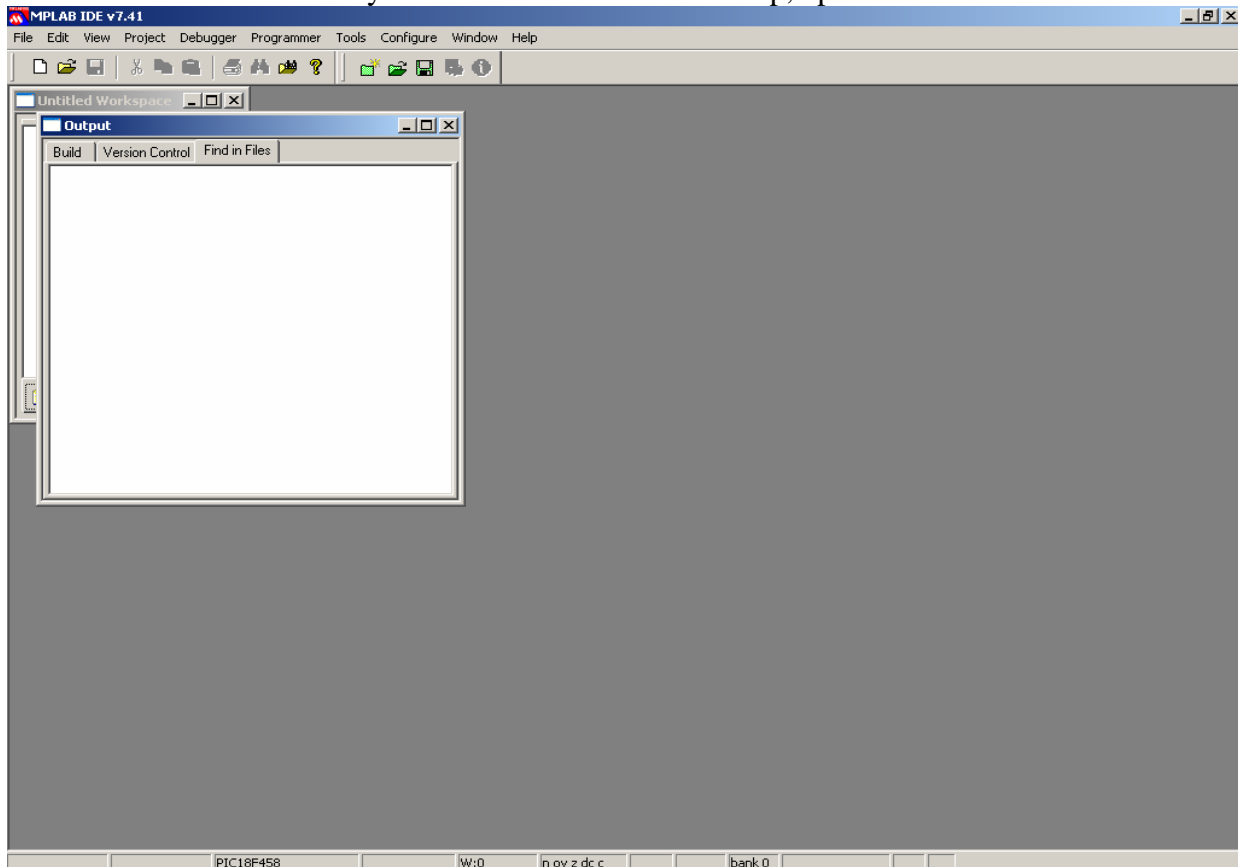
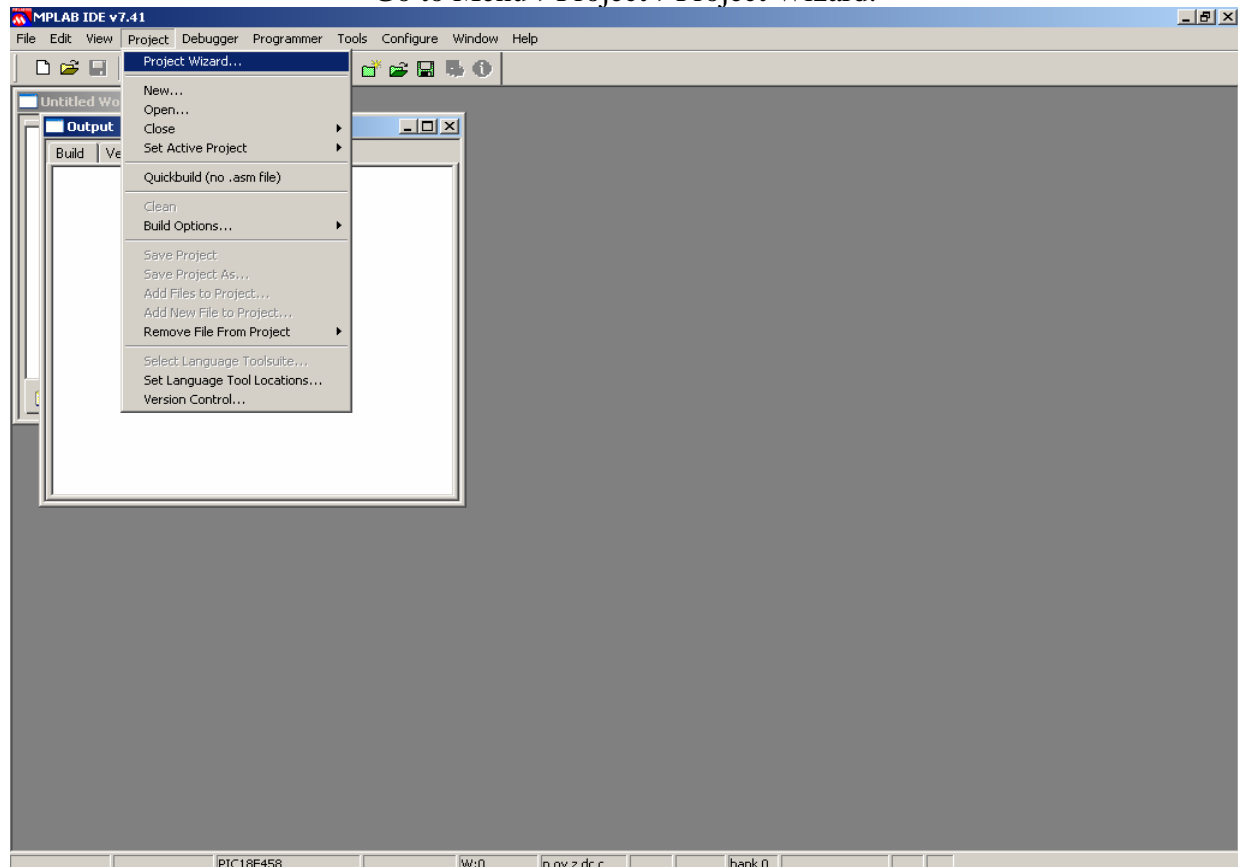


# MPLAB Tutorial

1. First download both MPLAB and C18 and install them into the default directories (see [www.microdigitaled.com](http://www.microdigitaled.com) for instructions).
2. After you have finished the above step, open MPLAB.

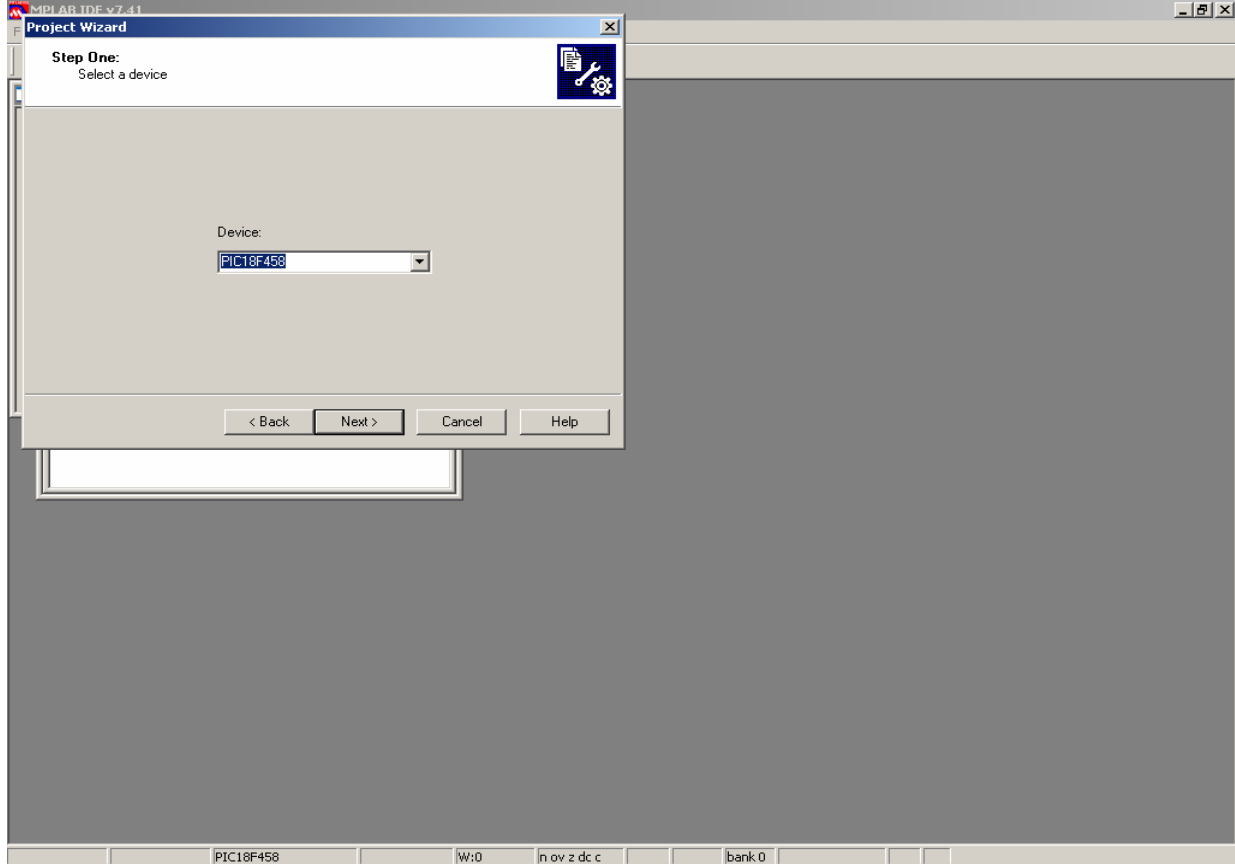


Go to Menu->Project->Project Wizard.

