How to use MPLABX to program and debug PICsimLab

Luis Claudio Gambôa Lopes <lcgamboa@yahoo.com>

http://sourceforge.net/projects/picsim/

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Chapter 1

Installing the Necessary Tools

1.1 Install MPLABX IDE and XC8 Compiler

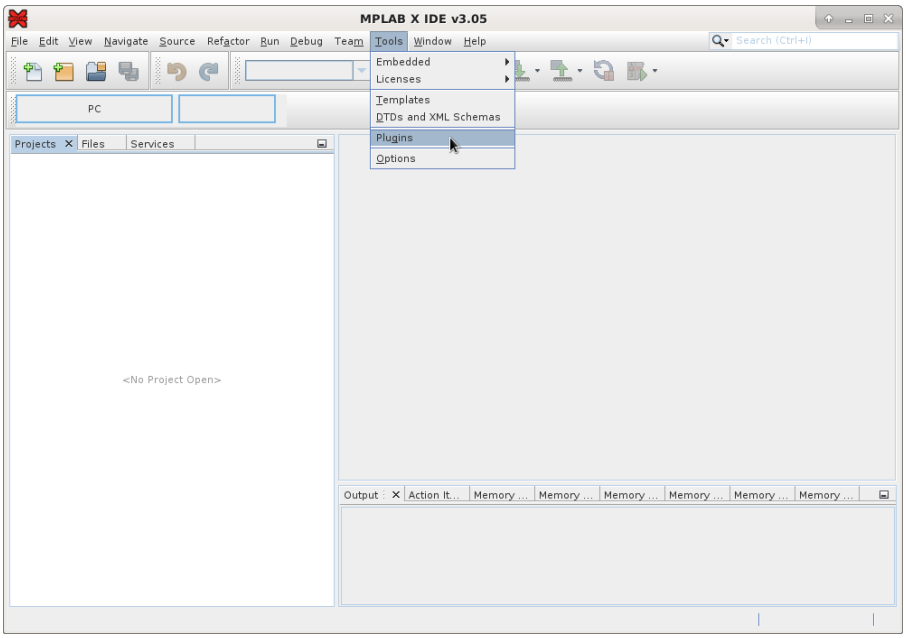
Links for download MPLABX IDE and XC8 Compiler installers. Download and install.

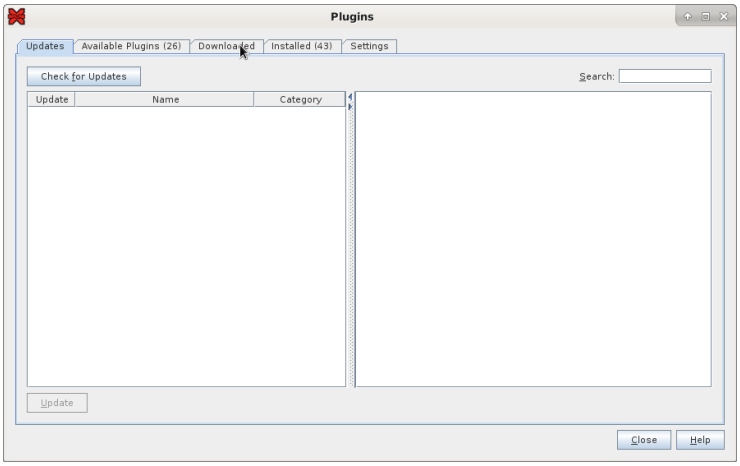
1.2 Install PICsimLab

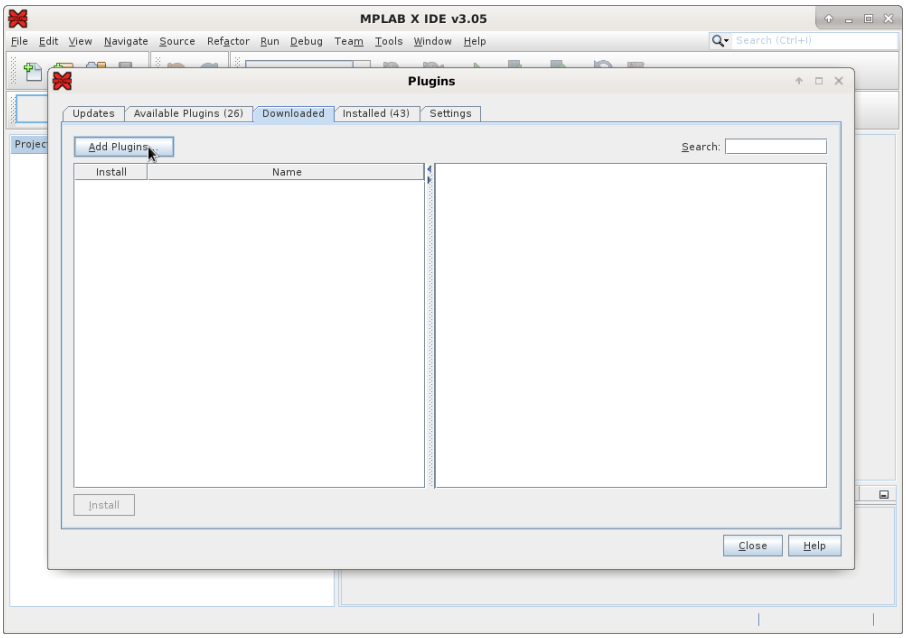
Link for download PICsimLab-0.6 installer. Download and install

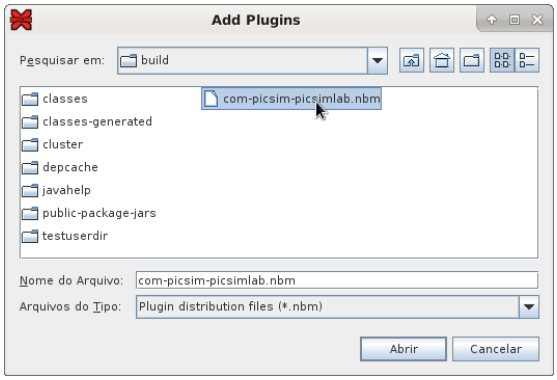
1.3 How to Install PicsimLab MPLABX Debugger plugin

