use command "d segment:offset" to see the content of memory locations starting from segment:offset address

11. To change the value in memory, use the command "e segment:offset"

Here "80s" are the new values given by the user . Press space if you want to edit the next location. To stop editing, press enter.
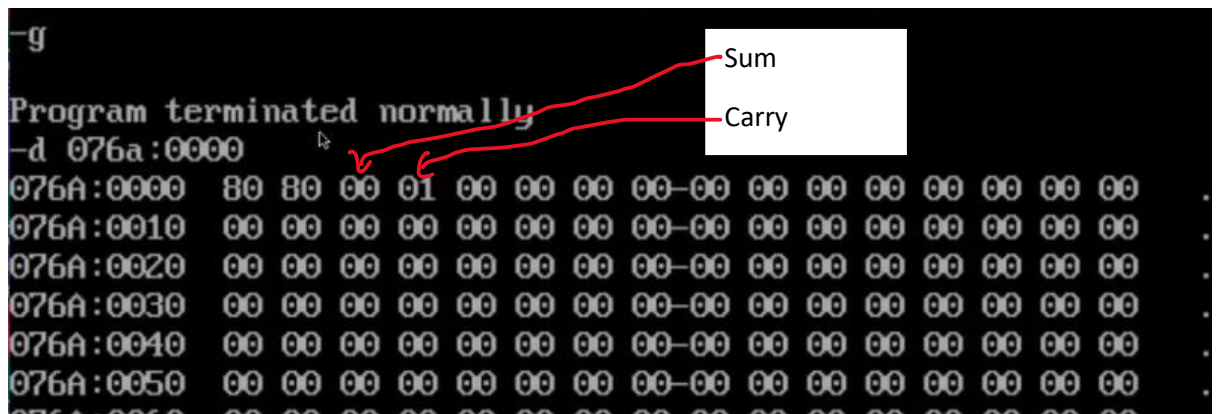
12. Verify the memory contents to ensure the updates (using command "d").

13. Execute using the command "g" and check the outputs.

```
-g

Program terminated normally
-d 076a:0000
076A:0000  80 80 00 01 00 00 00 00-00 00 00 00 00 00 00 00   .
076A:0010  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   .
076A:0020  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   .
076A:0030  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   .
076A:0040  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   .
076A:0050  00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00   .
```

Sum
Carry

14. Command "q" to exit from debug and command "exit" from command prompt to close dosbox

```
-q

D:\>exit
```