

Getting Started with Keil μ Vision

WEL Team, IIT Bombay
2020

Development Tools

- **Editor**
 - Entry of code into files
- **Assembler or Compiler**
 - Generate machine code from source code
- **Downloader**
 - Put machine code in the chip
- **Execution check**
 - Using Debugger to verify operation of program (on Hardware or Simulator)

Single Point Solution?

Keil μ Vision IDE

- **Keil μ Vision**

An easy-to-use **IDE** (Integrated Development Environment)

- Project management,
- Source code editing,
- Code building facilities,
- Run-time environment,
- Program debugging



Since 1982

Acquisition by



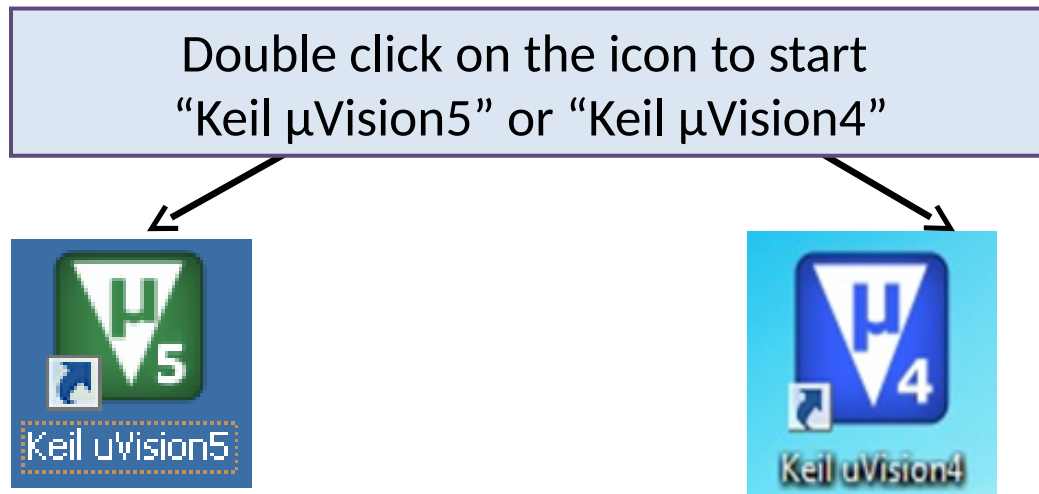
