Computer Org. & Assembly Language

Lab#02: Installation & Configuration of TextPad Editor

Agenda

- Installation of TextPad Editor for Assembly language Programming
- Configuring TextPad Editor for Assembly Programming
  - ✓ 16-Bit Real Mode Programs
    - Build 16-Bit MASM
    - Run 16-Bit MASM
  - ✓ 32-Bit Protected Mode Programs
    - Build 32-Bit MASM
    - Run 32-Bit MASM
- Getting started with Assembly Programming
  - ✓ 16-bit Real Mode Program Vs 32-Bit Protected Mode Program
  - ✓ Comments in Assembly Language
    - Multi Line Comments

Installation of TextPad Editor for Assembly language Programming

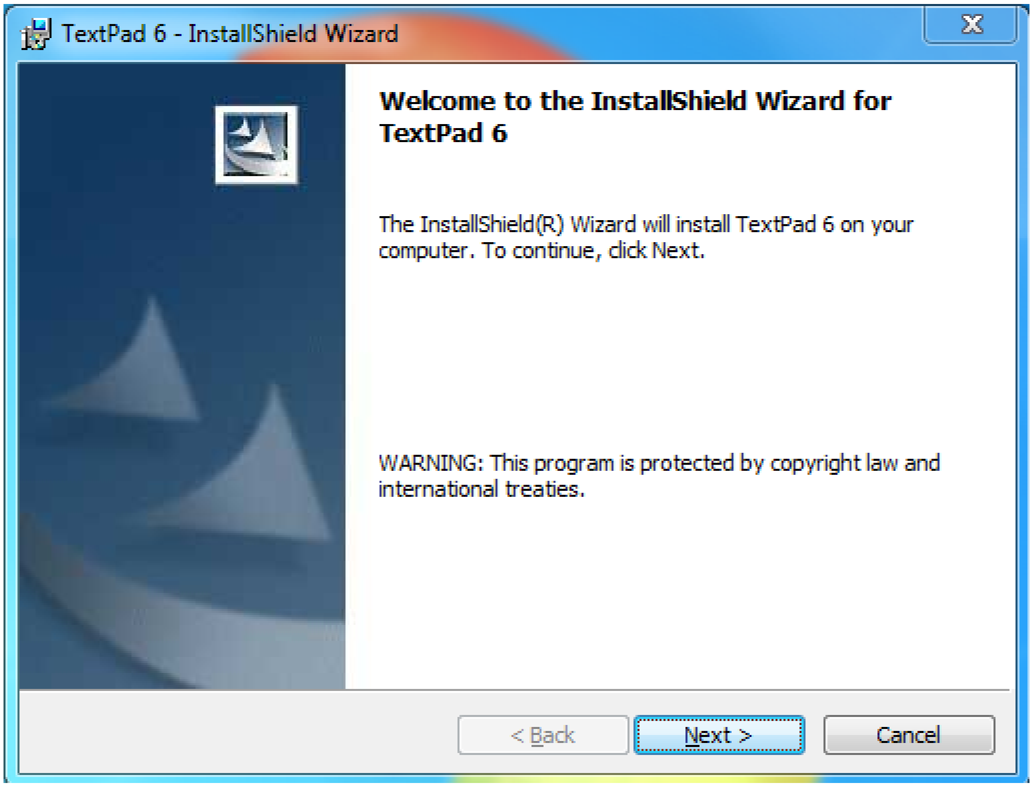
In this short tutorial, we will show you how to add commands to the Tools menu in TextPad, so you can easily assemble and link your assembly language programs.

Download the latest version of TextPad from: http://www.textpad.com/

Or get it from the lectures server.

In this tutorial we will be uisng TextPad6.

Run setup.exe, this will install the TextPad6 Editor.



Welcome to the InstallShield Wizard for TextPad 6

The InstallShield(R) Wizard will install TextPad 6 on your computer. To continue, click Next.

WARNING: This program is protected by copyright law and international treaties.

After the installation is complete, the next step is configure it to assemble and link assembly language programs.