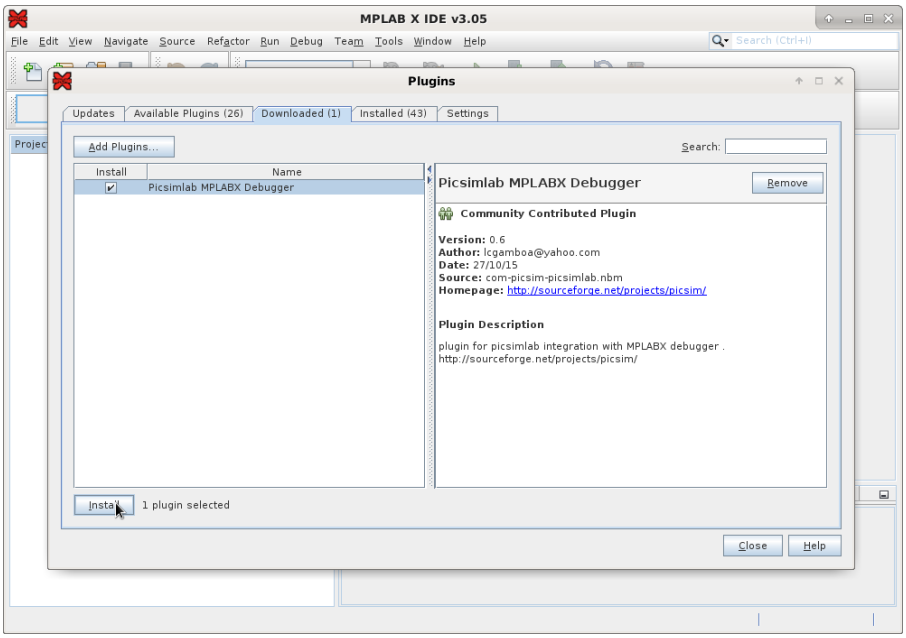
Link for download PicsimLab MPLABX Debugger plugin (com-picsim-picsimlab.nbm)

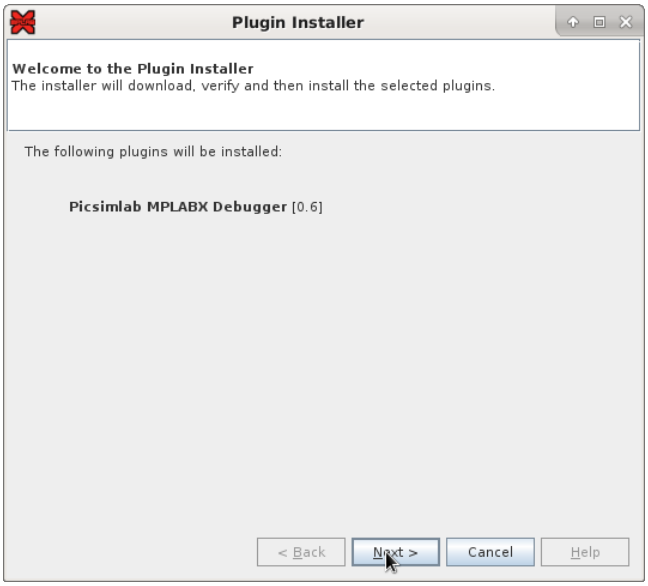

MPLAB X IDE v3.05
File Edit View Navigate Source Refactor Run Debug Team Tools Window Help
Search (Ctrl+I)
Embedded
Licenses
Templates
DTDs and XML Schemas
Plugins
Options
PC
Projects
Files
Services
<No Project Open>
Output
Action It...
Memory ...

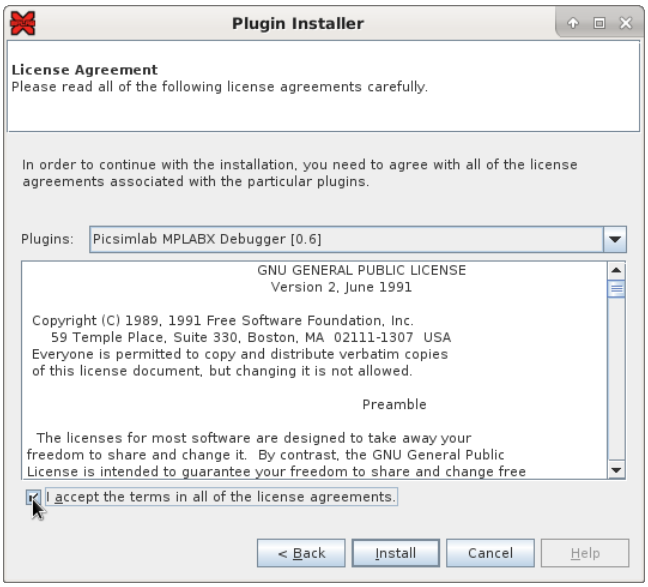

Plugins
Updates
Available Plugins (26)
Downloaded
Installed (43)
Settings
Check for Updates
Search:
Update
Name
Category
Update
Close
Help


MPLAB X IDE v3.05
File Edit View Navigate Source Refactor Run Debug Team Tools Window Help
Search (Ctrl+I)
Plugins
Updates
Available Plugins (26)
Downloaded
Installed (43)
Settings
Add Plugins...
Search:
Install
Name
Install
Close
Help

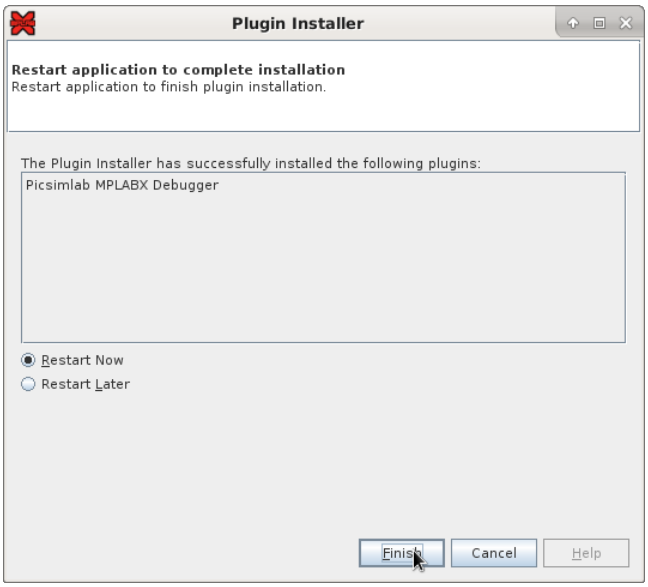

Add Plugins
Pesquisar em:
build
classes
classes-generated
cluster
depcache
javahelp
public-package-jars
testuserdir
com-picsim-picsimlab.nbm
Nome do Arquivo:
com-picsim-picsimlab.nbm
Arquivos do Tipo:
Plugin distribution files (*.nbm)
Abrir
Cancelar