Around 2005

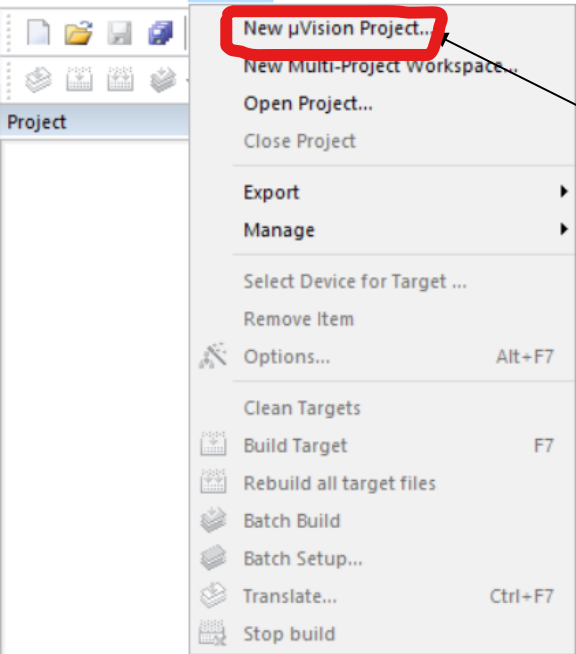
Now providing



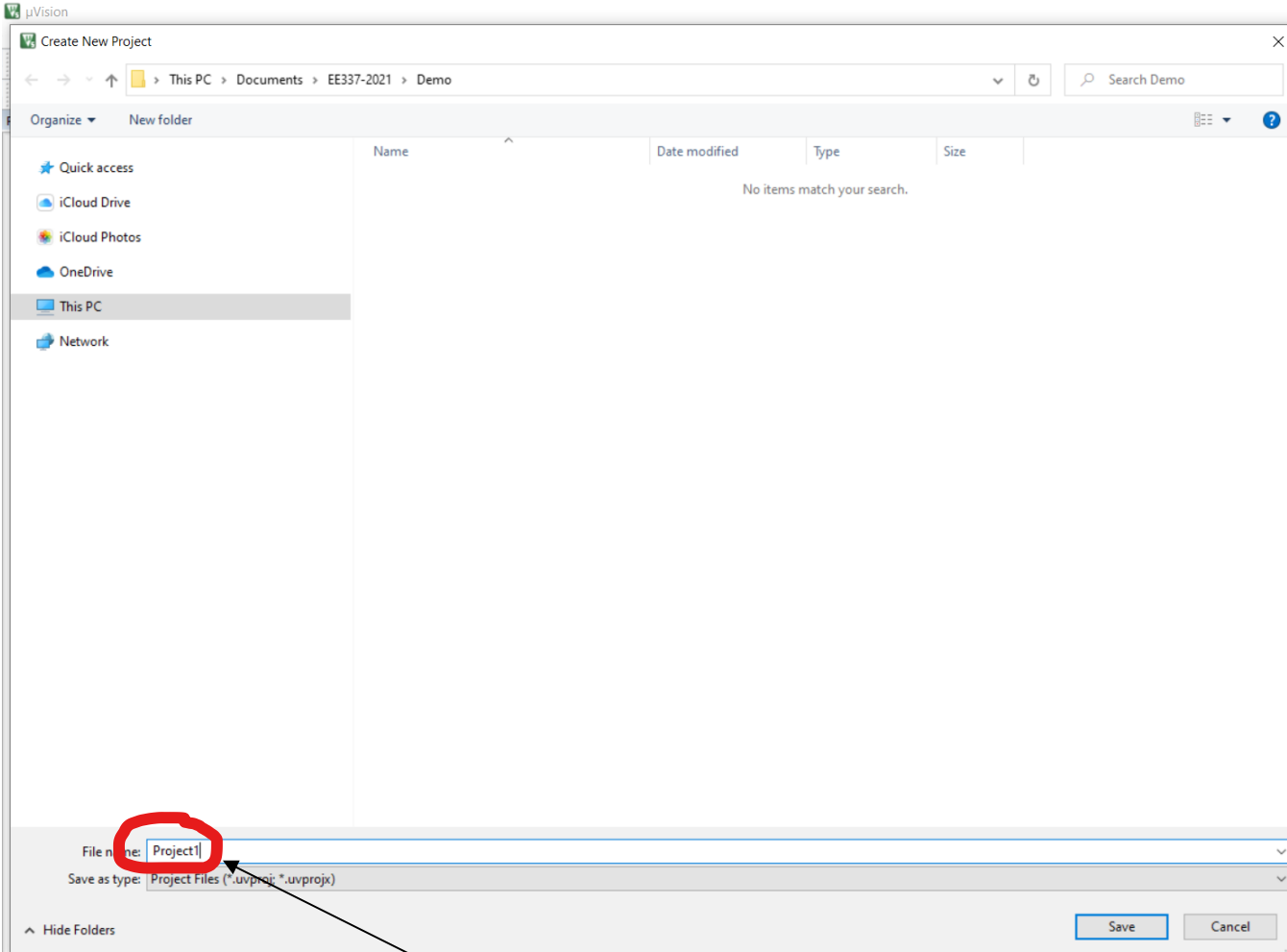
Keil μ Vision IDE

- **Project**
 - A collection of files related to a particular programming task.
- **Build**
 - The process in which **only the files modified since last build** are assembled/compiled for the chosen microcontroller device
- **Rebuild**
 - The process in which **all files are assembled/compiled** irrespective of their modification state.

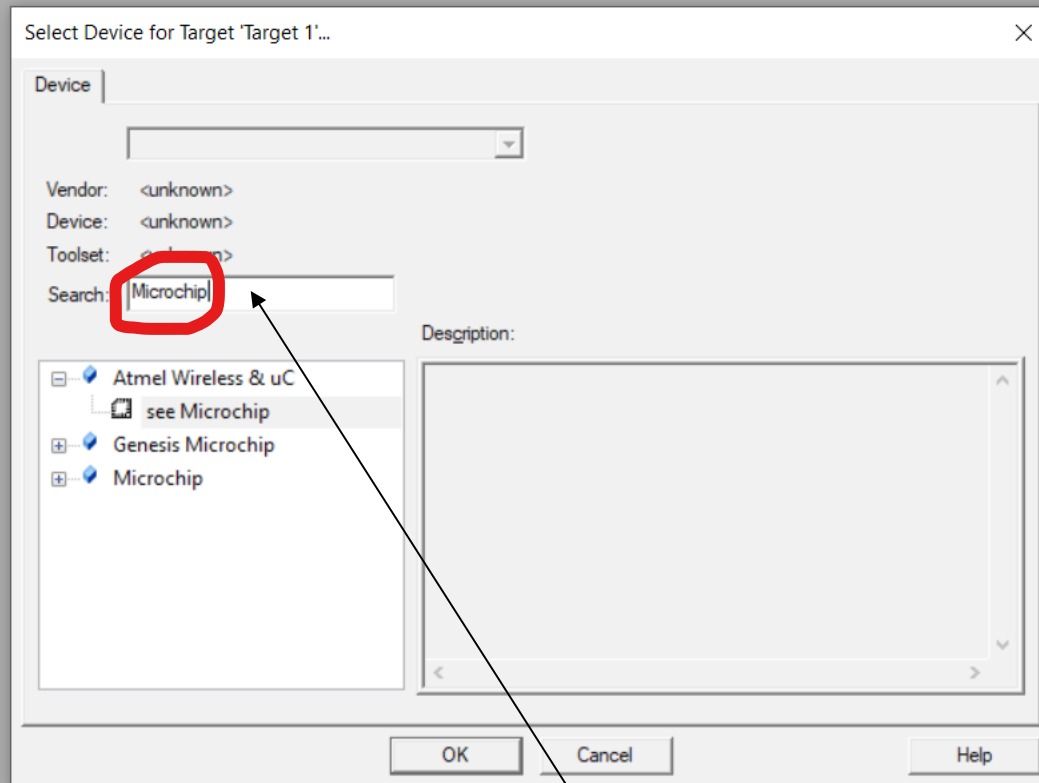




Create a new project by clicking on "New µVision Project"

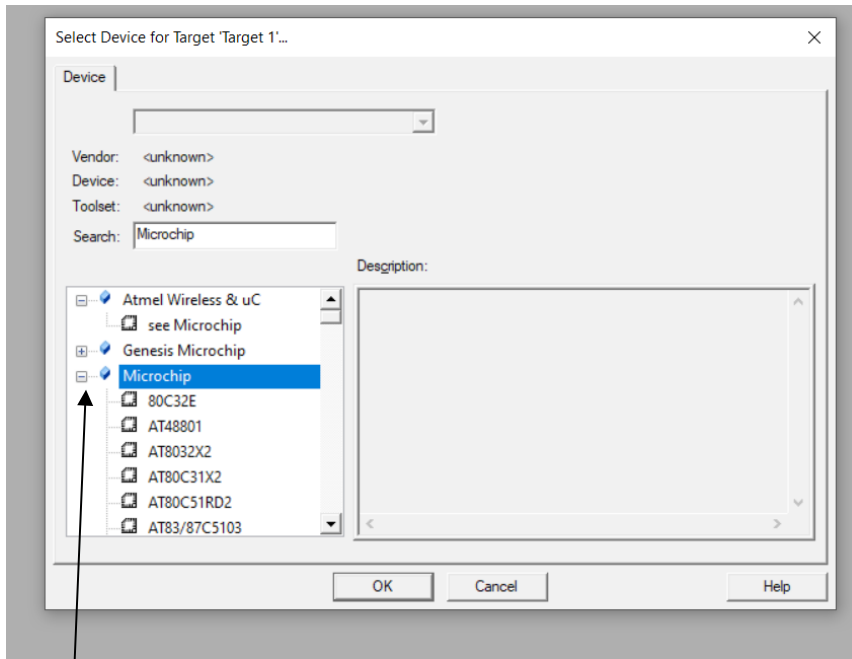


Specify the name of your project.