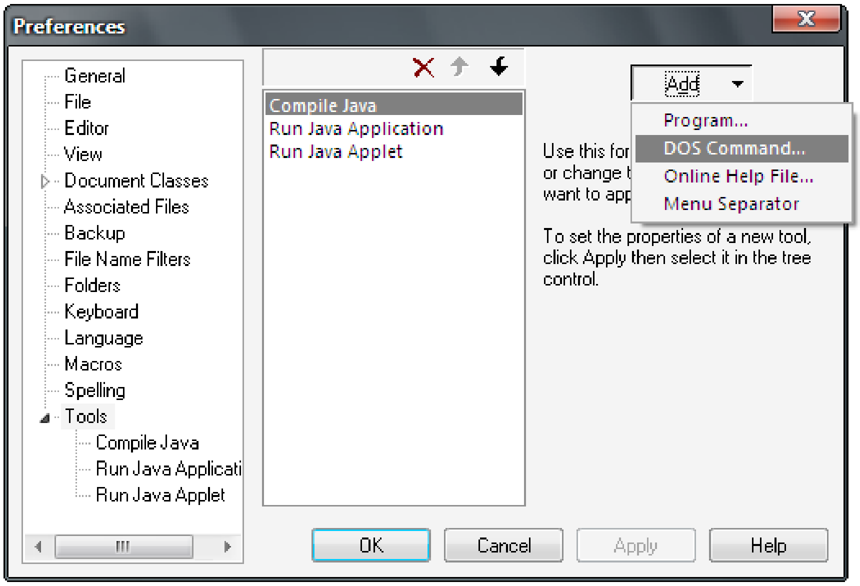
Configuring TextPad4 Editor for Assembly Programming

16-Bit Real-Mode Programs

Step 1: Build 16-Bit MASM

a) Select Preferences from the Configure menu.

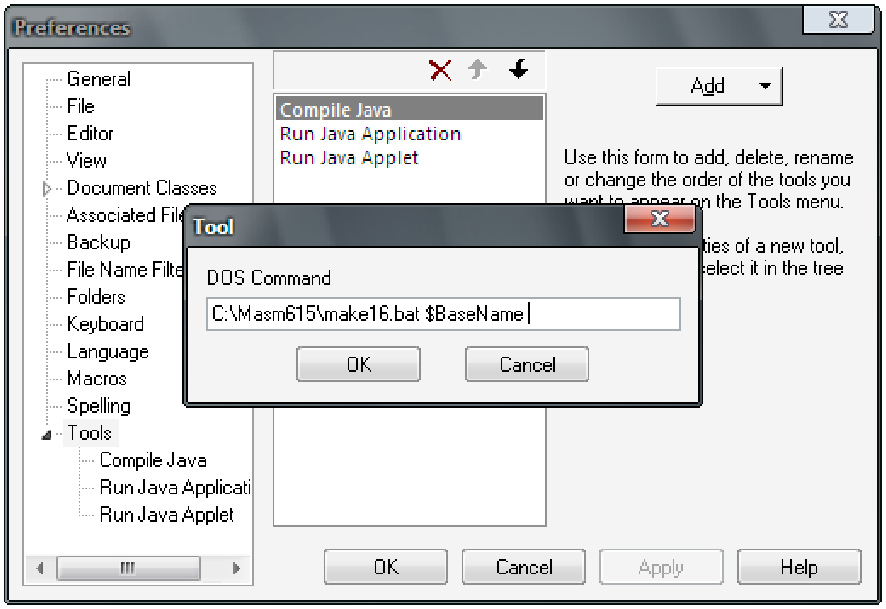
b) Select Tools in the left hand pane, and click the Add button.



c) Select "DOS command..." from the drop-down list.

d) When the popup dialog appears, enter the following and click the OK button:

```
C:\Masm615\make16.bat $BaseName
```

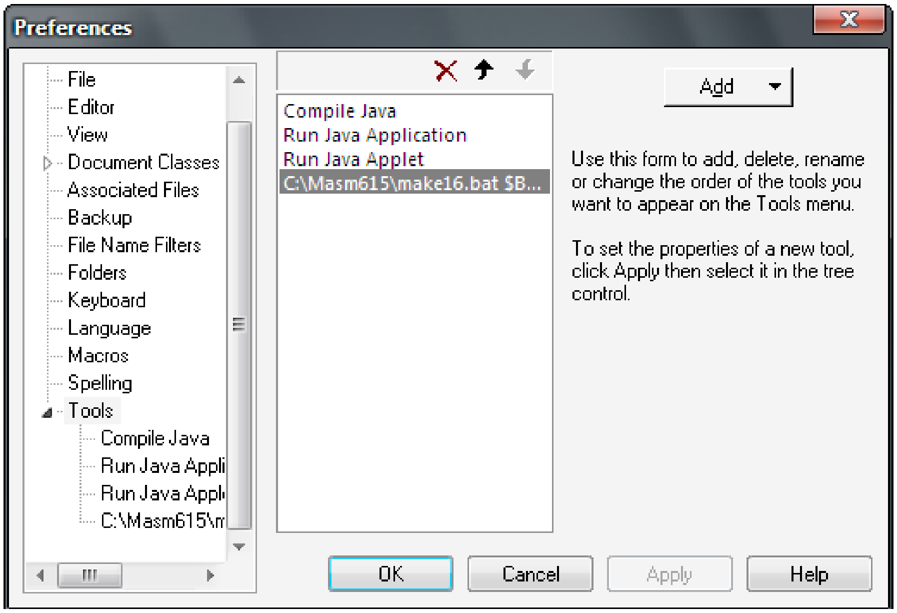


DOS Command: C:\Masm615\make16.bat $BaseName

e) Click the Apply button.

f) Next, you will rename the command to Build 16-Bit MASM. To do this,

g) Click once on Tools in Left Pane, you will see the command entered in the precious step in Right Pane.