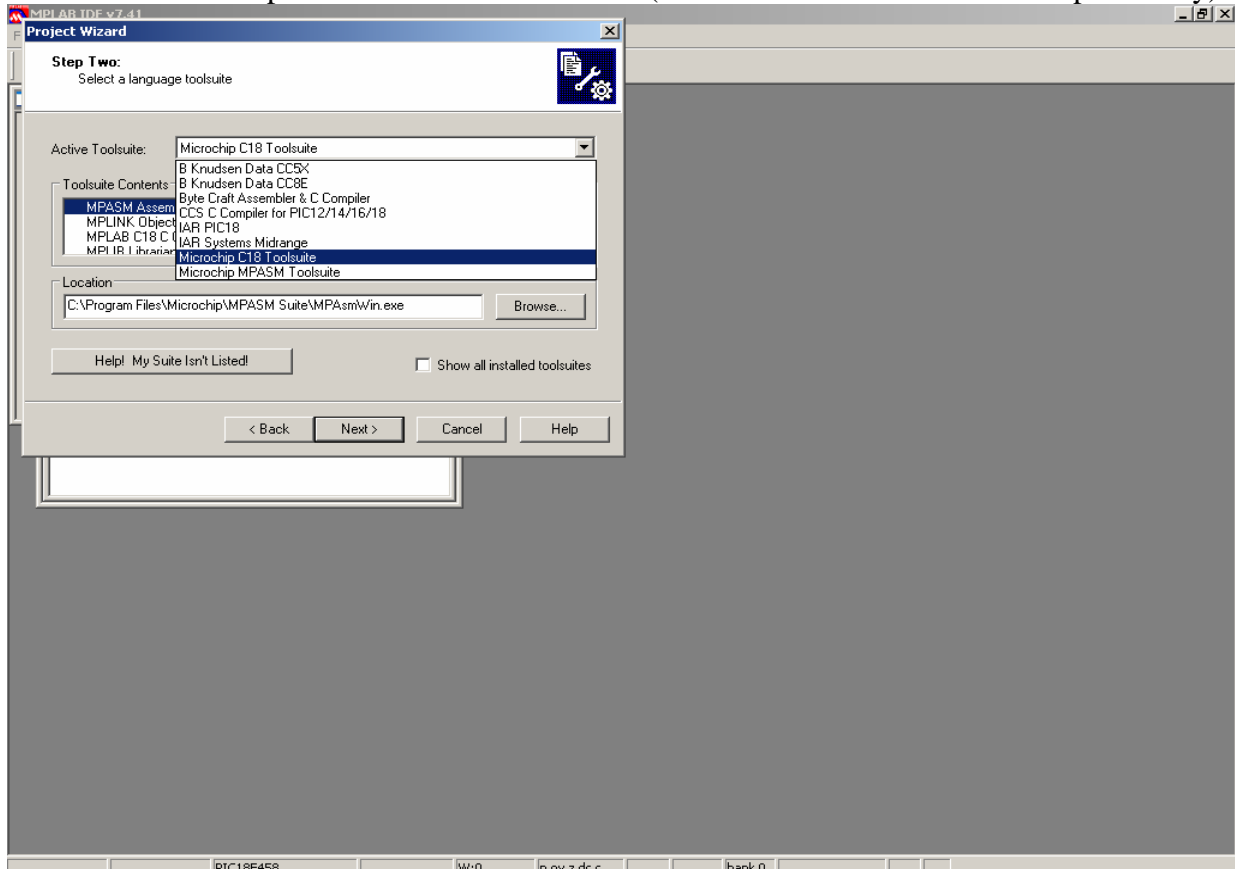


# MPLAB Tutorial

Hit Next to bypass the Welcome screen and select the PIC processor for the project and hit Next.

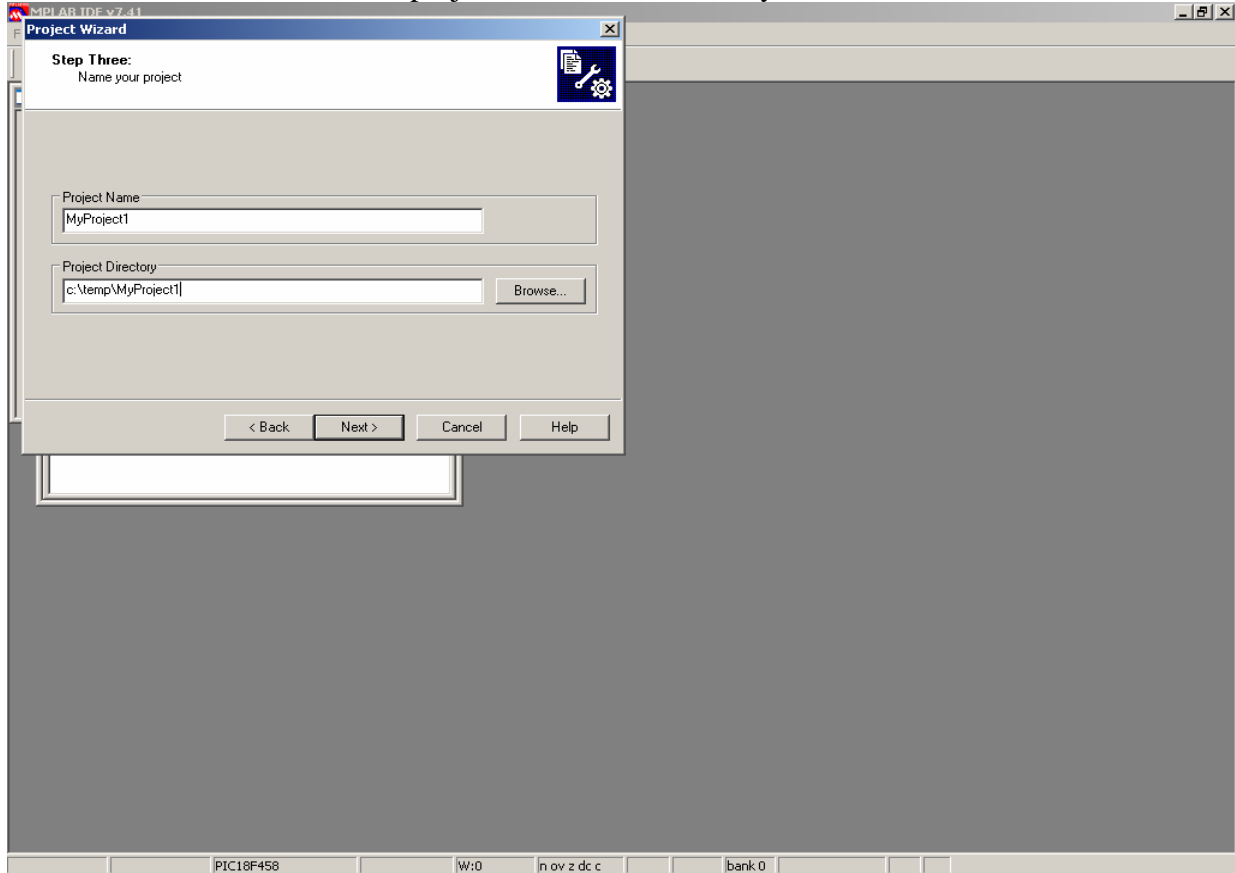


Select the Microchip C18 Toolsuite and hit Next (This assumes C18 was installed previously).

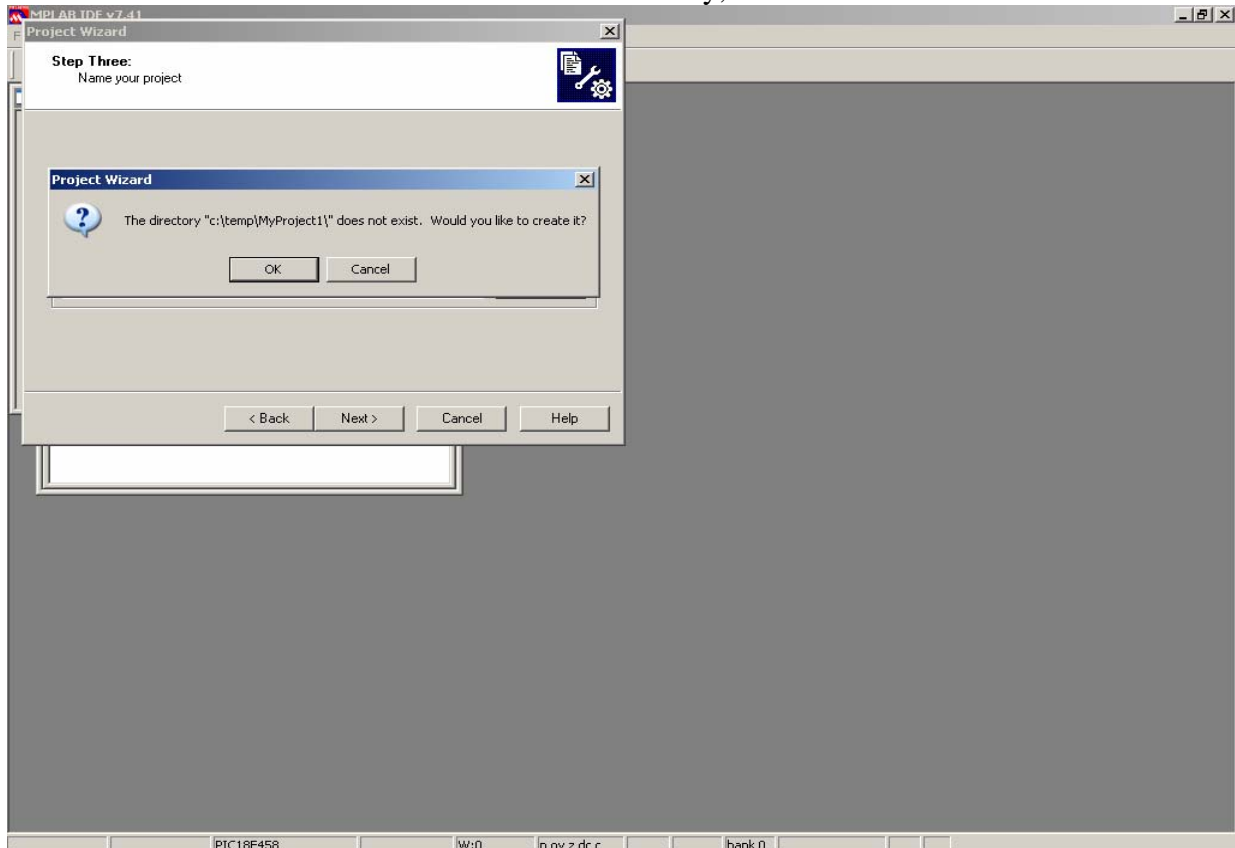


# MPLAB Tutorial

Give the project a name and directory and hit Next.