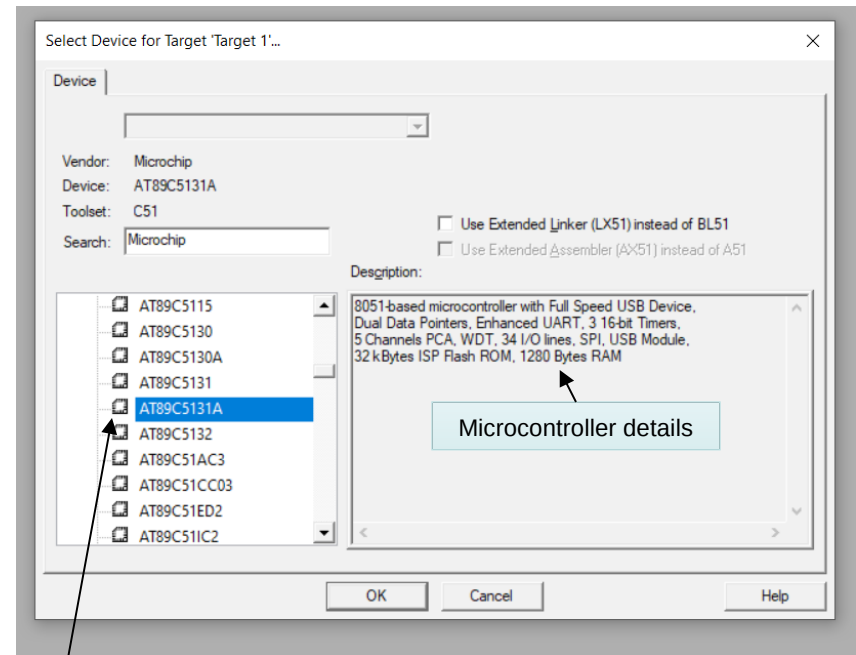


In the "Select Device for Target" dialog, type Microchip

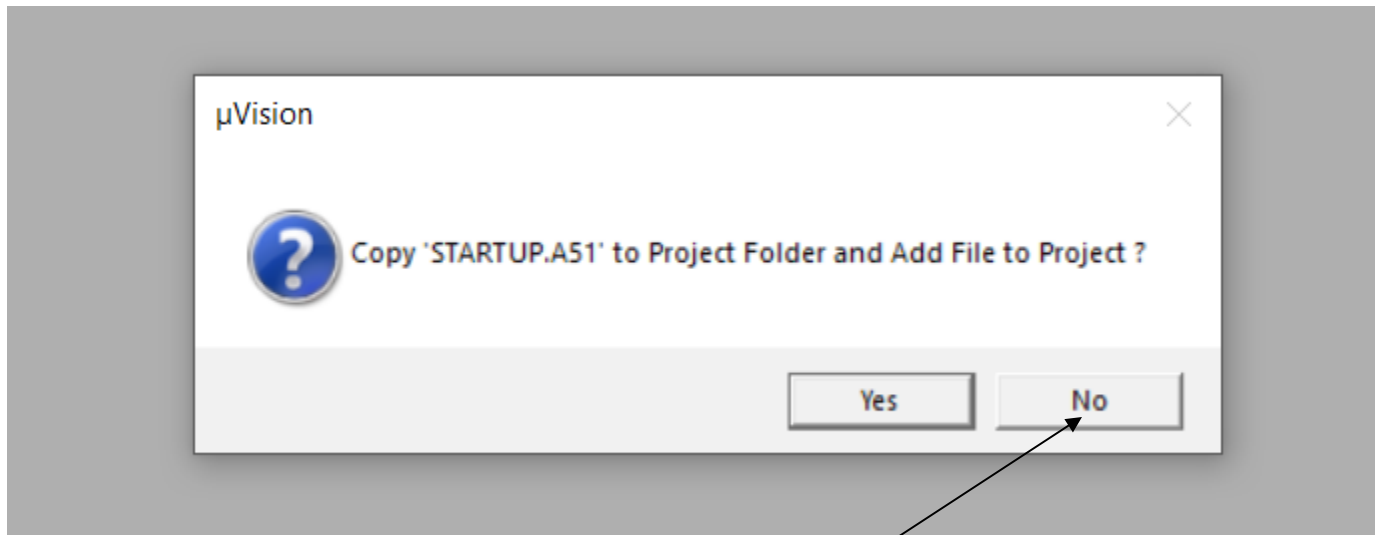
The Pt-51 board uses an Atmel microcontroller (AT89C5131A). Atmel was acquired by Microchip Technology Inc in 2016.