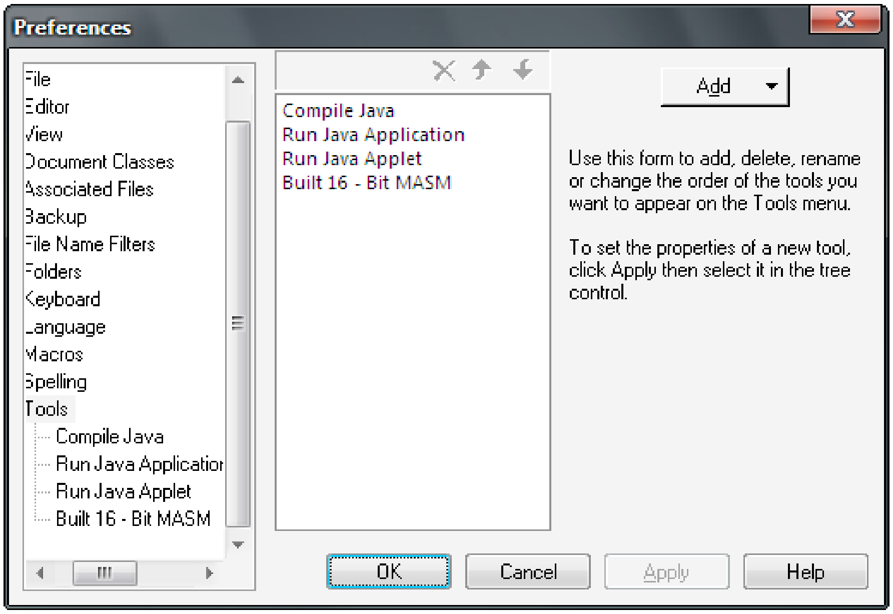
Use this form to add, delete, rename or change the order of the tools you want to appear on the Tools menu.

To set the properties of a new tool, click Apply then select it in the tree control.

- Then click name,
- Wait a second,
- Click again. When it turns blue,
- Retype the command's name and press Enter.

h) Click on Apply button.

i) You will see this command in the Left Pane under Tools Section well as in the Right Pane as in the figure below.



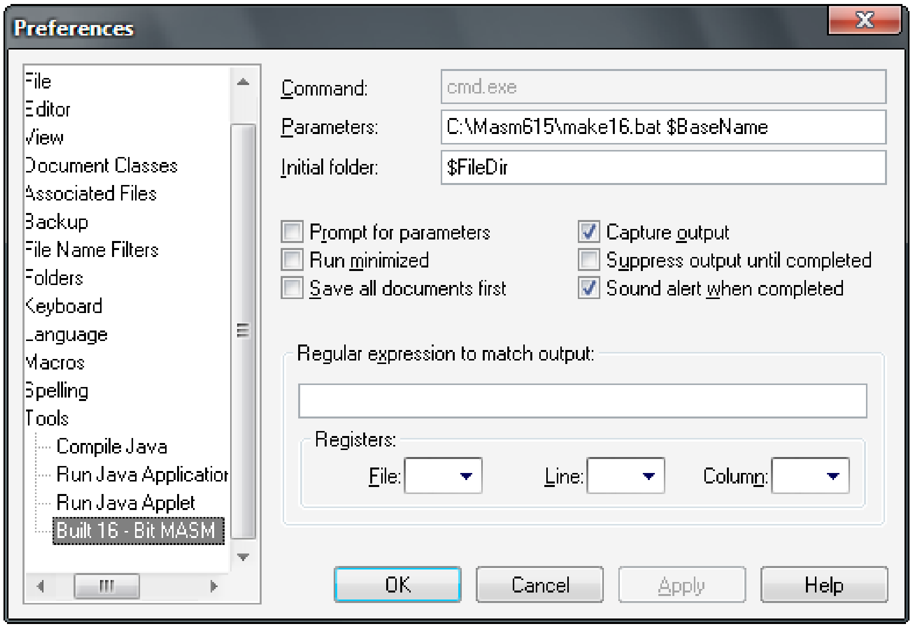
Compile Java
Run Java Application
Run Java Applet
Built 16 - Bit MASM

Use this form to add, delete, rename or change the order of the tools you want to appear on the Tools menu.

To set the properties of a new tool, click Apply then select it in the tree control.

j) Then click on Build 16-Bit MASM command in Left Pane.

k) You will see a panel as in the figure below.