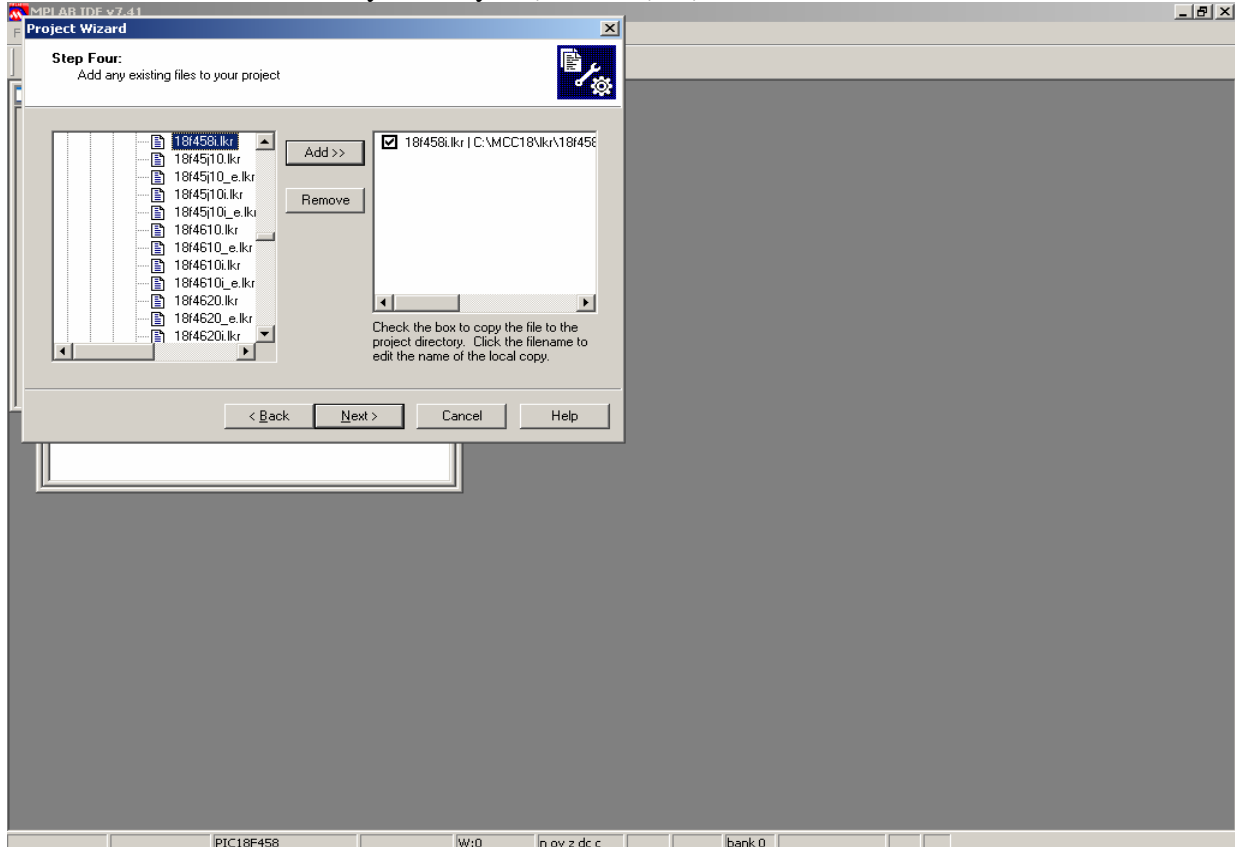


Hit OK to create directory, if needed.

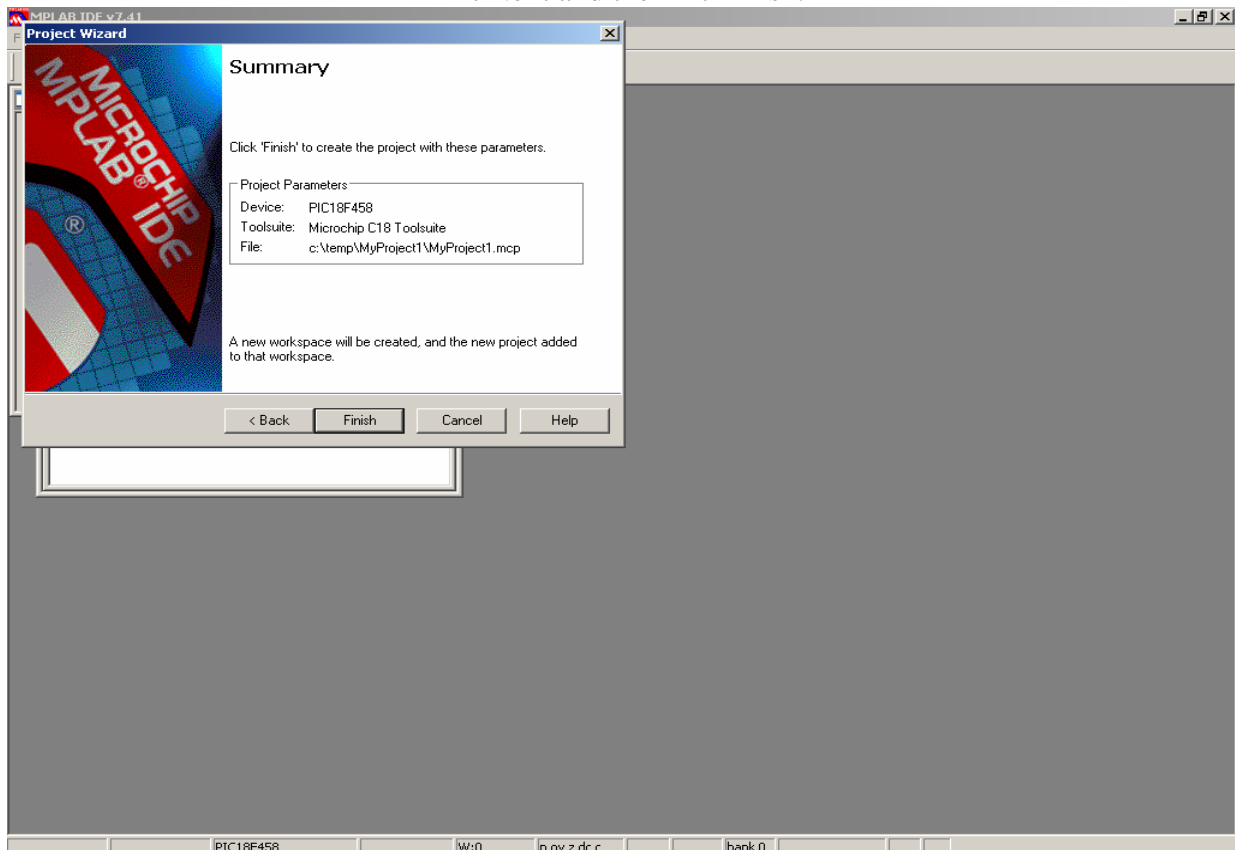


# MPLAB Tutorial

Find the C18 lkr directory, usually C:\MCC18\lkr\18f458i.lkr, Hit Add>> and check box.

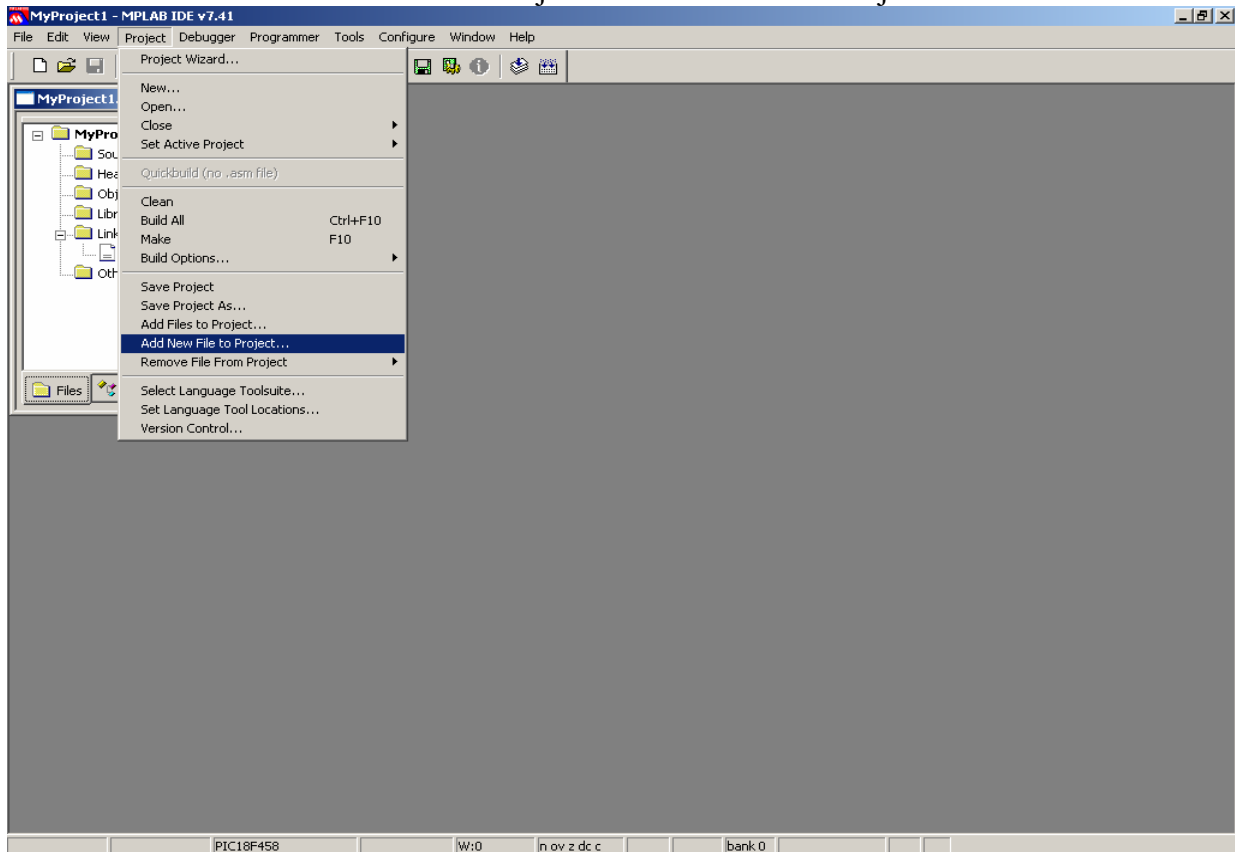


Hit Next and then hit Finish.