MPLAB X IDE v3.05
File Edit View Navigate Source Refactor Run Debug Team Tools Window Help
Search (Ctrl+I)
Plugins
Updates
Available Plugins (26)
Downloaded (1)
Installed (43)
Settings
Add Plugins...
Search:
Install
Name
Picsimlab MPLABX Debugger
Picsimlab MPLABX Debugger
Remove
Community Contributed Plugin
Version: 0.6
Author: lcgamboa@yahoo.com
Date: 27/10/15
Source: com-picsim-picsimlab.nbm
Homepage: http://sourceforge.net/projects/picsim/
Plugin Description
plugin for picsimlab integration with MPLABX debugger .
http://sourceforge.net/projects/picsim/
Install
1 plugin selected
Close
Help


Plugin Installer
Welcome to the Plugin Installer
The installer will download, verify and then install the selected plugins.
The following plugins will be installed:
Picsimlab MPLABX Debugger [0.6]
< Back
Next >
Cancel
Help


Plugin Installer
License Agreement
Please read all of the following license agreements carefully.
In order to continue with the installation, you need to agree with all of the license agreements associated with the particular plugins.
Plugins:
Picsimlab MPLABX Debugger [0.6]
GNU GENERAL PUBLIC LICENSE
Version 2, June 1991
Copyright (C) 1989, 1991 Free Software Foundation, Inc.
59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.
Preamble
The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public
License is intended to guarantee your freedom to share and change free
I accept the terms in all of the license agreements.
< Back
Install
Cancel
Help

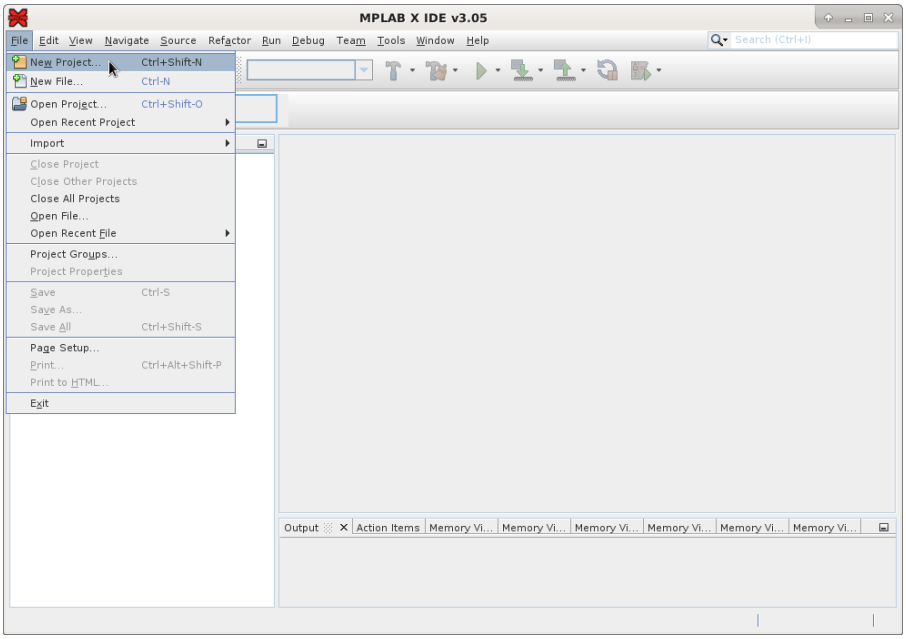

Validation Warning
The following plugins are not signed:
Picsimlab MPLABX Debugger
Warning: Installing untrusted plugins is potentially insecure. Use unsigned or untrusted plugins at your own risk.
Continue
Cancel

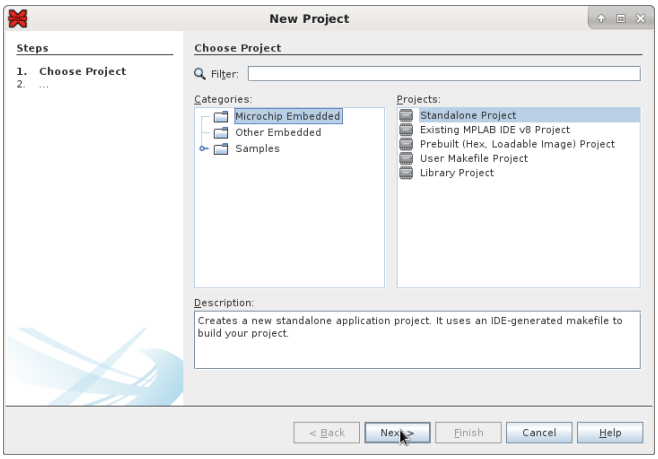

Plugin Installer
Restart application to complete installation
Restart application to finish plugin installation.
The Plugin Installer has successfully installed the following plugins:
Picsimlab MPLABX Debugger
Restart Now
Restart Later
Finish
Cancel
Help