Command: cmd.exe

Parameters: C:\Masm615\make16.bat $BaseName

Initial folder: $FileDir

□ Prompt for parameters
□ Run minimized
□ Save all documents first
☑ Capture output
□ Suppress output until completed
☑ Sound alert when completed

l) In the right-hand pane, if Initial folder entry is empty or written anything else then enter the following:

```
$FileDir
```

m) Finally click OK button to save changes

Note

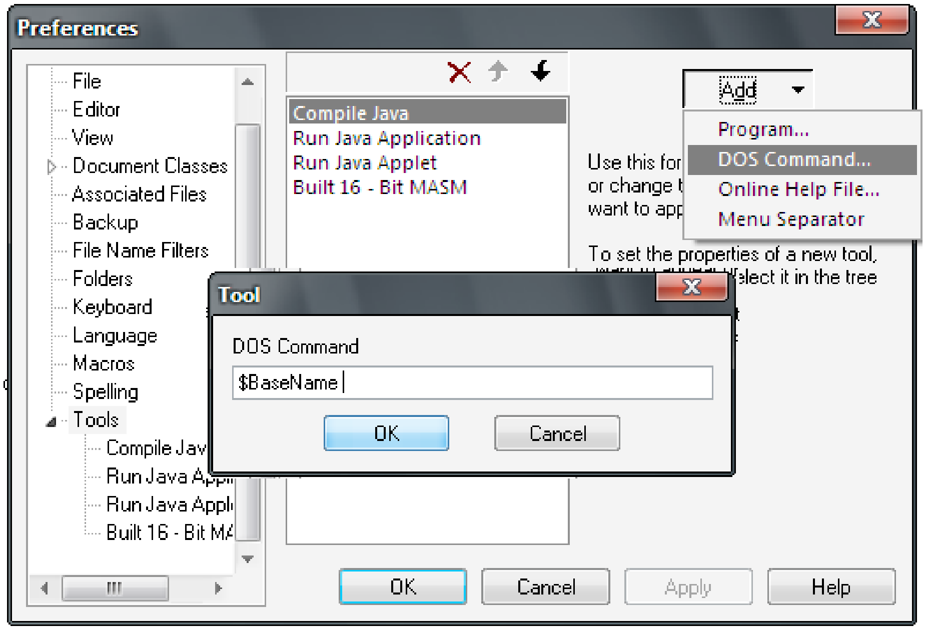
Uncheck the “Capture Output” check boxes for user friendly compilation and execution as a novice user. If you check the “Capture output” option, then execution and assembler's output messages would be in a TextPad Editor’s window.

Step 2: Run 16-Bit MASM

a) As you have already created one command in the Tools menu, we can speed things up a bit.
b) b) Select Preferences from the Configure menu
c) Select Tools in the left hand pane, and click the Add button on the right side same as in above steps.
d) Select” DOS command...” from the drop-down list. When the popup dialog appears, enter the following:

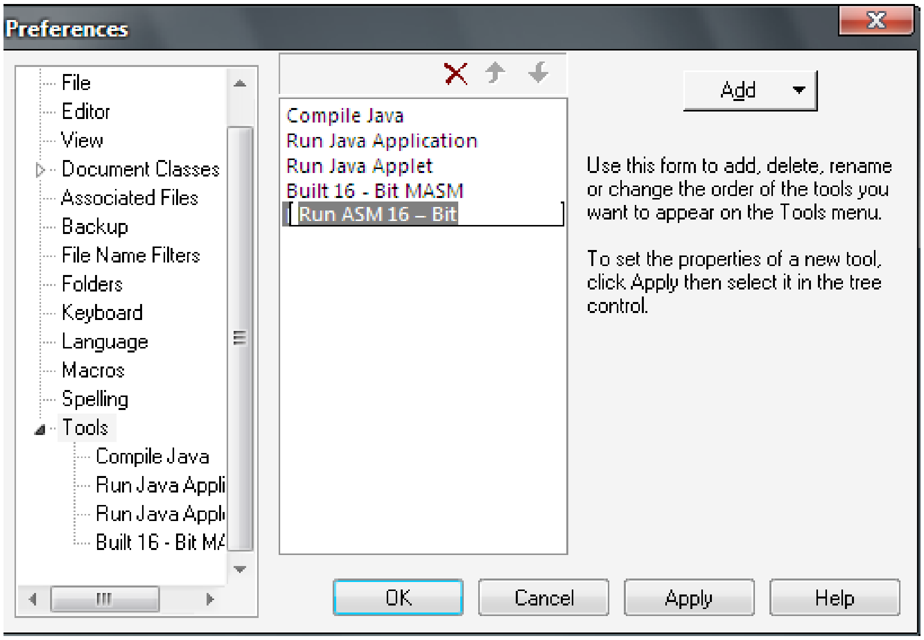
```
$BaseName
```

e) Click on OK and Apply button.



DOS Command: $BaseName

f) Next, rename the command to” Run ASM 16 – Bit”. To do this, click once on the name, wait a second, and click again. When it turns blue, retype the command's name and press Enter. Click Apply same as in above steps.