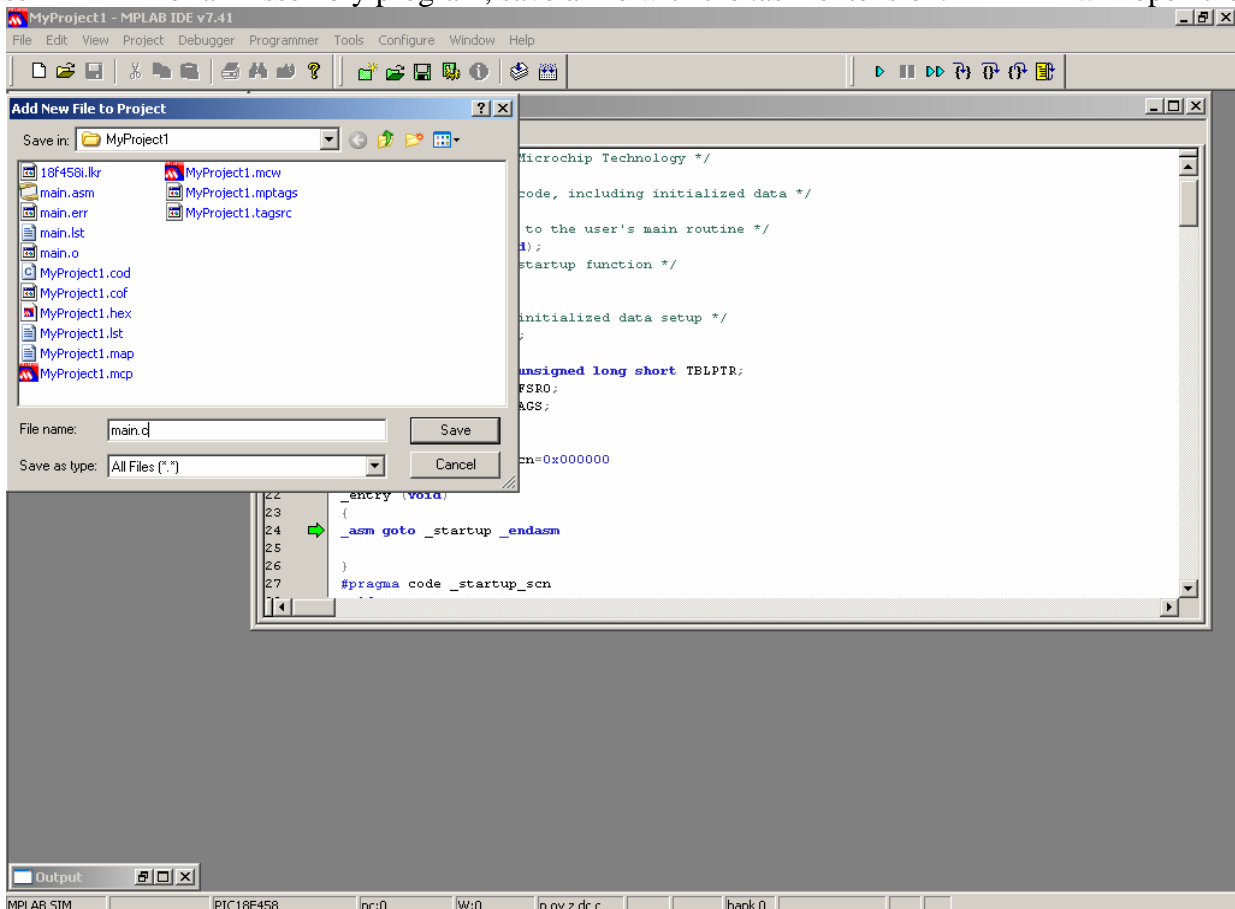
# MPLAB Tutorial

Go to Menu->Project->Add New File to Project.



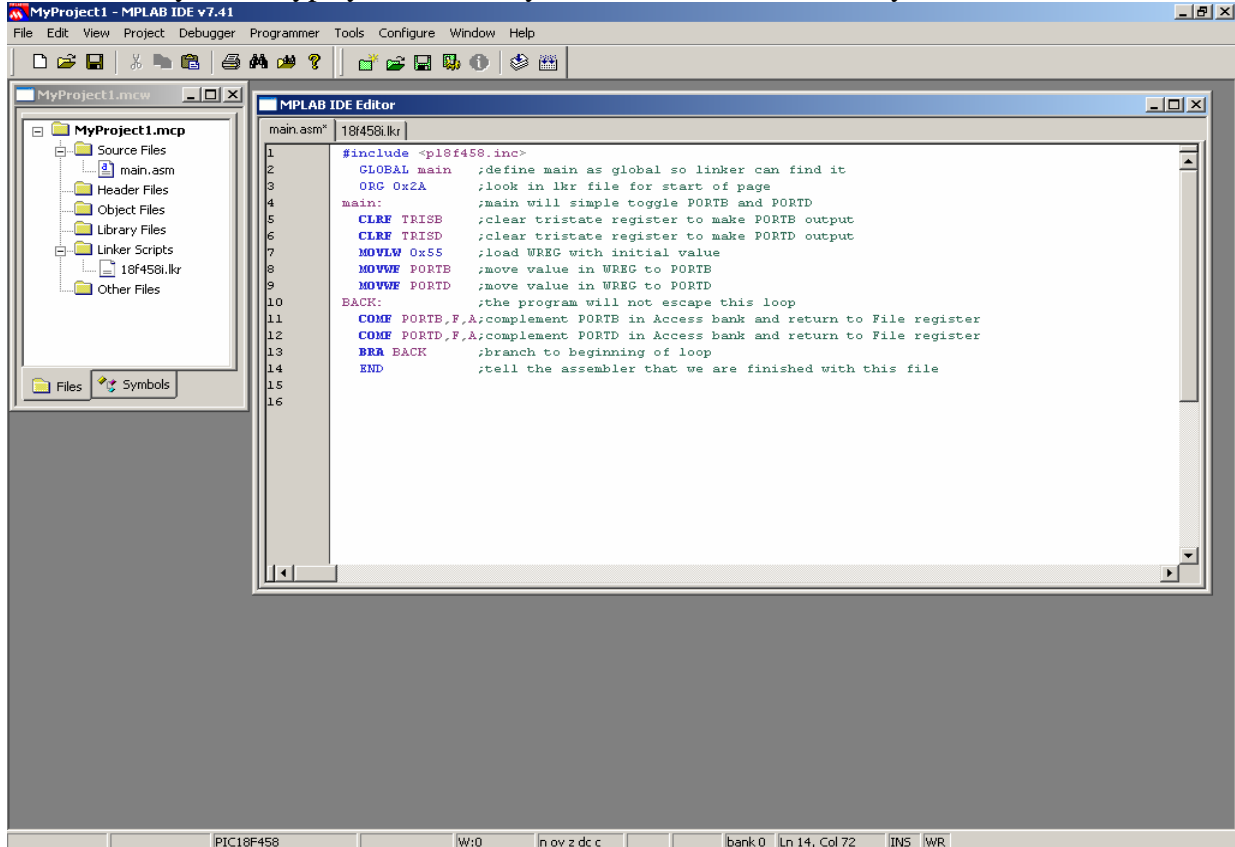
Browse and find your project directory.

To use MPLAB for an Assembly program, save a file with the .asm extension. MPLAB will open the file.

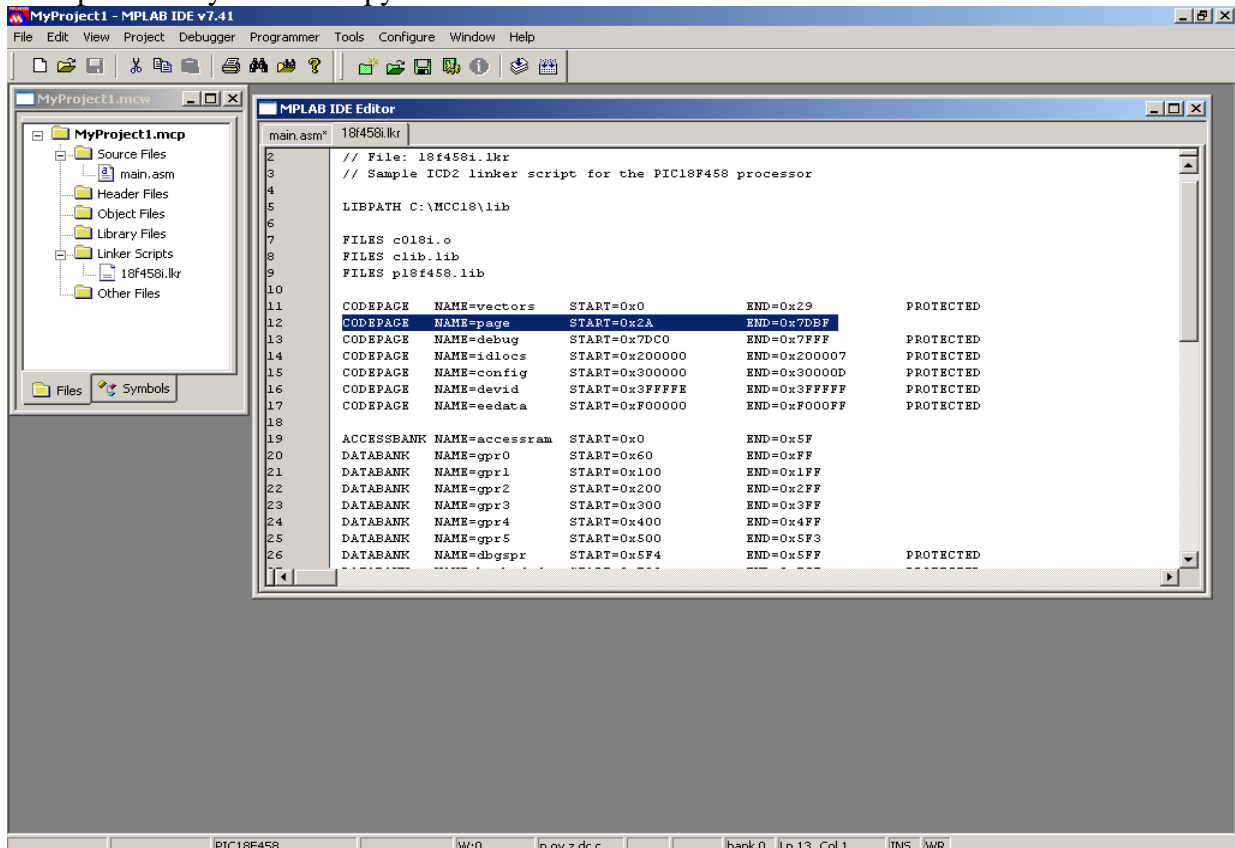


# MPLAB Tutorial

Now you can type your Assembly code or insert the Assembly code into the file.