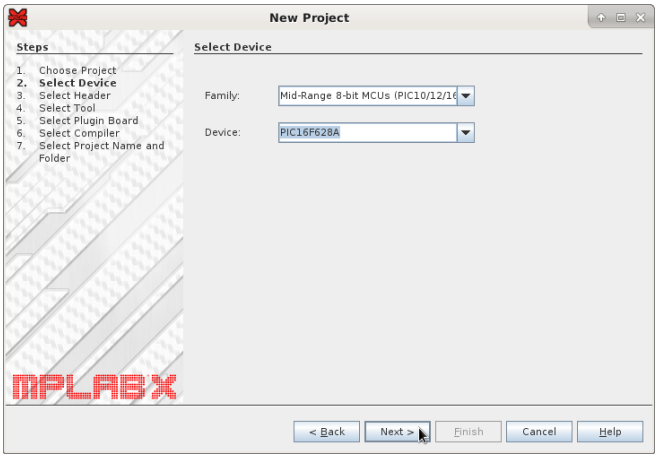
Chapter 2

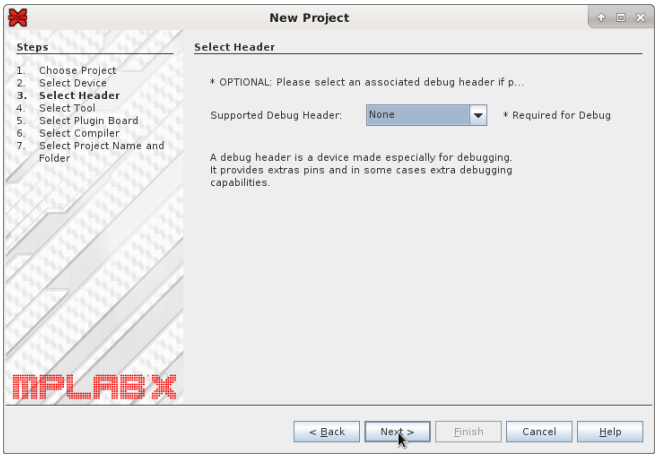
Configuring a New Project in MPLABX

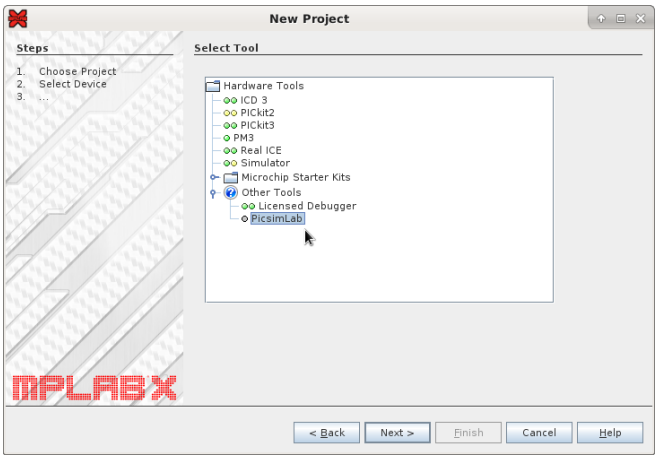
2.1 Project Creation

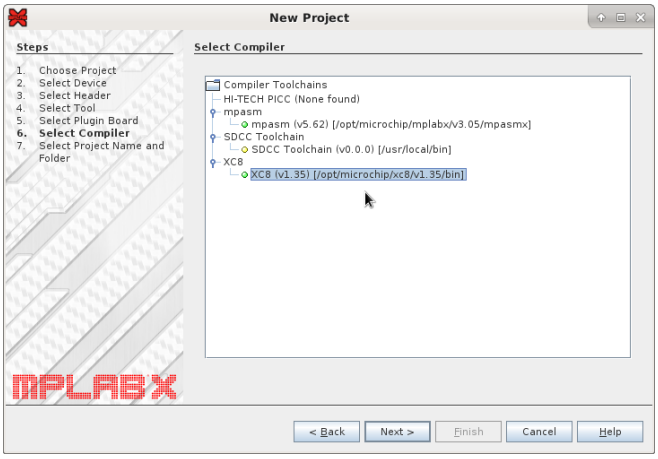


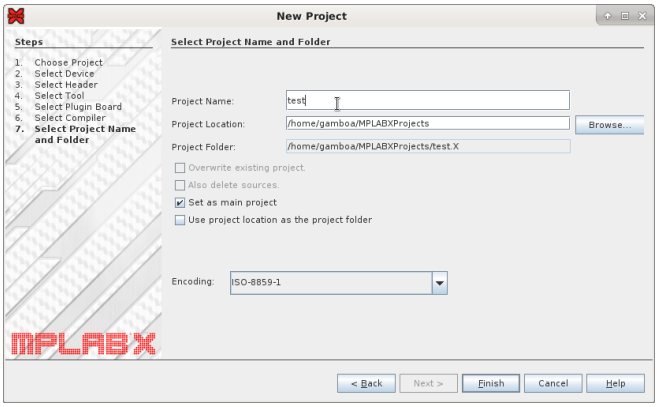

New Project
Steps
1. Choose Project
2. ...
Choose Project
Filter:
Categories:
Microchip Embedded
Other Embedded
Samples
Projects:
Standalone Project
Existing MPLAB IDE v8 Project
Prebuilt (Hex, Loadable Image) Project
User Makefile Project
Library Project
Description:
Creates a new standalone application project. It uses an IDE-generated makefile to build your project.
< Back
Next >
Finish
Cancel
Help


New Project
Steps
1. Choose Project
2. Select Device
3. Select Header
4. Select Tool
5. Select Plugin Board
6. Select Compiler
7. Select Project Name and Folder
Select Device
Family:
Mid-Range 8-bit MCUs (PIC10/12/16
Device:
PIC16F628A
MPLABX
< Back
Next >
Finish
Cancel
Help

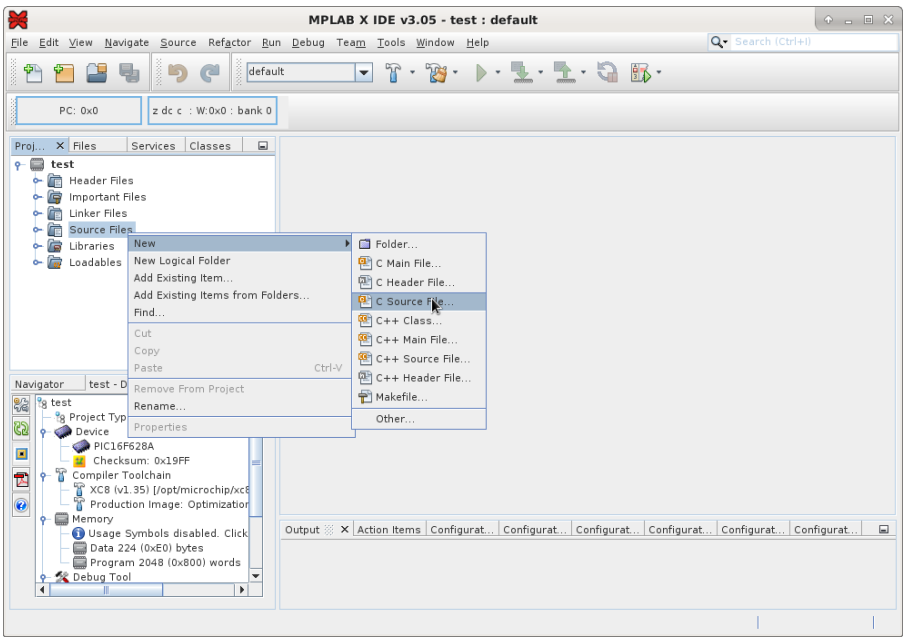

New Project
Steps
1. Choose Project
2. Select Device
3. Select Header
4. Select Tool
5. Select Plugin Board
6. Select Compiler
7. Select Project Name and Folder
Select Header
* OPTIONAL: Please select an associated debug header if p...
Supported Debug Header:
None
* Required for Debug
A debug header is a device made especially for debugging.
It provides extras pins and in some cases extra debugging capabilities.
MPLABX
< Back
Next >
Finish
Cancel
Help