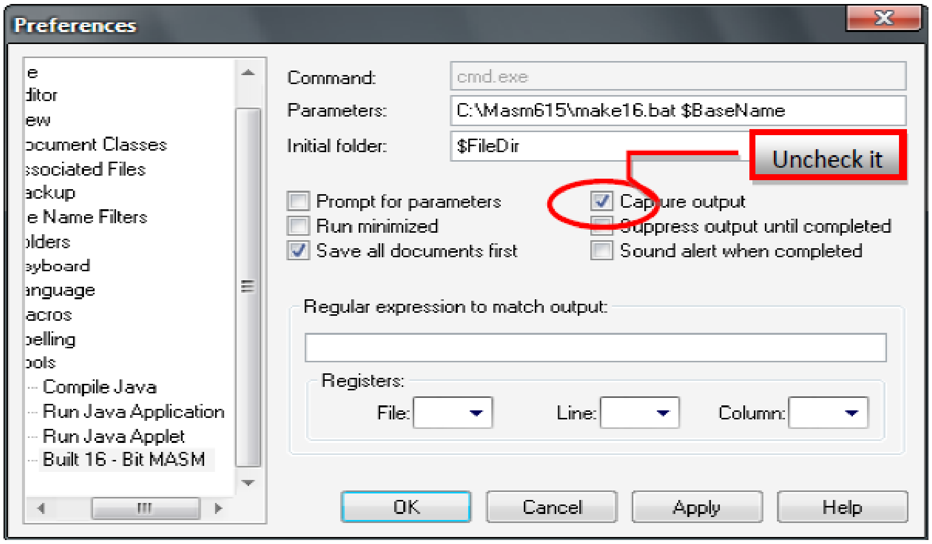


Compile Java
Run Java Application
Run Java Applet
Built 16 - Bit MASM
Run ASM 16 – Bit

Use this form to add, delete, rename or change the order of the tools you want to appear on the Tools menu.

To set the properties of a new tool, click Apply then select it in the tree control.

g) Click on the "+" next to Tools in the left-hand pane. When the list expands, select “Run ASM 16 – Bit”. In the right hand pane of the dialog, remove the check mark next to Capture output.



Command: cmd.exe

Parameters: C:\Masm615\make16.bat $BaseName

Initial folder: $FileDir

☐ Prompt for parameters
☐ Run minimized
☑ Save all documents first
☑ Capture output
☐ Suppress output until completed
☐ Sound alert when completed

Regular expression to match output:

Registers:
File: Line: Column:

Note

Uncheck the “Capture Output” check boxes for user friendly compilation and execution as a novice user. If you check the “Capture output” option, then execution and assembler's output messages would be in a TextPad4 Editor’s window.

h) Finally click OK button to save changes

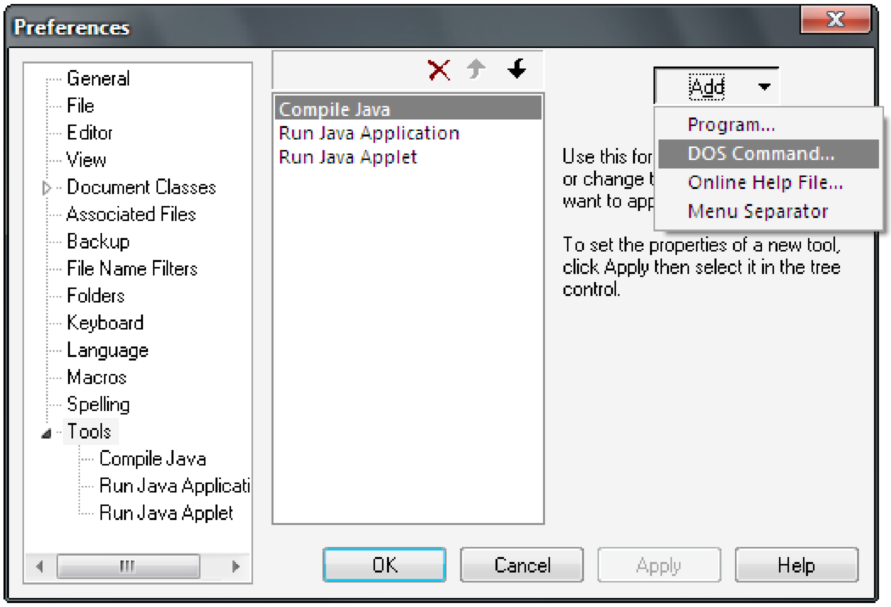
Now you have successfully configured “TextPad Editor” for 16 – Bit Programs of Real Mode.

32-Bit Protected-Mode Programs

Step 1: Build 32-Bit MASM

a) Select Preferences from the Configure menu.

b) Select Tools in the left hand pane, and click the Add button.