Expand the list of Microchip devices

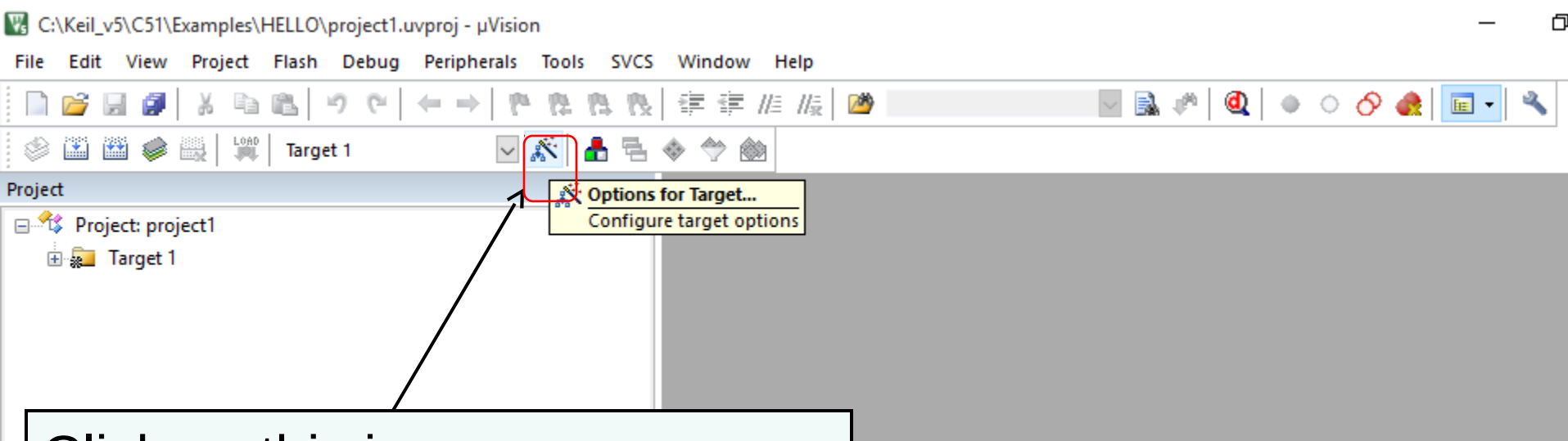


Choose **AT89C5131A** from the list



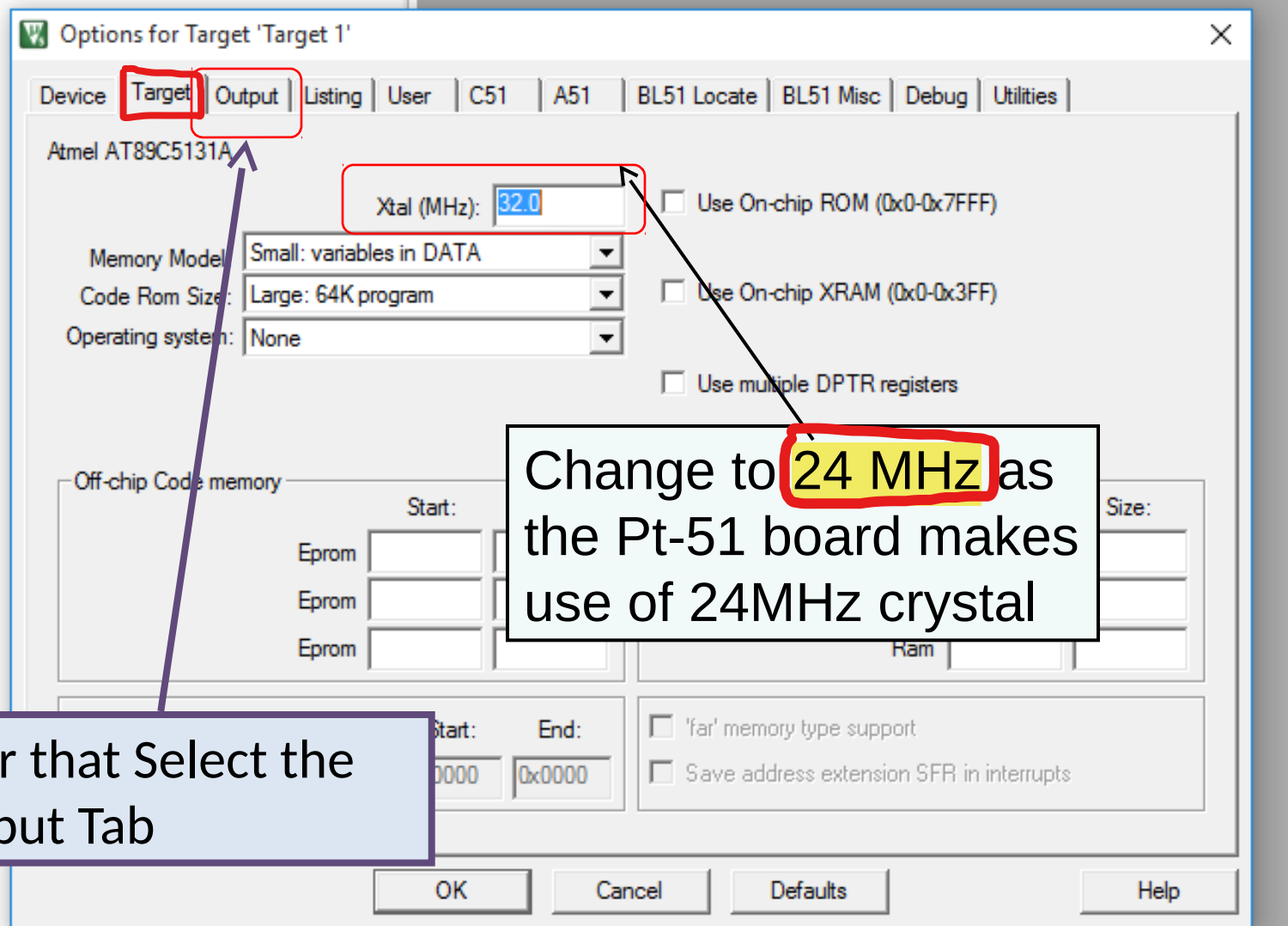
- In the dialog which pops up, choose “No” if you are going to write programs in assembly language.
- **STARTUP.A51** is a file required for writing programs in C.