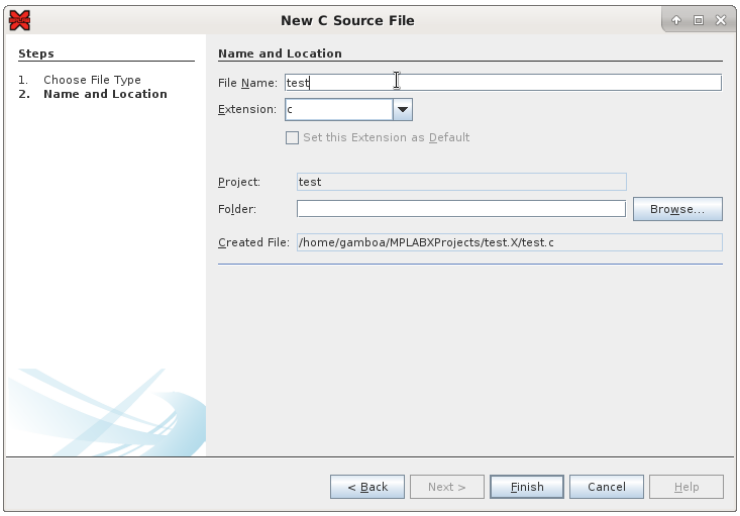

New Project
Steps
1. Choose Project
2. Select Device
3. ...
Select Tool
Hardware Tools
ICD 3
PICkit2
PICkit3
PM3
Real ICE
Simulator
Microchip Starter Kits
Other Tools
Licensed Debugger
PicsimLab
MPLABX
< Back
Next >
Finish
Cancel
Help


New Project
Steps
1. Choose Project
2. Select Device
3. Select Header
4. Select Tool
5. Select Plugin Board
6. Select Compiler
7. Select Project Name and Folder
Select Compiler
Compiler Toolchains
HI-TECH PICC (None found)
mpasm
mpasm (v5.62) [/opt/microchip/mplabx/v3.05/mpasmx]
SDCC Toolchain
SDCC Toolchain (v0.0.0) [/usr/local/bin]
XC8
XC8 (v1.35) [/opt/microchip/xc8/v1.35/bin]
MPLABX
< Back
Next >
Finish
Cancel
Help

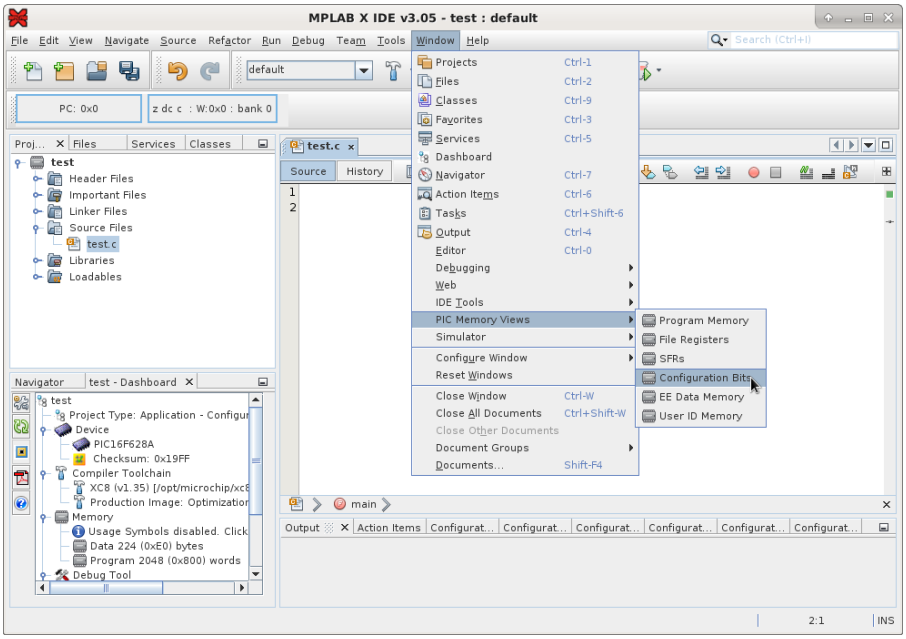

New Project
Steps
1. Choose Project
2. Select Device
3. Select Header
4. Select Tool
5. Select Plugin Board
6. Select Compiler
7. Select Project Name and Folder
Select Project Name and Folder
Project Name:
test
Project Location:
/home/gamboa/MPLABXProjects
Browse...
Project Folder:
/home/gamboa/MPLABXProjects/test.X
Overwrite existing project.
Also delete sources.
Set as main project
Use project location as the project folder
Encoding:
ISO-8859-1
MPLABX
< Back
Next >
Finish
Cancel
Help