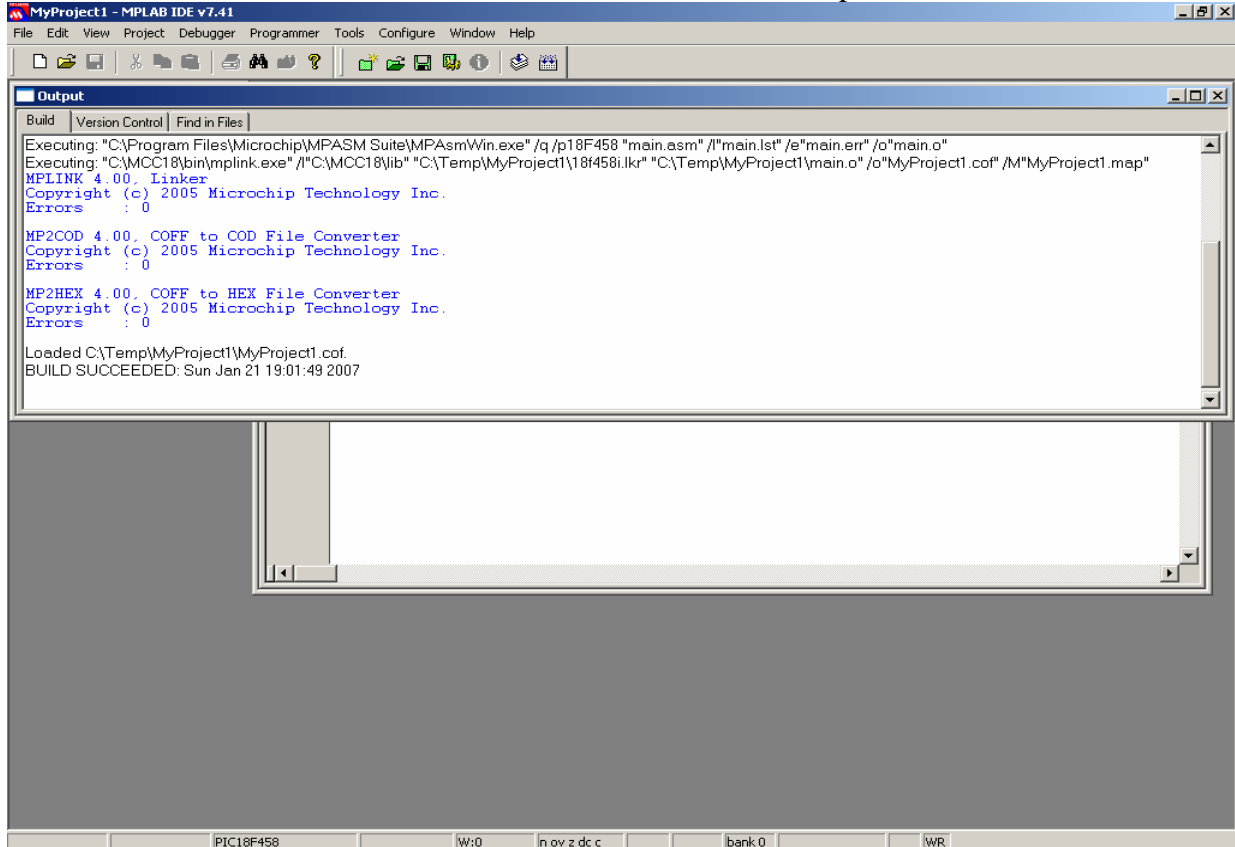


The ORG value is already set by the linker, however, if you want to compile the program for a different PIC processor you must copy and insert the new value for ORG which is found in the .lkr file.

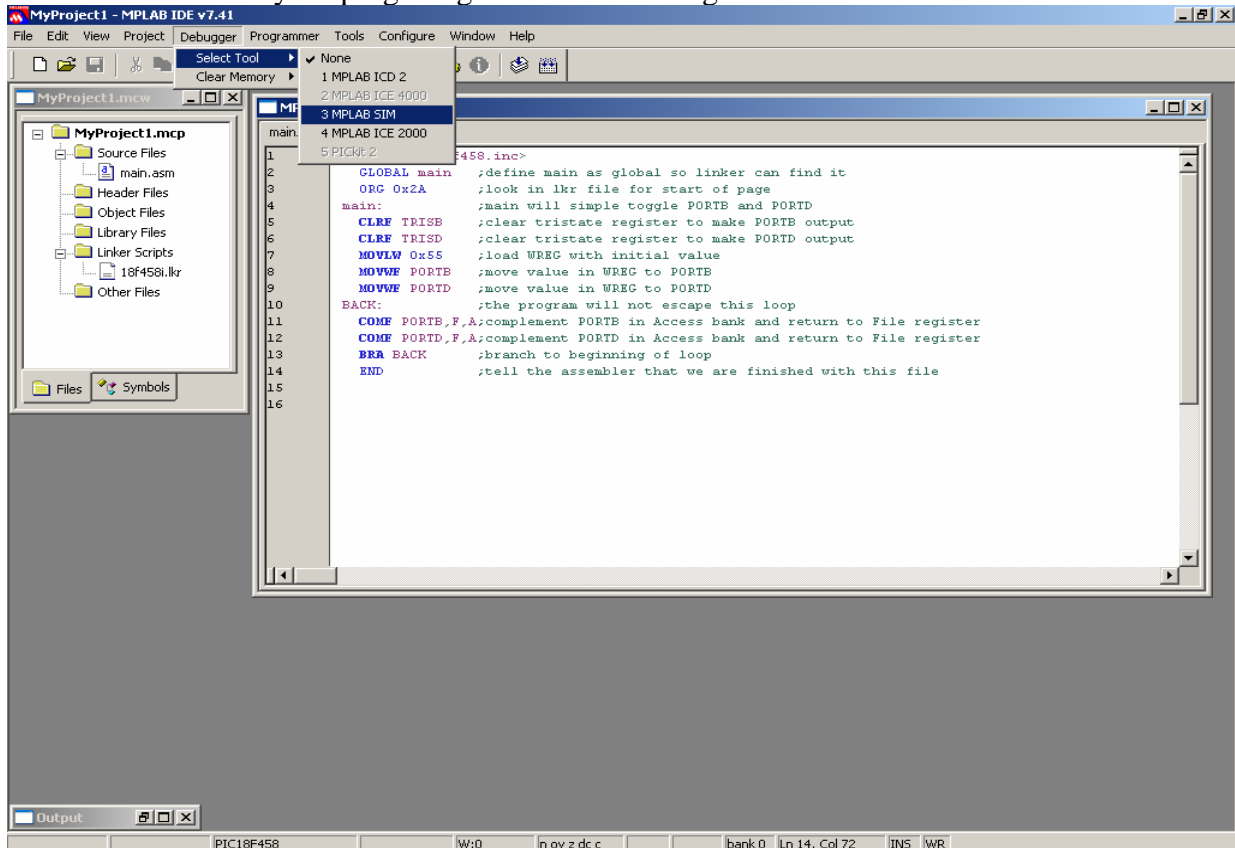


# MPLAB Tutorial

Click the Build Toolbar button to compile.

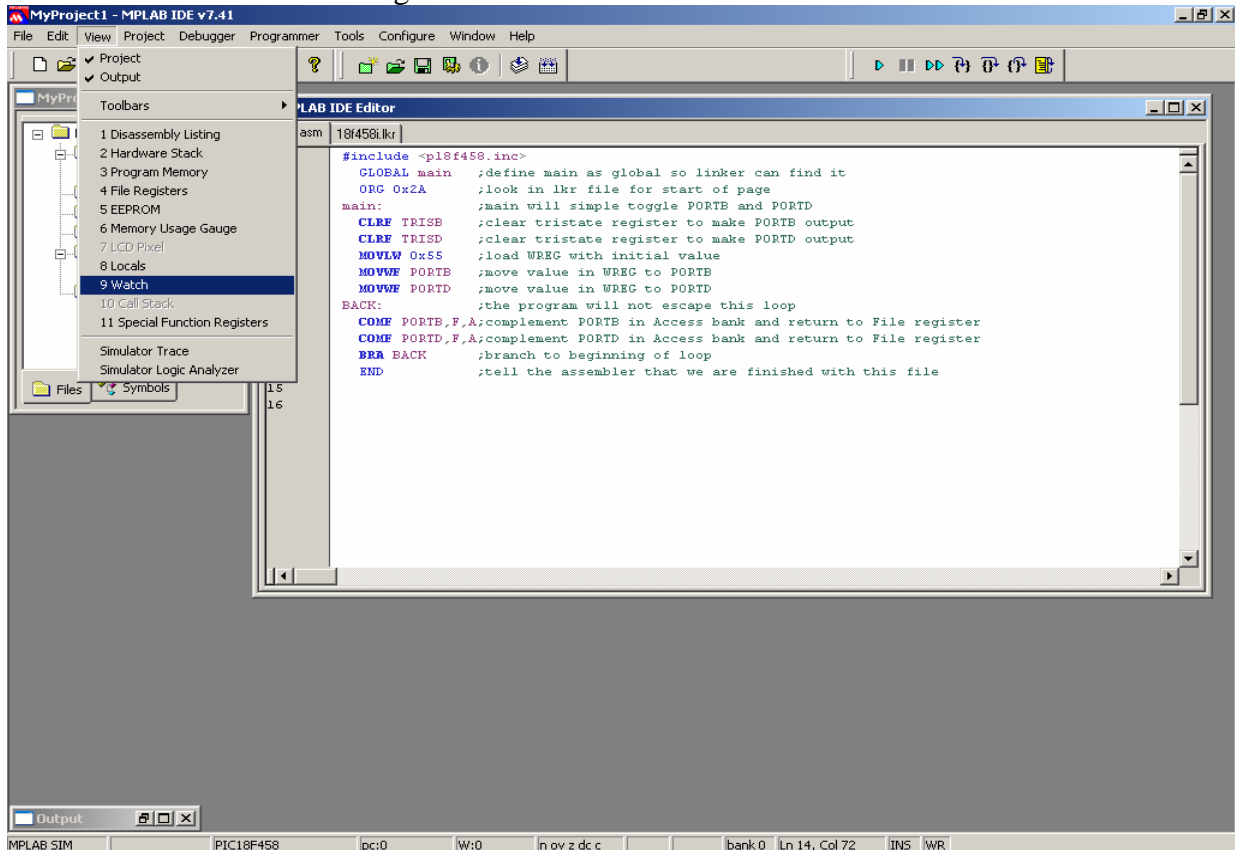


To simulate your program go to Menu->Debug->Select Tool->3 MPLAB SIM.