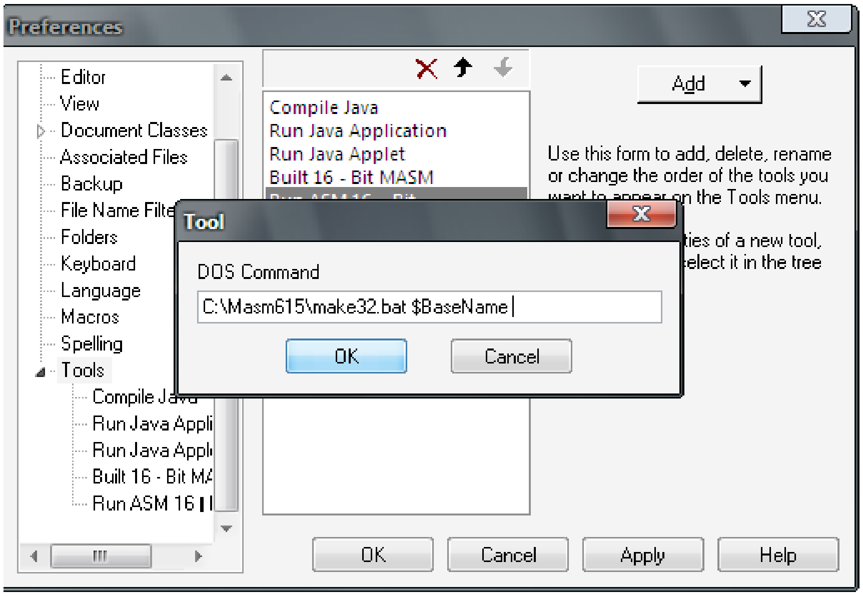
Use this for… or change t… want to app…

To set the properties of a new tool, click Apply then select it in the tree control.

c) Select "DOS command..." from the drop-down list.

d) When the popup dialog appears, enter the following and click the OK button:

```
C:\Masm615\make32.bat $BaseName
```



Use this form to add, delete, rename or change the order of the tools you want to appear on the Tools menu.

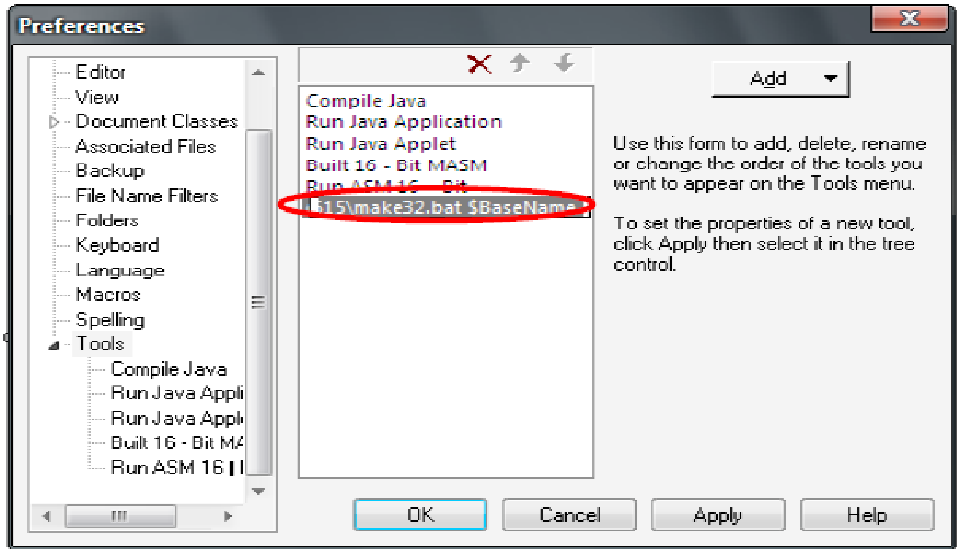
…ties of a new tool, …elect it in the tree

DOS Command: C:\Masm615\make32.bat $BaseName

e) Click the Apply button.

f) Next, you will rename the command to Build 32-Bit MASM. To do this,

- Click once on Tools in Left Pane, you will see the command entered in the precious step in Right Pane.



```
515\make32.bat $BaseName
```