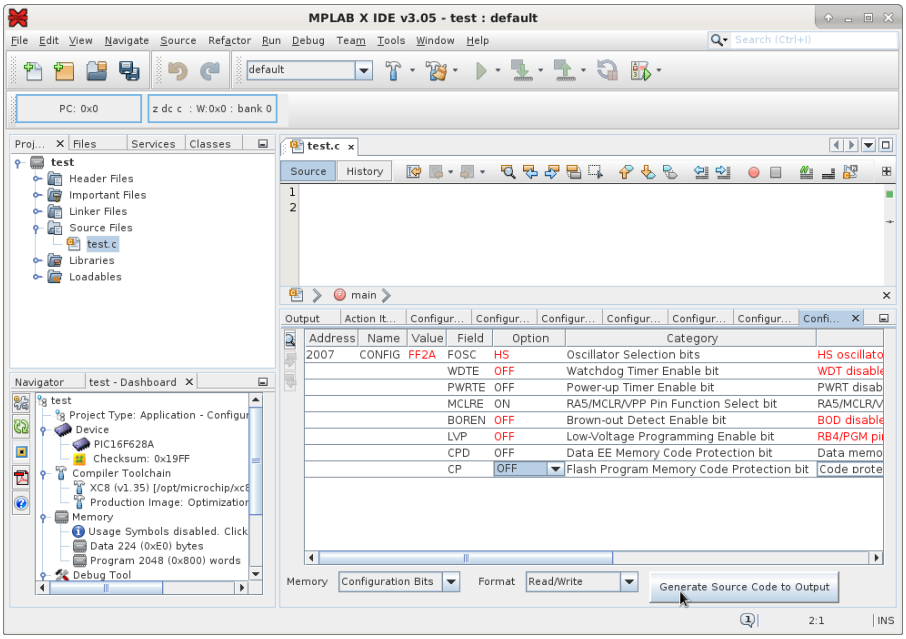
2.2 File Creation

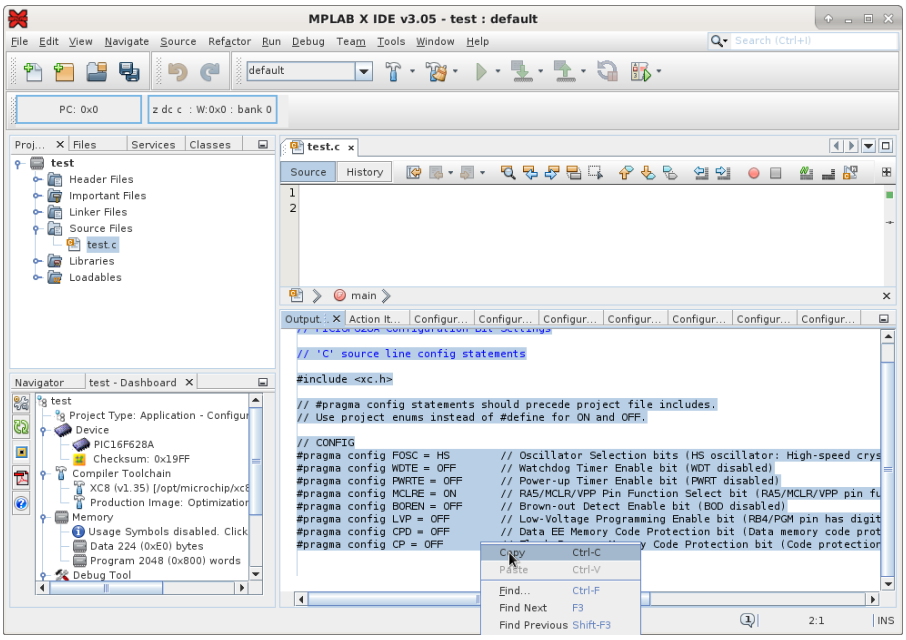




2.3 PIC Configuration Bits



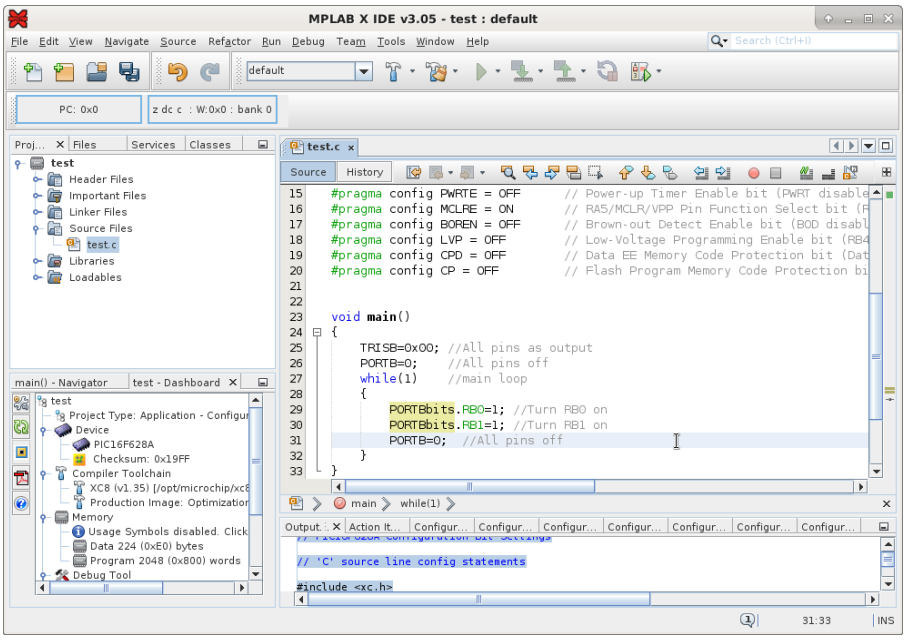




2.4 Code Example

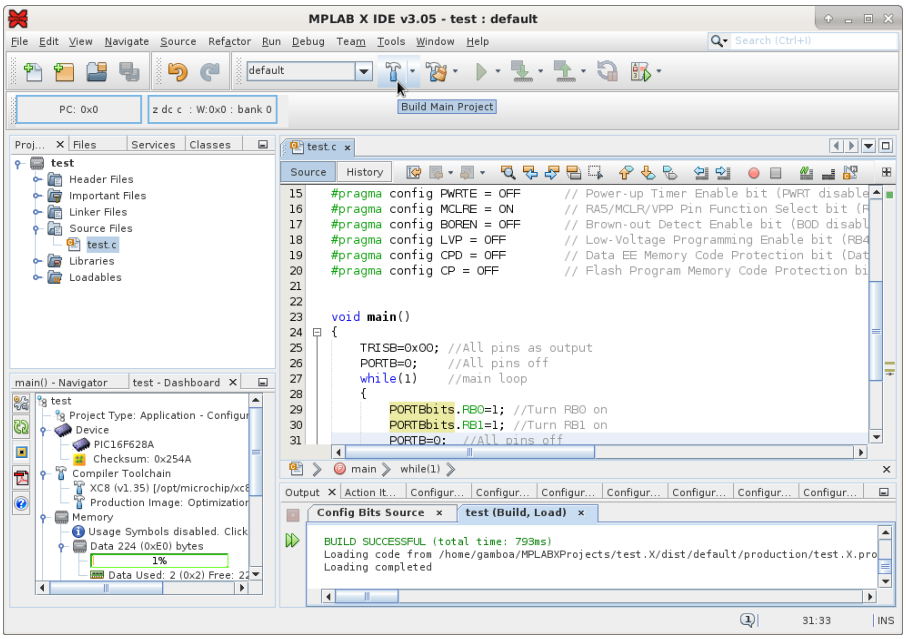
Paste the configuration and this simple code example in test.c:

```
void main()
{
    TRISB=0x00; //All pins as output
    PORTB=0;    //All pins off
    while(1)    //main loop
    {
        PORTBbits.RB0=1; //Turn RB0 on
        PORTBbits.RB1=1; //Turn RB1 on
        PORTB=0;  //All pins off
    }
}
```



2.5 Building the Project

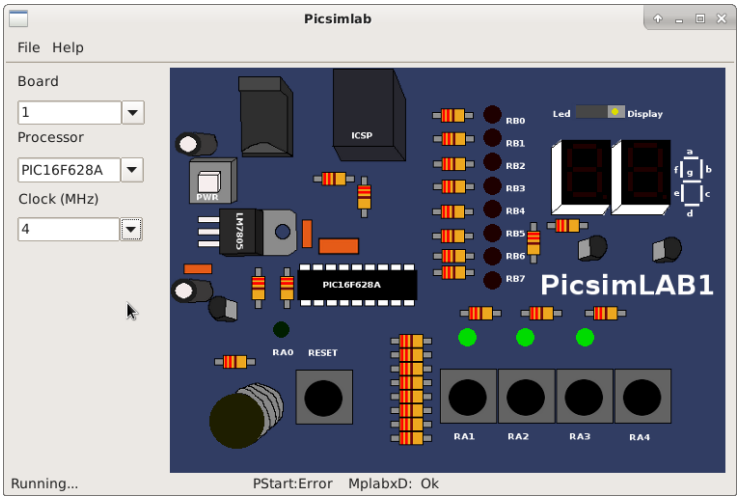
Use the **Build** button and wait for the message "BUILD SUCCESSFUL".



