Executing the Assembly Language Programs Under Windows XP

This document describes in detail how you can the assembly language programs in the text under Windows XP using the NASM assembler.

Step 1: Getting the Windows version of NASM

Download win32 binaries (a zip file) from <u>http://nasm.sourceforge.net</u>. For example, at the time of this writing, the latest version is <u>nasm-0.98.39-win32.zip</u>.

Unzip to extract all the files (by doubleclicking the zip file). This creates a folder with the following name: nasm-0.98.39-win32. Inside this folder, you see another folder nasm-0.98.39. The NASM assembler is in this folder: nasmw.exe. For convenience, you may rename this to nasm.exe. It is convenient to add this directory to your PATH environment variable (see below).

Updating the PATH variable

Click start and select Control Panel. In the Control Panel, select System. It pops the System Properties window. Press the Advanced tab to get access to Environment Variables (see below).

System Properties						
	System Res	store	Automa	tic Updates		Remote
	General	Comp	uter Name	Hardware	/	\dvanced
	You must be logged on as an Administrator to make most of these changes.					
	Visual effects, processor scheduling, memory usage, and virtual memory					
					<u>S</u> etti	ings
	User Profiles -					
	Desktop settings related to your logon					
					S <u>e</u> tti	ngs
	Startup and Re	covery				
	System startup, system failure, and debugging information					
					Seţti	ings
		Er	nviro <u>n</u> ment Varia	ubles E	iror Repor	ting
	OK Cancel Apply					

Click Environment Variables button to open system and user environment variables (see below).

Environment Variables							
User variables for Owner							
	Variable	Value					
	CLASSPATH	C:\Program Files\PhotoDeluxe BE 1.1\A	_				
	TEMP	C:\Documents and Settings\Owner\Loc					
	TMP	C:\Documents and Settings\Owner\Loc					
		New Edit Deleta	Э				
ſ	§ystem variables —						
	Variable	Value	^				
	ComSpec	C:\WINDOWS\system32\cmd.exe	=				
	NUMBER_OF_PR	2					
	OS	Windows_NT					
	Path	C:\tasm\bin;\texmf\miktex\bin;C:\WIN					
	PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;	×				
		Ne <u>w</u> Ed <u>i</u> t De <u>l</u> eta	3				
		OK Can	cel				

Doubleclick Path (shown highlighted in the above screenshot) or select Path and click the Edit button to edit the system variables (see below).

Edit System Variable				
Variable <u>n</u> ame:	Path			
Variable <u>v</u> alue:	Files\Common Files\Ulead Systems\MPEG			
	OK Cancel			

Place cursor in the Variable value field and press Home key on your keyboard. This takes you to the beginning of the path variable list as shown below.

Edit System Variable		
Variable <u>n</u> ame:	Path	
Variable <u>v</u> alue:	C:\tasm\bin;\texmf\miktex\bin;%SystemR	
	OK Cancel	

Enter the path of the directory that contains the **nasm.exe** file. For example, if it is in C:\NASM_WINDOWS, add C: \NASM_WINDOWS; (don't forget the semicolon) as shown below:

Edit System Variable				
Variable <u>n</u> ame:	Path			
Variable <u>v</u> alue:	C:\NASM_WINDOWS; <mark>D:\tasm\bin;\texmf\</mark> I			
	OK Cancel			

Press OK several times to exit all the popped up windows.

That's it. Now open a command prompt window (if you already opened one, close it and reopen) and try typing

nasm -h

You should see the NASM help information.

Step 2: Getting the Linker

Download **lnk563.exe** from the following URL:

http://download.microsoft.com/download/vc15/Update/1/WIN98/EN-US/Lnk563.exe

Execute this self-extracting file in the Command Prompt window. This gets the linker link.exe we want. For convenience, keep this in the same directory as the nasm.exe.

Now you are ready to execute assembly language programs under Windows XP using the NASM assembler.

Step 3: Running Assembly Programs under Windows XP

First, you need to copy the Windows versions of the programs in the text. You can get them from the book's Web site

http://www.scs.carleton.ca/~sivarama/asm book/.

Do not use the Linux I/O files (io.mac and io.obj). Make sure to use the I/O files that come with the Windows version. Now you are ready!

To assemble a source file (say, addigits.asm), use the following command: nasm -f obj addigits.asm

To link the object files, use link addigits.obj io.obj

This produces **addigits.exe** file.

If you have multiple modules, assemble each and link them together as in the following example (uses two source files **module1.asm** and **module2.asm**)

nasm -f obj module1.asm nasm -f obj module2.asm link module1.obj module2.obj io.obj

Good luck!

Some changes in the source code from their LINUX versions in the textbook

- You will see the following directive

 STACK 100H
 for the stack segment.
- 2. Pointers are 16 bits as opposed 32 bits (this changes offsets in the stack-based parameter passing) and in the **ret** instruction to clear the arguments.

Note

Not all programs are available in the Windows version. In particular, you don't see programs for Chapters 14, 17, and 18 as the programs in these chapters are Linux specific (int 80H, gcc, and so on).