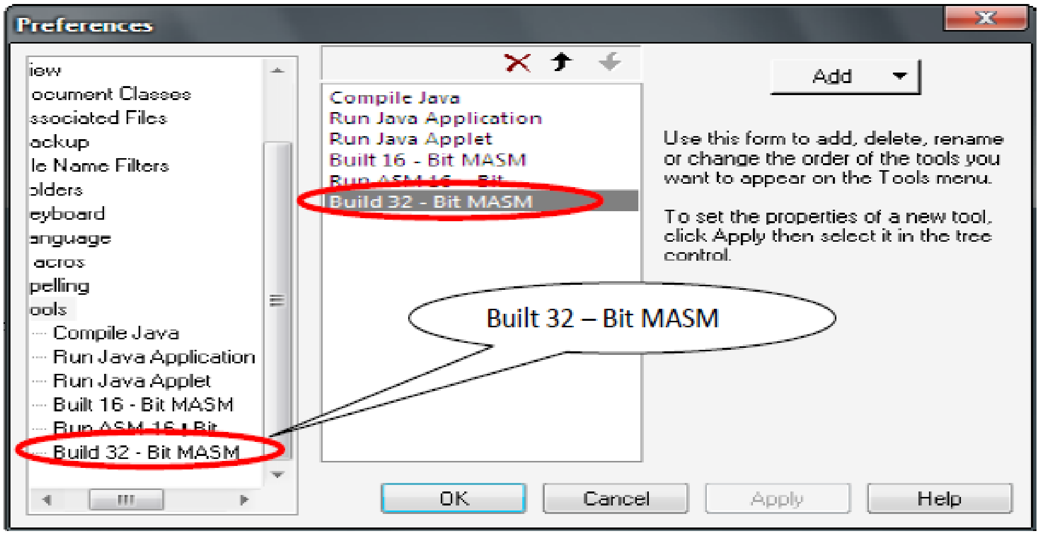
Use this form to add, delete, rename or change the order of the tools you want to appear on the Tools menu.

To set the properties of a new tool, click Apply then select it in the tree control.

- Then click name,
- Wait a second,
- Click again. When it turns blue,
- Retype the command's name and press Enter.

g) Click on Apply button.

h) You will see this command in the Left Pane under Tools Section well as in the Right Pane as in the figure below.



Use this form to add, delete, rename or change the order of the tools you want to appear on the Tools menu.

To set the properties of a new tool, click Apply then select it in the tree control.

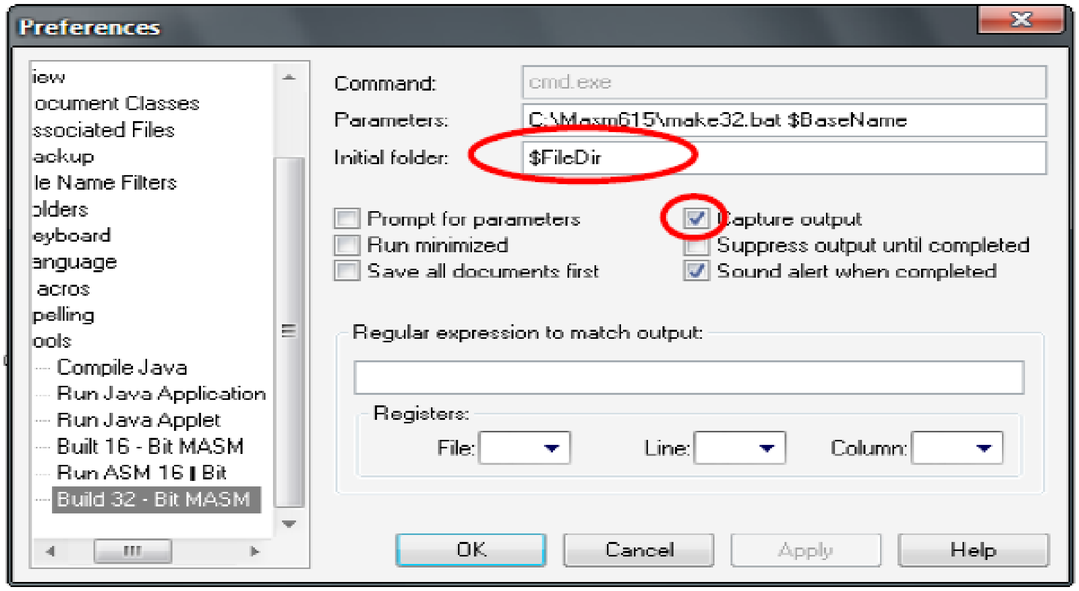
Built 32 – Bit MASM

i) Then click on Build 32-Bit MASM command in Left Pane.

j) You will see a panel as in the figure below.

k) In the right-hand pane, if Initial folder entry is empty or written anything else then enter the following:

```
$FileDir
```



Preferences

Command: cmd.exe

Parameters: C:\Masm615\make32.bat $BaseName

Initial folder: $FileDir

□ Prompt for parameters

☑ Capture output

□ Run minimized

□ Suppress output until completed

□ Save all documents first

☑ Sound alert when completed

Regular expression to match output:

Registers: File: Line: Column:

l) Finally click OK button to save changes

Note

Uncheck the “Capture Output” check boxes for user friendly compilation and execution as a novice user.

If you check the “Capture output” option, then execution and assembler's output messages would be in a TextPad Editor window.