Chapter 3

Program and Debug PICsimLab With MPLABX

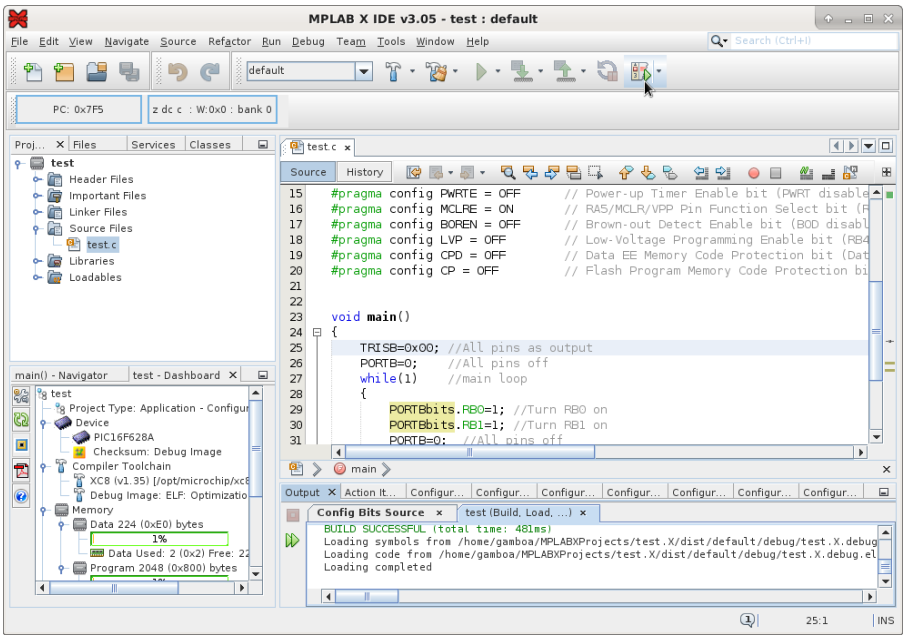
3.1 Starting PICsimLab



The plugin connect to Picsimlab through a TCP socket using port 1234, and you have to allow the access in the firewall. Verify in the PICsimLab statusbar the message "MplabxD: Ok". It's show debugger server state.

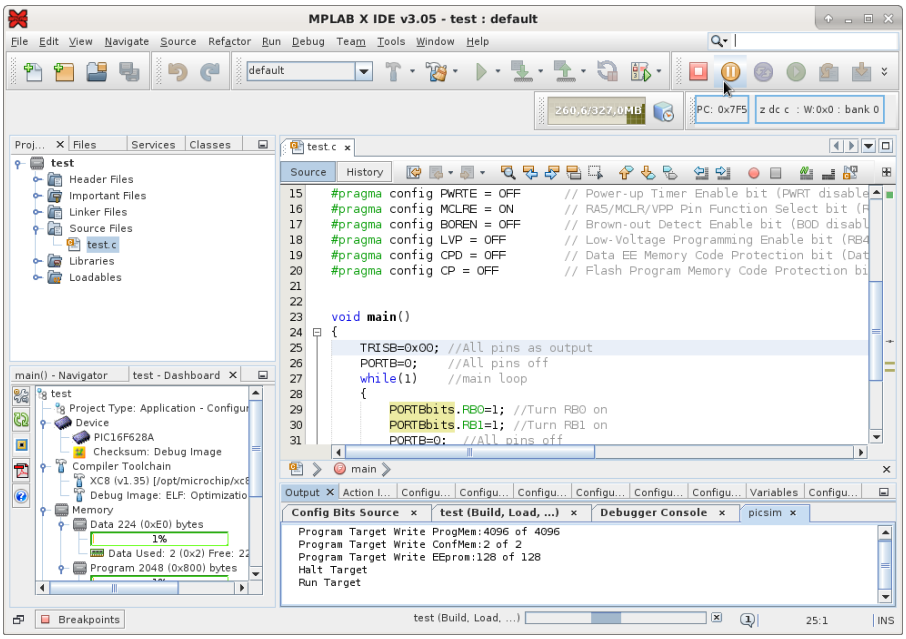
3.2 Programming PICsimLab

Use the **Debug** button to programming PICsimLab.



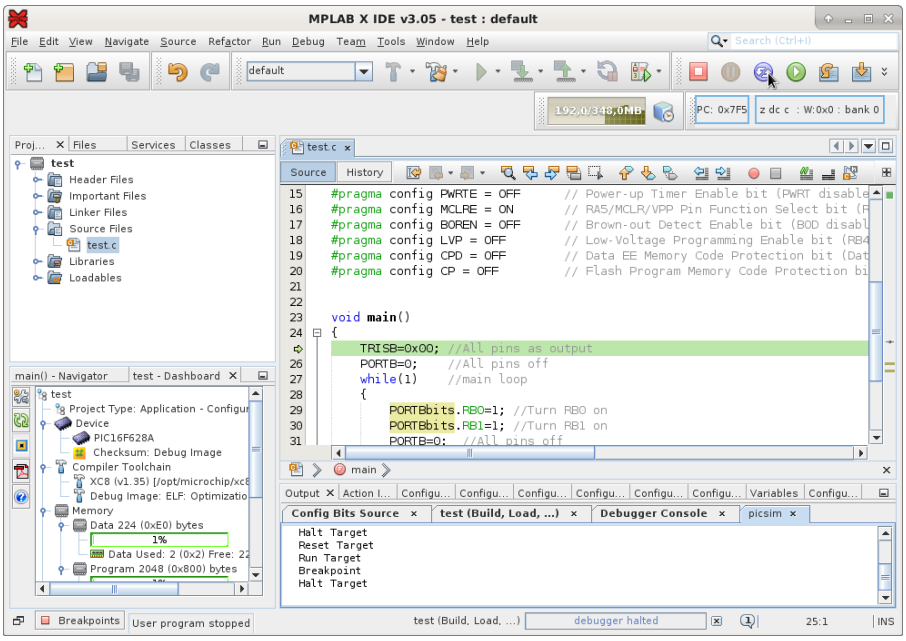
3.3 Pausing the Program

Use the **Pause** button to stop the program and inspect the code and memory.