Configuring the Project target options

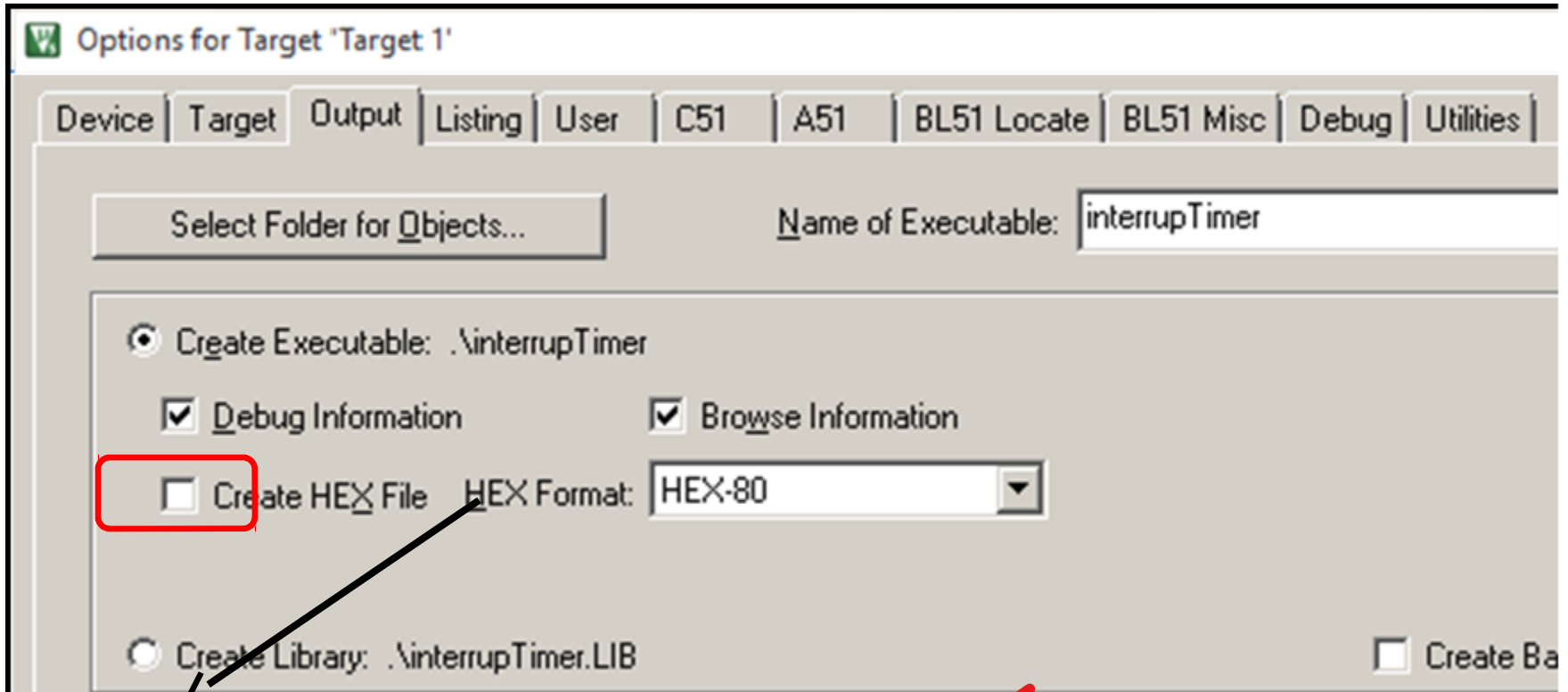


Click on this icon or press
'Alt+F7'
to configure the target options

Configuring the Crystal frequency



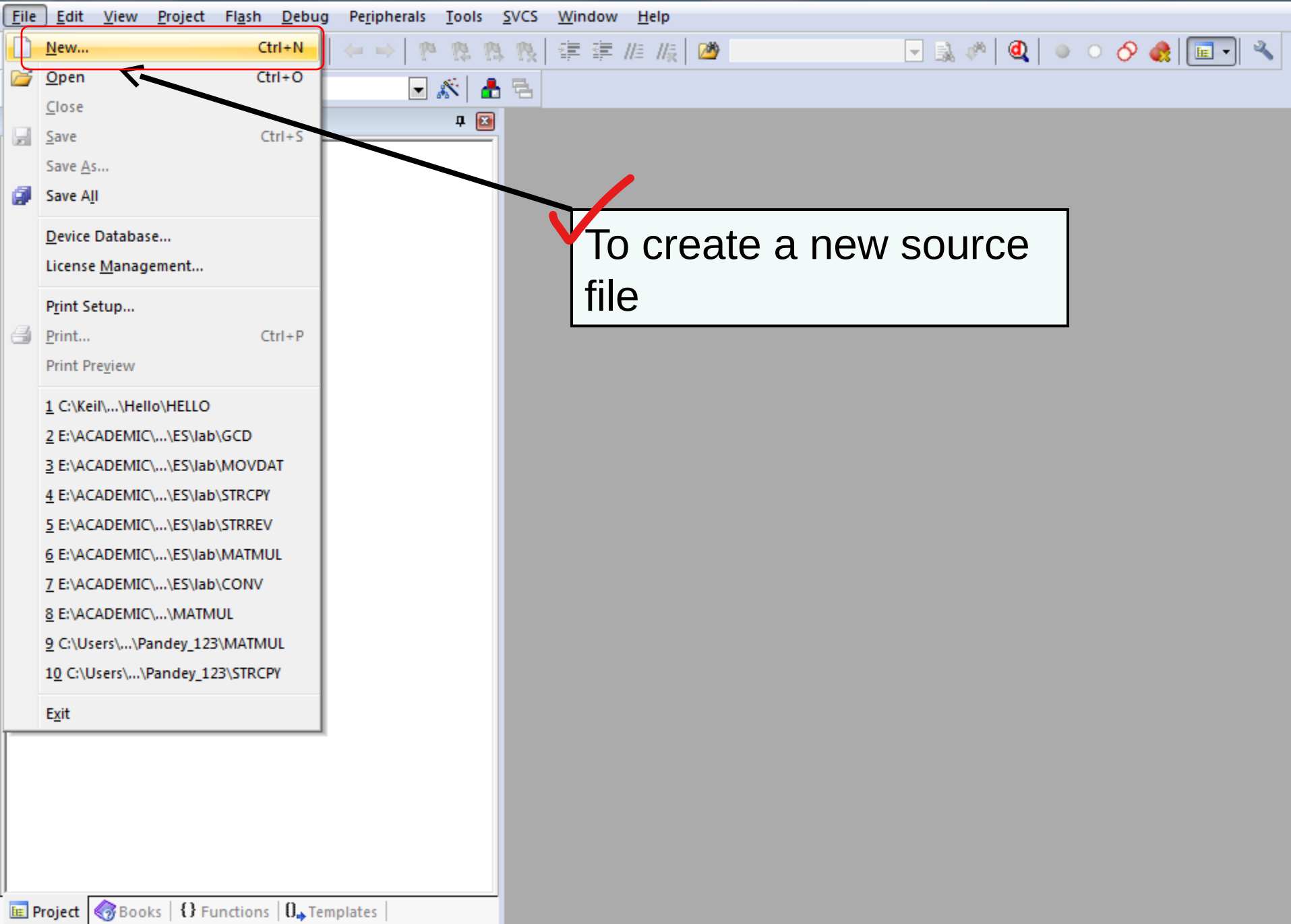
Creating **HEX file**

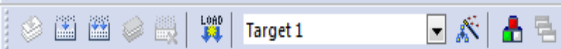


Click this Tick box to create
Hex file

✓ Finally Click on OK to
save these Options
chosen for this project

Hex files are used to store and transfer program and data for programmable logic devices, microcontrollers, and EPROMs





Project

Target 1
Source Group 1

Text2

1

1. Type here the code for your program in this window.
2. Save the file as **<<file name>.asm** for for assembly language programs) or as **<<file name>.c** for C programs.