Step 2: Run 32-Bit MASM

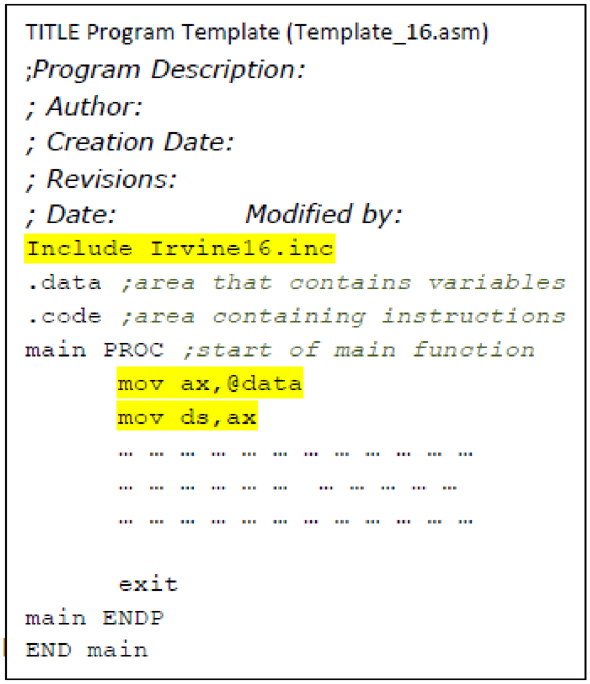
Same procedure for running 16-Bit MASM programs.

Getting Started with Assembly Programming

16 – Bit Real Mode Program vs. 32 – Bit Protected Mode Program

As there is a difference between Real Mode and Protected Mode, in the same way there is structural difference between these both mode programs using Irvine's Libraries.

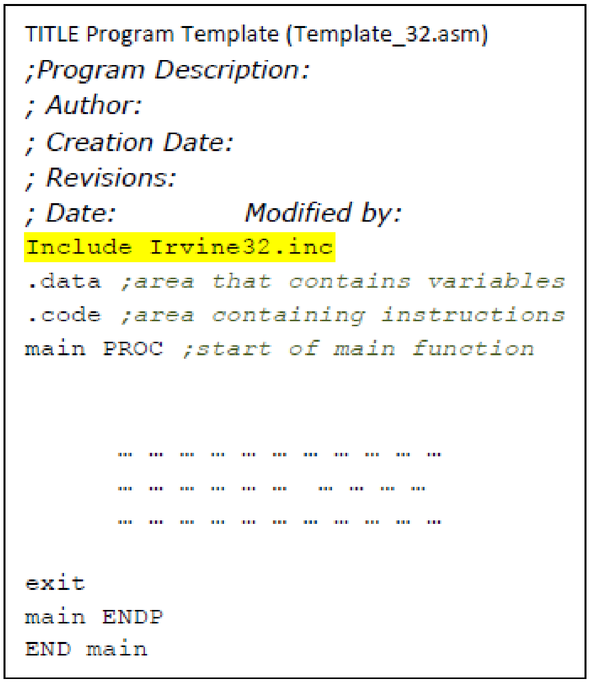
16 – Bit Real Mode Program Template



```
TITLE Program Template (Template_16.asm)
;Program Description:
; Author:
; Creation Date:
; Revisions:
; Date:           Modified by:
Include Irvine16.inc
.data ;area that contains variables
.code ;area containing instructions
main PROC ;start of main function
      mov ax,@data
      mov ds,ax
      … … … … … … … … … … … …
      … … … … … …   … … … … …
      … … … … … … … … … … … …

      exit
main ENDP
END main
```

32 – Bit Protected Mode Program



```
TITLE Program Template (Template_32.asm)
;Program Description:
; Author:
; Creation Date:
; Revisions:
; Date:           Modified by:
Include Irvine32.inc
.data ;area that contains variables
.code ;area containing instructions
main PROC ;start of main function


      … … … … … … … … … … …
      … … … … … …   … … … …
      … … … … … … … … … … …

exit
main ENDP
END main
```

These are templates for both types of programs. Highlighted lines are different in the both type of programs. This structure has to follow for corresponding modes. These templates are prepared by using Irvine Libraries.

Note

Semicolon (;) is used to comment the statement.

Comment in Assembly Language

Comments are good and recommended in programming for best understanding and readability of the code. You can explain the program's purpose, creation date and many more.

Single Line Comments

Semicolon (;) is used for single line comment

Multi-Line Comments

It begins with COMMENT directive and a programmer-chosen character end with the same programmer-chosen character. E.g.

```
COMMENT @

««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««

________________Hello World In Assembly using TextPad ________________________

________________This is Lab # 02 ___________________________________________________

________________ Creation Date. 03.09.2013 ____________________________________

««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««««

@
```

Tasks

Task # 1. Show the successful configuration of TextPad Editor with Masm.

Task # 2. Assemble & Link some sample examples