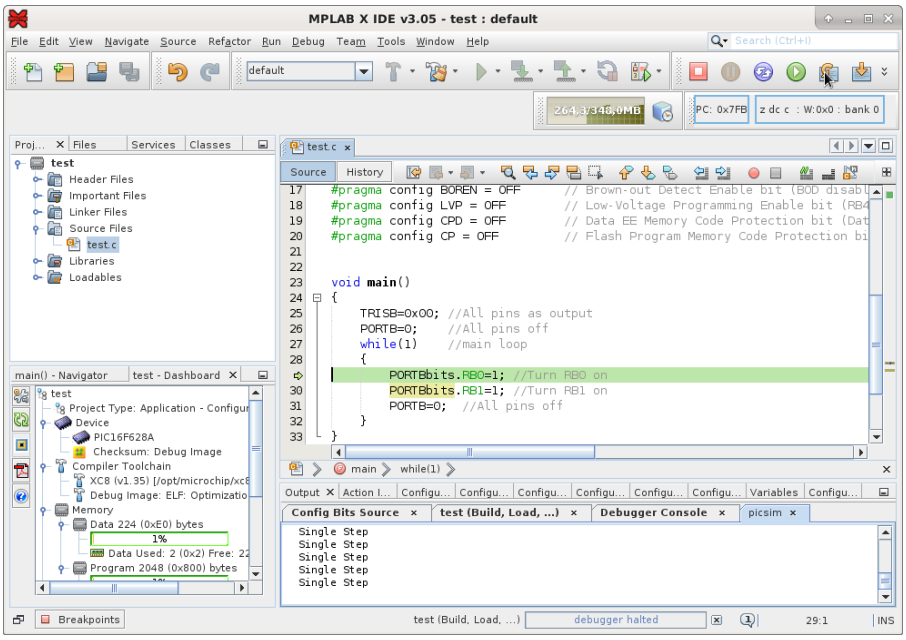
3.4 Restarting the Program

Use the **Restart** button to restart the program.

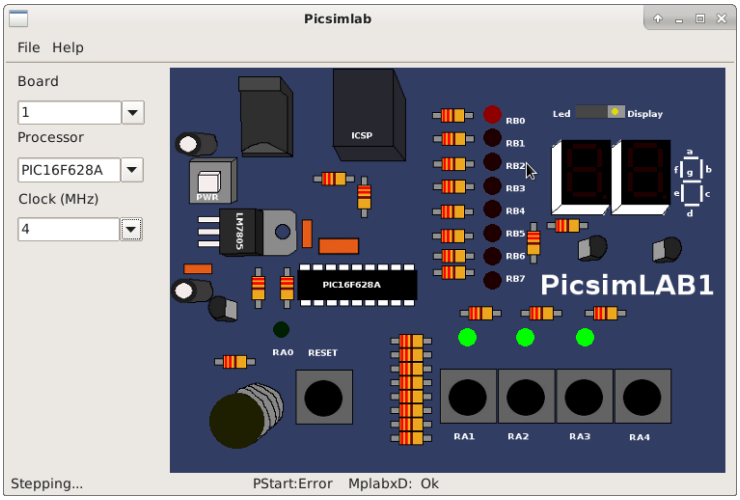


3.5 Running Step by Step

Use the **Step** or **Step Over** button to run the program step by step.

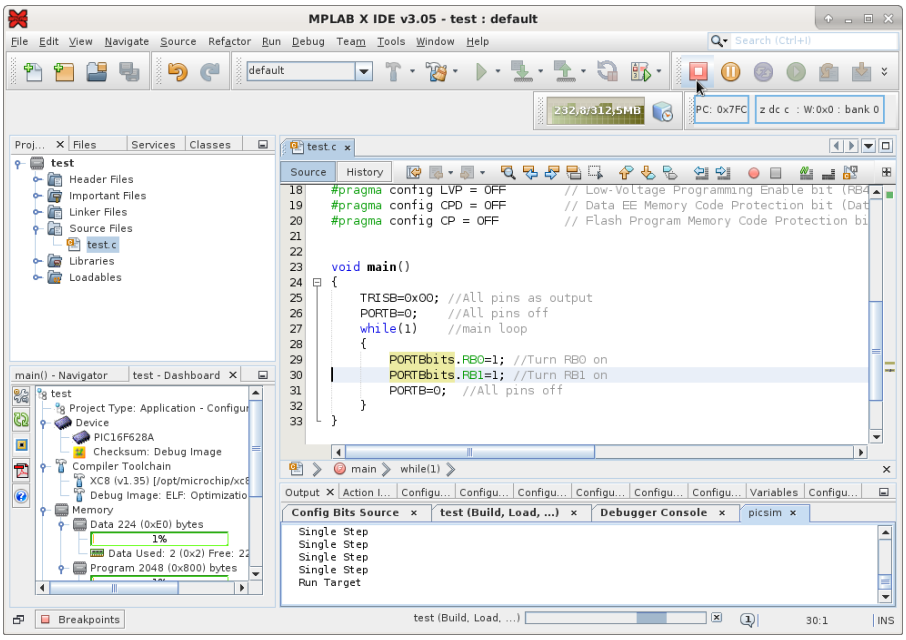


See in the PICsimLab the changes of each step.



3.6 Stopping Debugger

Use the **Stop** button to turn off the MPLABX debugger. The program continues running in PICsimLab after MPLABX debugger is stopped.


MPLAB X IDE v3.05 - test : default
File Edit View Navigate Source Refactor Run Debug Team Tools Window Help
default
test
Header Files
Important Files
Linker Files
Source Files
test.c
Libraries
Loadables
test.c
Source History
#pragma config LVP = OFF // Low-Voltage Programming Enable bit (RB4
#pragma config CPD = OFF // Data EE Memory Code Protection bit (Dat
#pragma config CP = OFF // Flash Program Memory Code Protection bi
void main()
{
TRISB=0x00; //All pins as output
PORTB=0; //All pins off
while(1) //main loop
{
PORTBbits.RB0=1; //Turn RB0 on
PORTBbits.RB1=1; //Turn RB1 on
PORTB=0; //All pins off
}
}
Config Bits Source
test (Build, Load, ...)
Debugger Console
picsim
Single Step
Single Step
Single Step
Single Step
Run Target
Breakpoints
30:1
INS

Chapter 4

This Tutorial in Video

Link for Youtube video version of this tutorial: How to use MPLABX to program and debug PicsimLab 0.6

Chapter 5

License