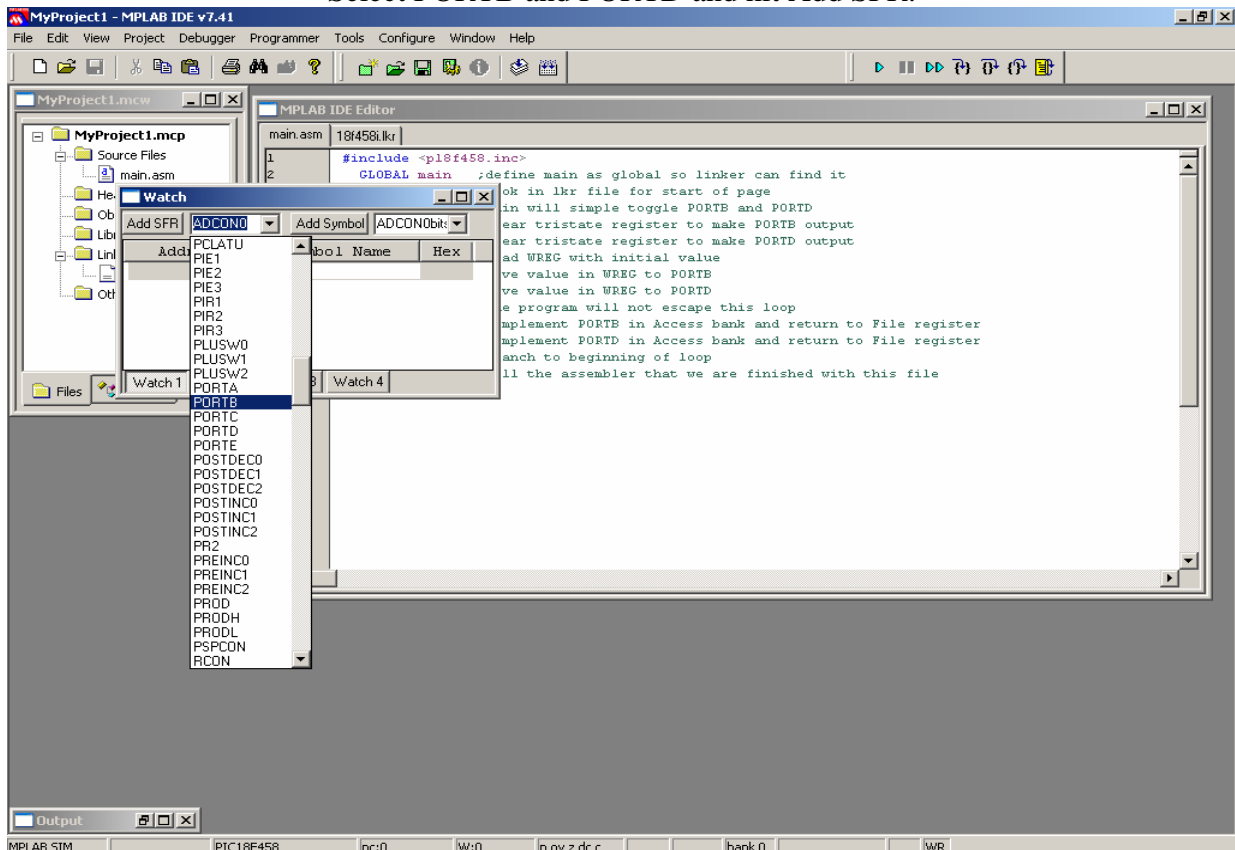


# MPLAB Tutorial

To view the registers and variables Go to Menu->View->Watch.



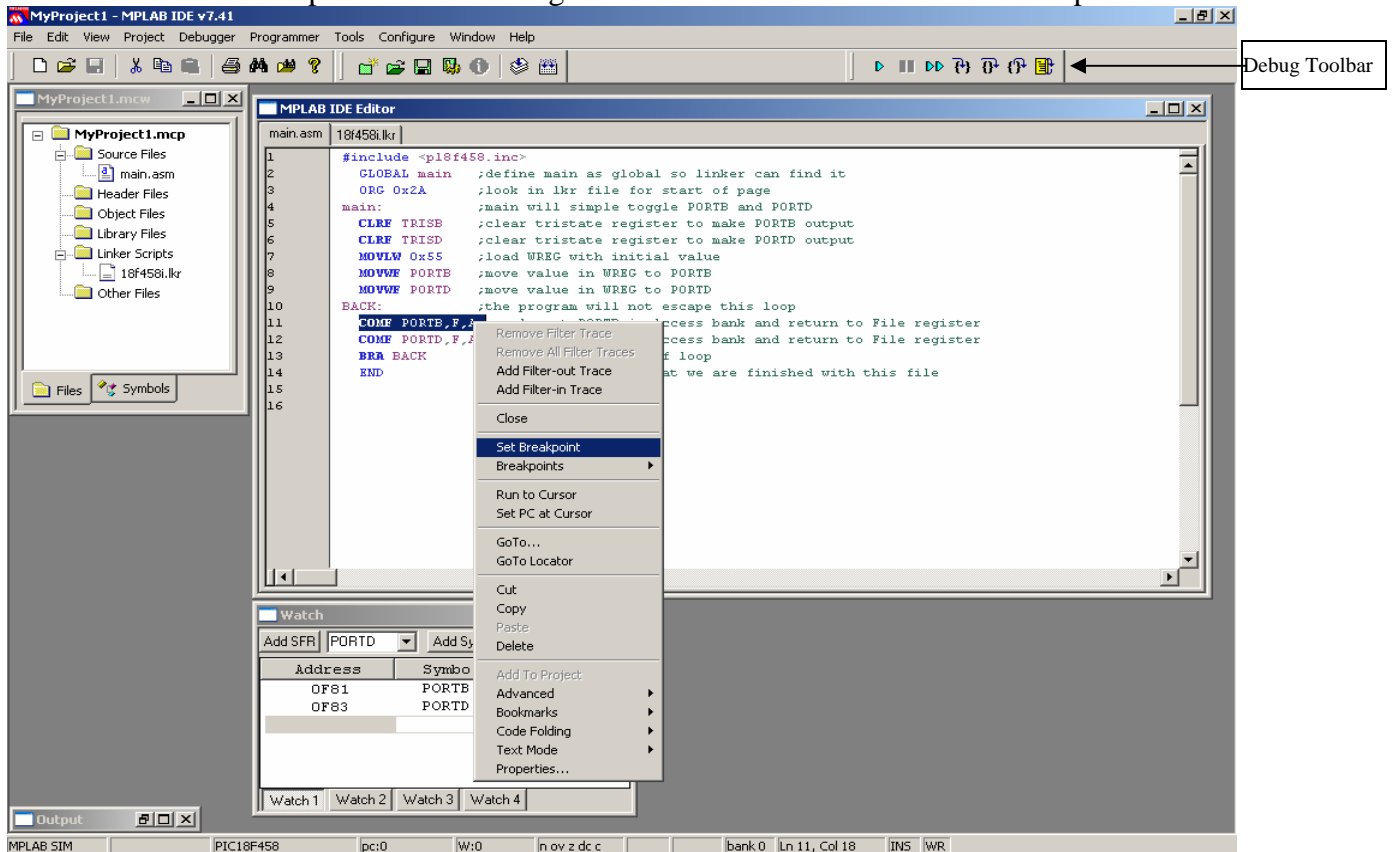
Select PORTB and PORTD and hit Add SFR.



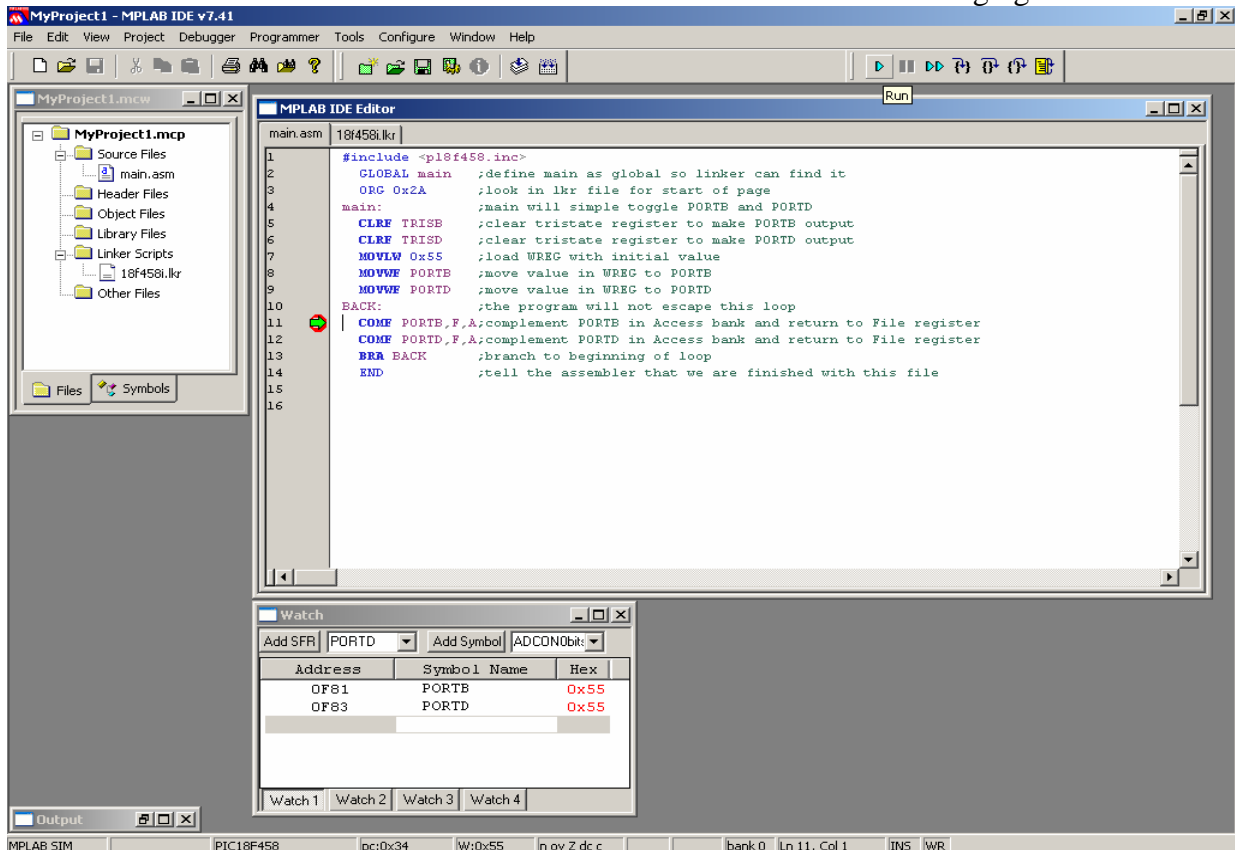


# MPLAB Tutorial

1. To single step click on the icon on the Debug Toolbar.
2. To set a breakpoint on Line 11 right-click on the line and select Set Breakpoint.