Target 1

Project

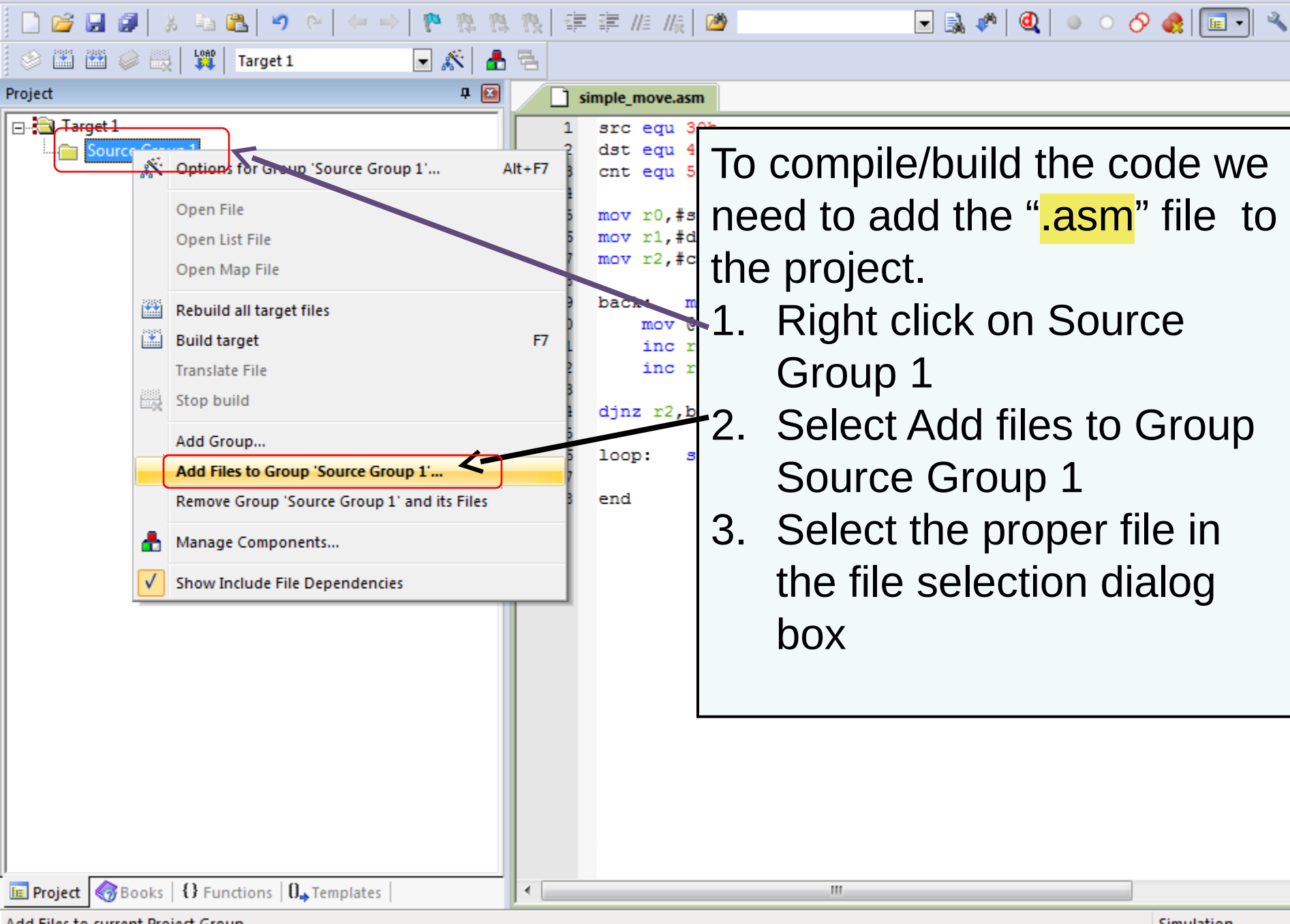
Target 1
Source Group 1

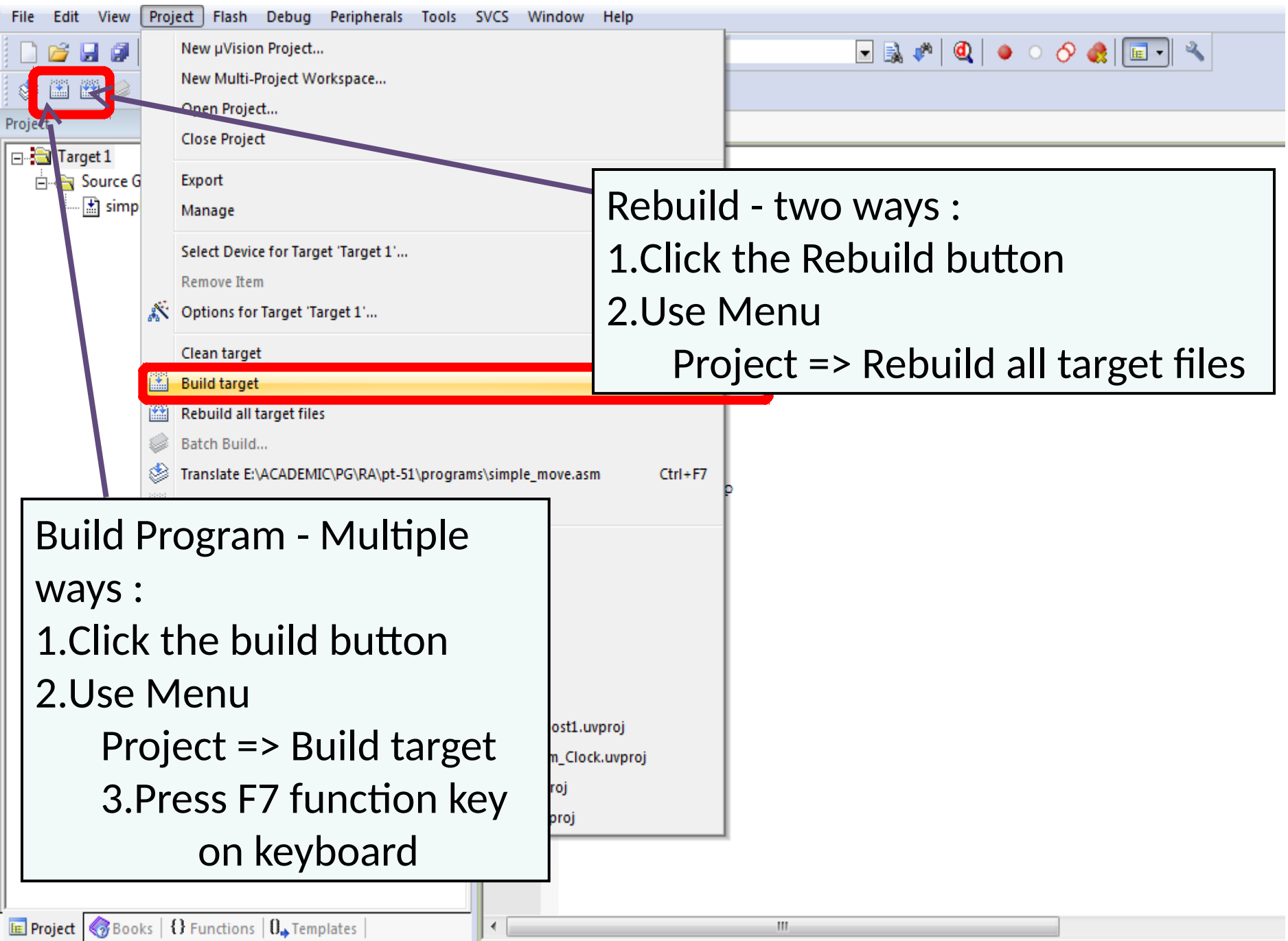
A saved assembly file
for use with the 8051
microcontroller family

simple_move.asm

```
1  src equ 30h
2  dst equ 40h
3  cnt equ 5
4
5  mov r0,#src
6  mov r1,#dst
7  mov r2,#cnt
8
9  back:  mov a,@r0
10        mov @r1,a
11        inc r0
12        inc r1
13
14  djnz r2,back
15
16  loop:  sjmp loop
17
18  end
```

Notice the different colors
used for assembler
directives, opcodes,
registers, data, etc by the
IDE.





Rebuild - two ways :