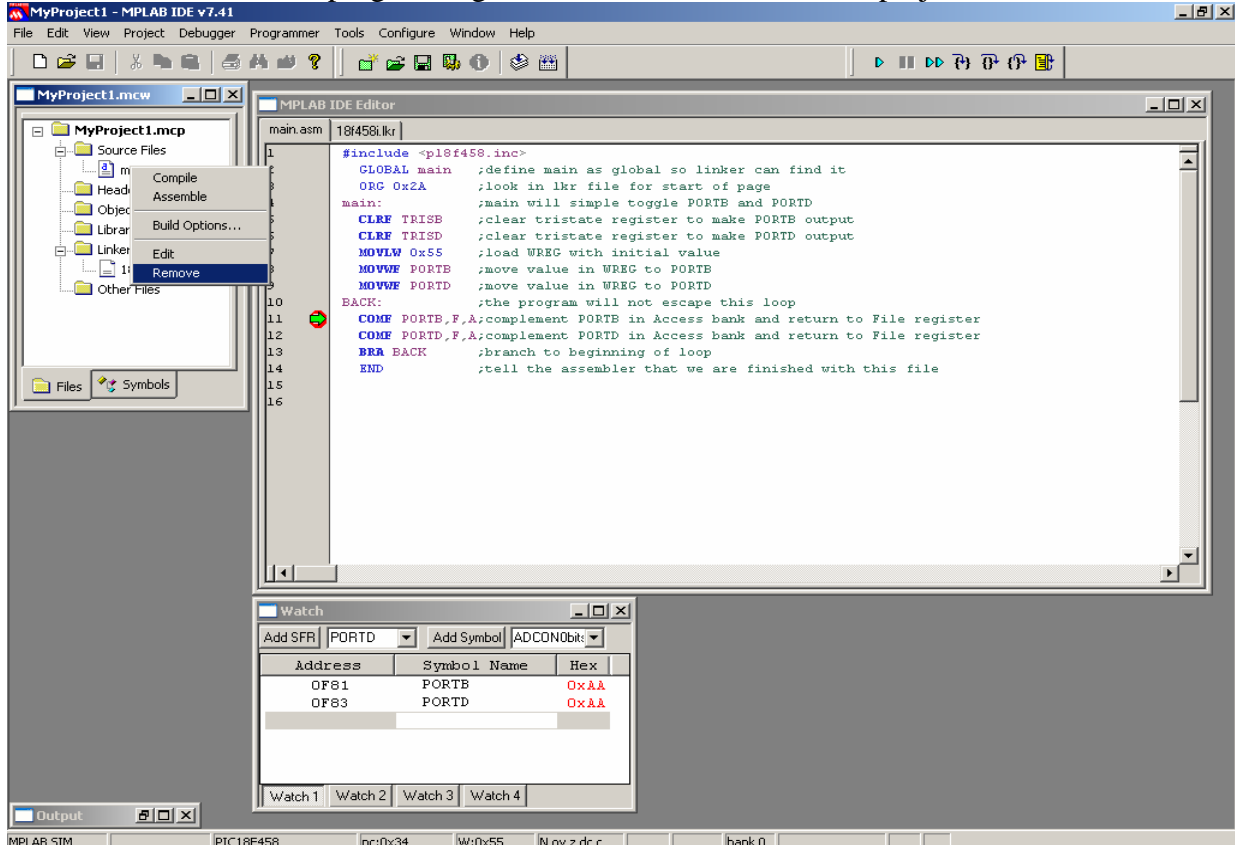


Hit the Run Toolbar button several times and observe the values changing in Watch.



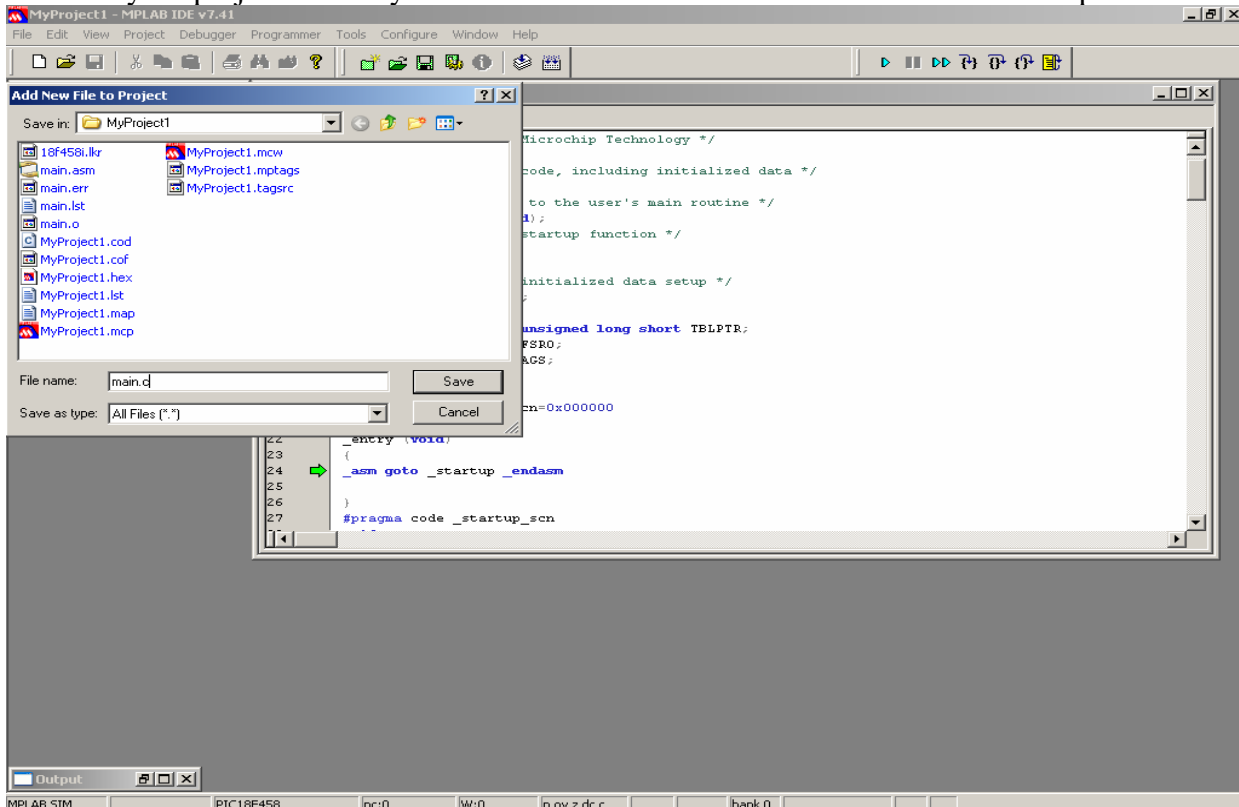
# MPLAB Tutorial

To use MPLAB for a C program, right-click on the .asm file in the project and select Remove.



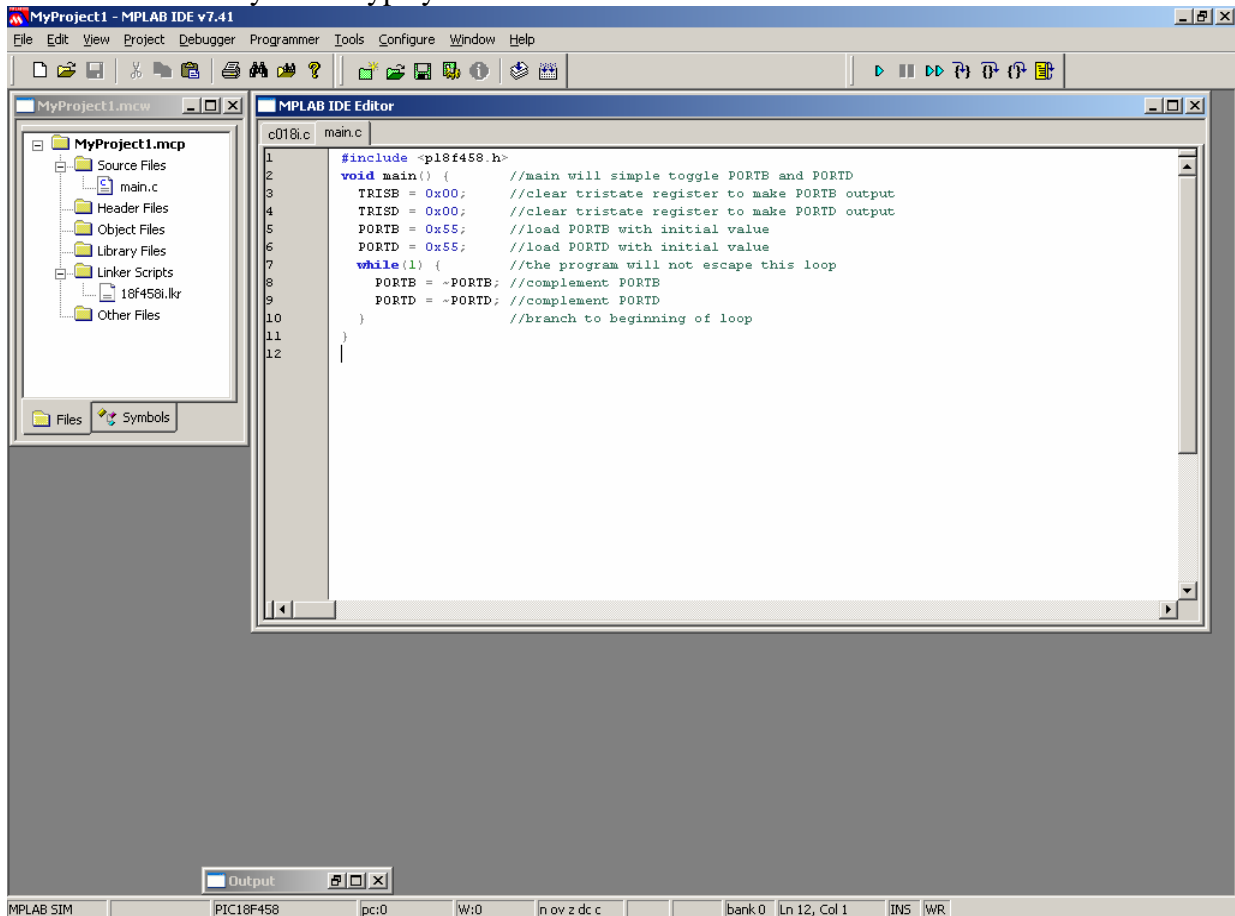
Go to Menu->Project->Add New File to Project (see Page 5).

Browse your project directory and save a file with the .c extension. MPLAB will open the file.

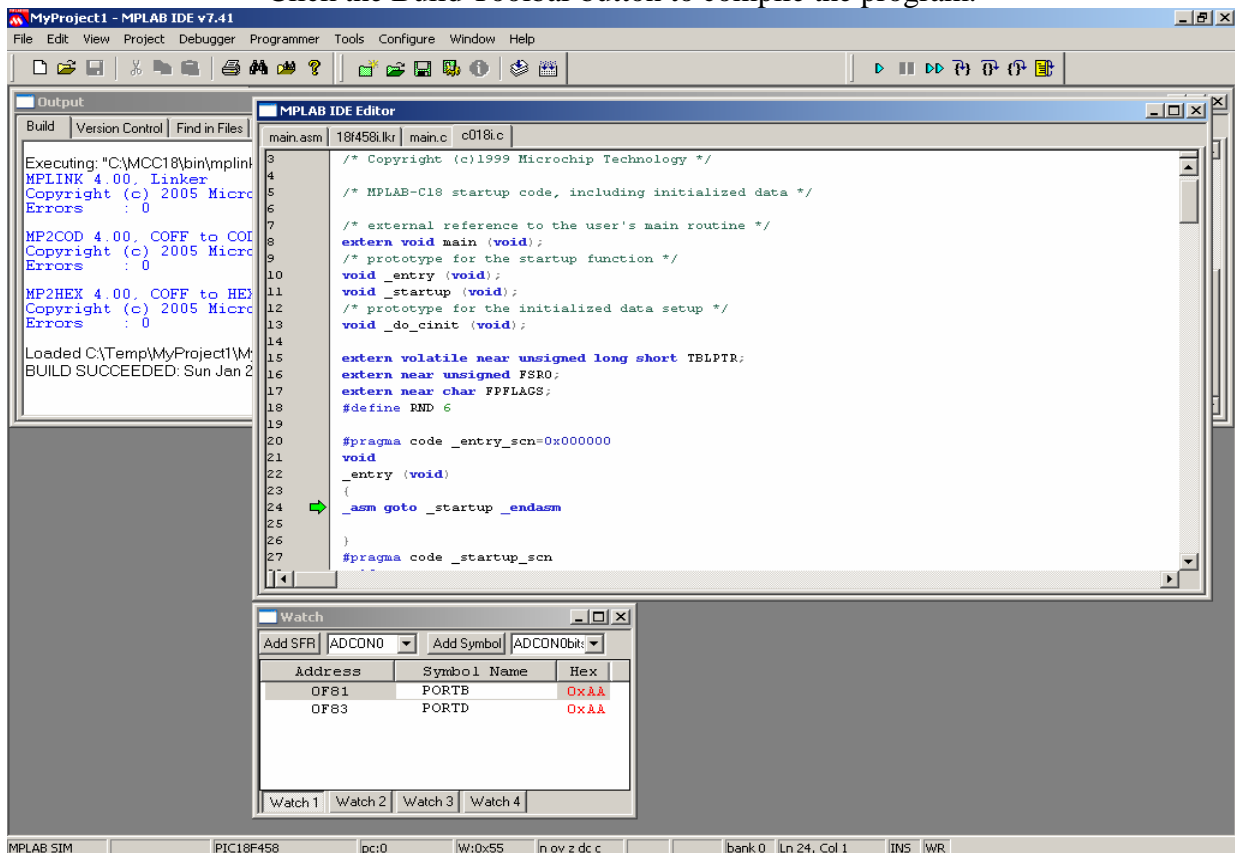


# MPLAB Tutorial

Now you can type your C18 code or insert the C18 code into the file.

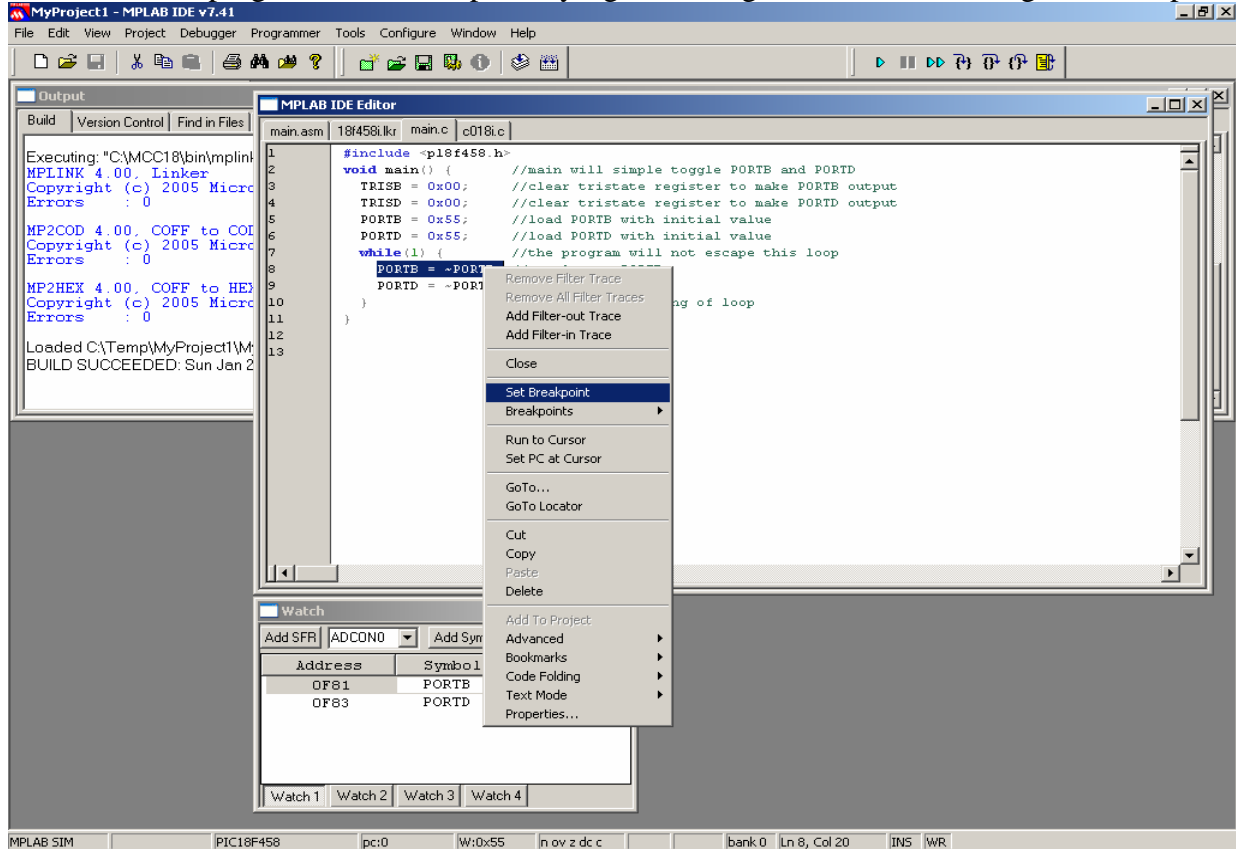


Click the Build Toolbar button to compile the program.

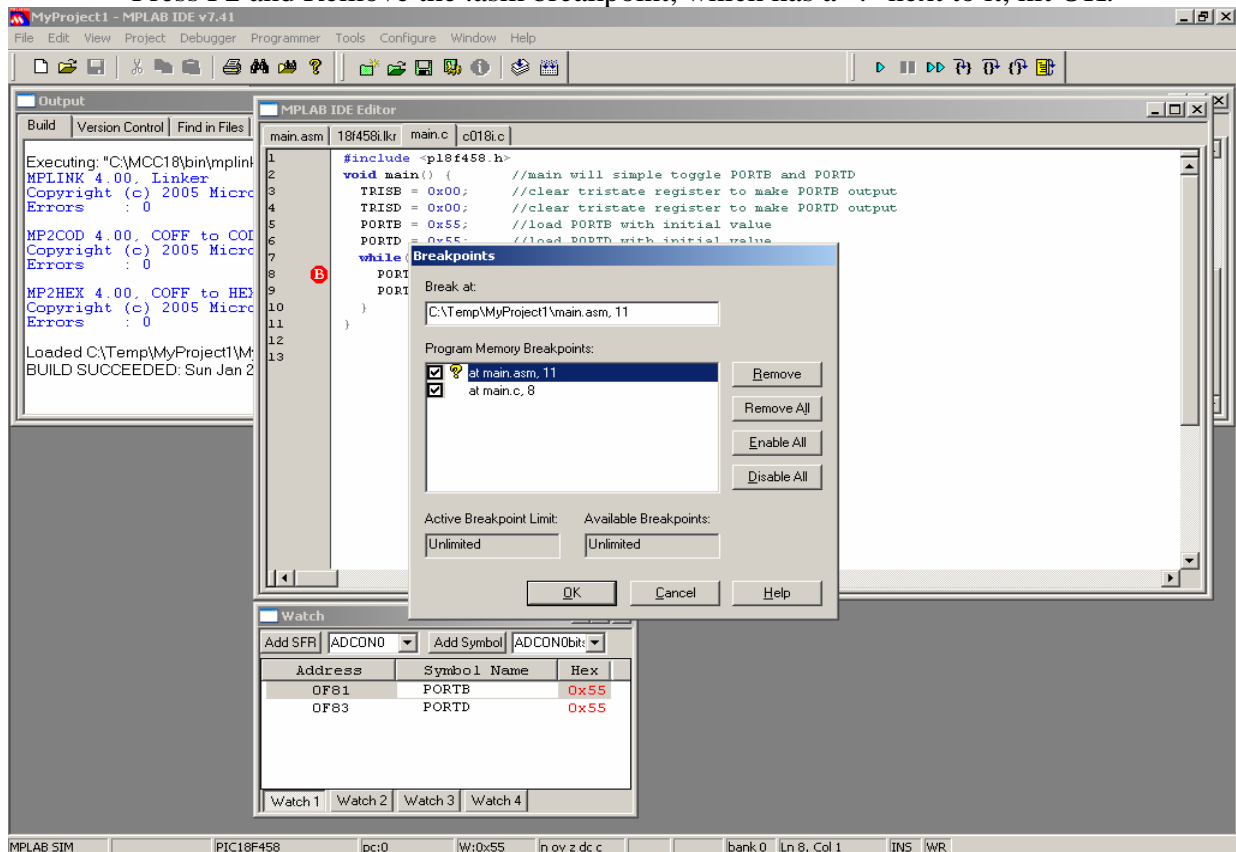


# MPLAB Tutorial

To simulate the program, set a breakpoint by right-clicking the line and selecting Set Breakpoint.



Press F2 and Remove the .asm breakpoint, which has a '?' next to it, hit OK.



# MPLAB Tutorial

Hit the Run Toolbar button several times and observe the values changing in Watch.

The screenshot displays the MPLAB IDE v7.41 interface. The **Output** window on the left shows the execution results of the linker and compilers, indicating a successful build. The **MPLAB IDE Editor** window in the center shows the source code for `main.c`, which includes a `while` loop that toggles `PORTB` and `PORTD` registers. The **Watch** window at the bottom right shows the current values of `PORTB` and `PORTD` as `0x55`. The status bar at the bottom indicates the current register values and the instruction being executed.

**Output Window:**

```
Executing: "C:\MCC18\bin\mplink
MPLINK 4.00, Linker
Copyright (c) 2005 Micro
Errors : 0

MP2COD 4.00, COFF to COF
Copyright (c) 2005 Micro
Errors : 0

MP2HEX 4.00, COFF to HEX
Copyright (c) 2005 Micro
Errors : 0

Loaded C:\Temp\MyProject1\W
BUILD SUCCEEDED: Sun Jan 2
```

**MPLAB IDE Editor:**

```
1 #include <pic18f458.h>
2 void main() { //main will simple toggle PORTB and PORTD
3   TRISE = 0x00; //clear tristate register to make PORTB output
4   TRISD = 0x00; //clear tristate register to make PORTD output
5   PORTB = 0x55; //load PORTB with initial value
6   PORTD = 0x55; //load PORTD with initial value
7   while(1) { //the program will not escape this loop
8     PORTB = ~PORTB; //complement PORTB
9     PORTD = ~PORTD; //complement PORTD
10    } //branch to beginning of loop
11
12
13
```

**Watch Window:**

Address	Symbol Name	Hex
0F81	PORTB	0x55
0F83	PORTD	0x55

**Status Bar:** MPLAB SIM | PIC18F458 | pc:0xec | W:0x55 | n ov z dc c | bank 0 | Ln 8, Col 1 | IINS | WR