1.Click the Rebuild button

2.Use Menu

Project => Rebuild all target files

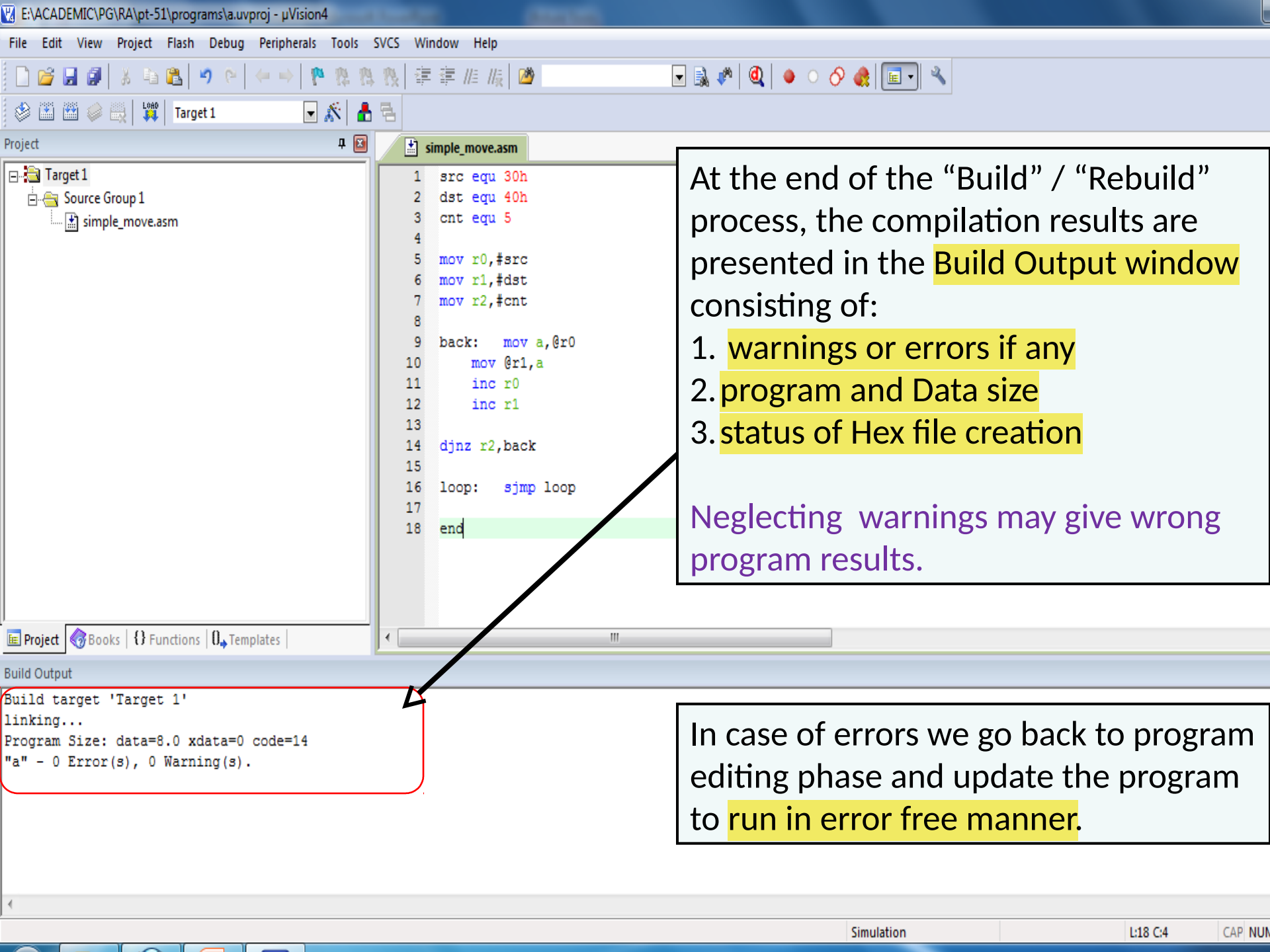
Build Program - Multiple ways :

1.Click the build button

2.Use Menu

Project => Build target

3.Press F7 function key
on keyboard



At the end of the “Build” / “Rebuild” process, the compilation results are presented in the **Build Output window** consisting of:

1. **warnings or errors if any**
2. **program and Data size**
3. **status of Hex file creation**

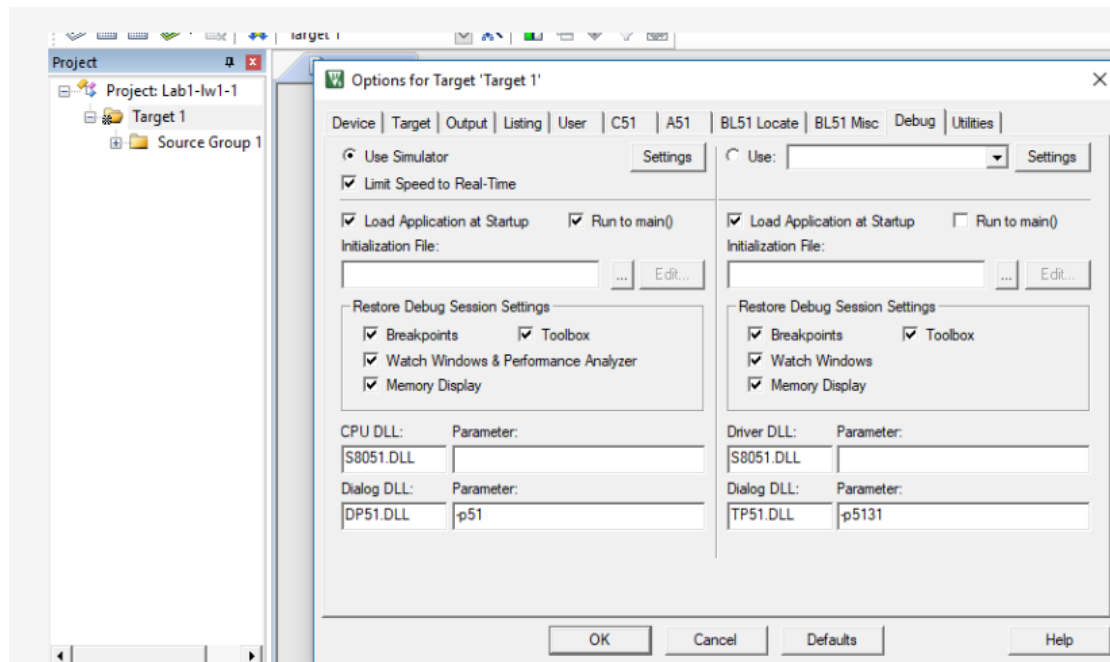
Neglecting warnings may give wrong program results.

Build target 'Target 1'
linking...
Program Size: data=8.0 xdata=0 code=14
"a" - 0 Error(s), 0 Warning(s).

In case of errors we go back to program editing phase and update the program to **run in error free manner**.

Solving Keil Crash Issue

- If Keil μ Vision keeps crashing on pressing the Start\stop debug session, then follow these steps.
 - Right click on the target folder (at the left pane).
 - Select Options for Target `<TargetName>`.
 - Select the Debug pane.
 - Change the Parameter field to the right of Dialog DLL with name DP51.DLL to -p51.
 - Tick the Limit Speed to Real-Time checkbox.



Questions ?

Thank you

WEL, IIT Bombay 2020

Presentation Version Information:

Date	Comments
Jan 2020	Modifications to title. Changed some screenshots to remove Atmel references. Deleted flowchart slide. Changed uVision to μ Vision.
2016	Initial version by Suryakant Toraskar, smtoraskar.iitbombay@gmail.com