Visual Disassembler for the Microchip © PIC32 MIPS® Technologies M4K™ Microprocessor Family

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Introduction

Visual Disassembler is an interactive multiple pass disassembler for the Microchp © PIC32 and MIPS® Technologies M4K™ microprocessor core family. The user simply opens an Intel hex file and the file is disassembled and placed in a text view. The user does not edit the text directly. Comments and program labels are added by address through dialog boxes. Each entry shows an immediate result in the text view. Program labels are resolved throughout the entire file. Intermediate work can be saved and resumed later. Upon completion of the dis-assembly the file can be saved as an assembly listing text file. The assembly listing can be easily edited to create an assembler source file. The assembler source file may require editing due to the requirements of the assembler.

Features

- Memory space control
    - Allows definition of data and code areas in the memory space
- Resolve program labels interactively
    - Define both data and memory segments for proper dis-assembly

The program is a plug-in for the Eclipse IDE and can be sold as an individual component or bundled with the Eclipse CDT.

This can be bundled with the Visual Disassembler:
ECLIPSE CDT 3.6.0 (Helios)
http://www.eclipse.org

Visual Disassembler Jar
com.favorites4u.visualdisassembler.mips.jar

Questions?
Contact us: sales@favorites4u.com

Requirements

Visual Disassembler

The Visual Disassembler requires Eclipse version 3.6.x. and will run on both Windows and Linux platforms.

The Visual Disassembler jar file must be installed in the eclipse/plugins directory.

Eclipse

Eclipse 3.6.x requires the Java Runtime Environment (JRE)6.

It can be obtained from http://www.oracle.com/technetwork/java/index.html

Installation

Unzip the file in the CD into a new folder.

Find the eclipse folder and locate the file eclipse.exe.

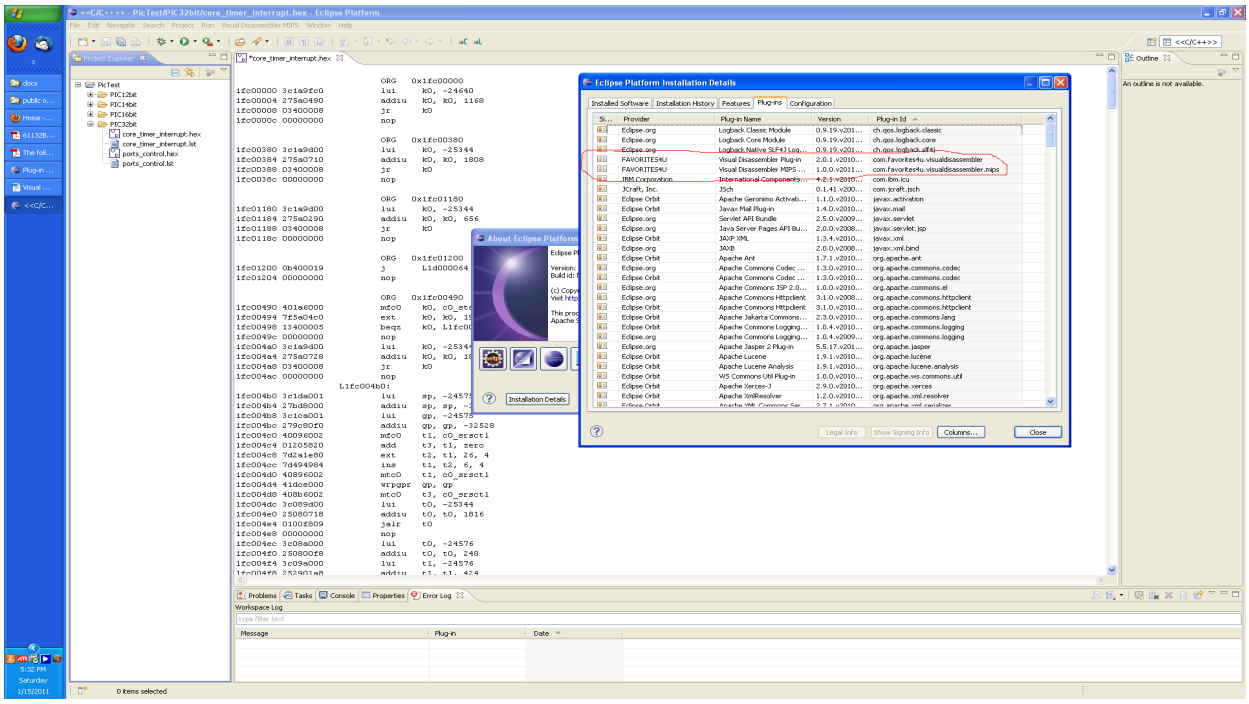
Create a shortcut to your desktop.

Note:

You can create a clean directory by unzipping the eclipse CDT file into a new folder.

Next copy the visual disassembler jar file into the eclipse\plugins directory.

Type eclipse -clean and verify that the visual disassembler plugin is installed by looking in the Help\About Eclipse Platform\Installation Details dialog box..



Quick Start

1. Open hex file – select hex file and double click it
2. Modify Control Table
3. Add comments
4. Add labels
5. Save as vdmips32 file

   6a. Use File/Save As... to save project file (change extension to .vdmips32)
6. Repeat steps 3 through 6 until satisfied with dis-assembly
7. Save listing to text file

   8a. Use File/Save As... to save listing (change extension to .lst)

Typical View

A typical view of the Visual Disassembler is shown below in figure 1.

File Types Opened by the Application:

The default file extension is - .vdmips32

An alternative extension is an Intel hex file - .hex or .HEX

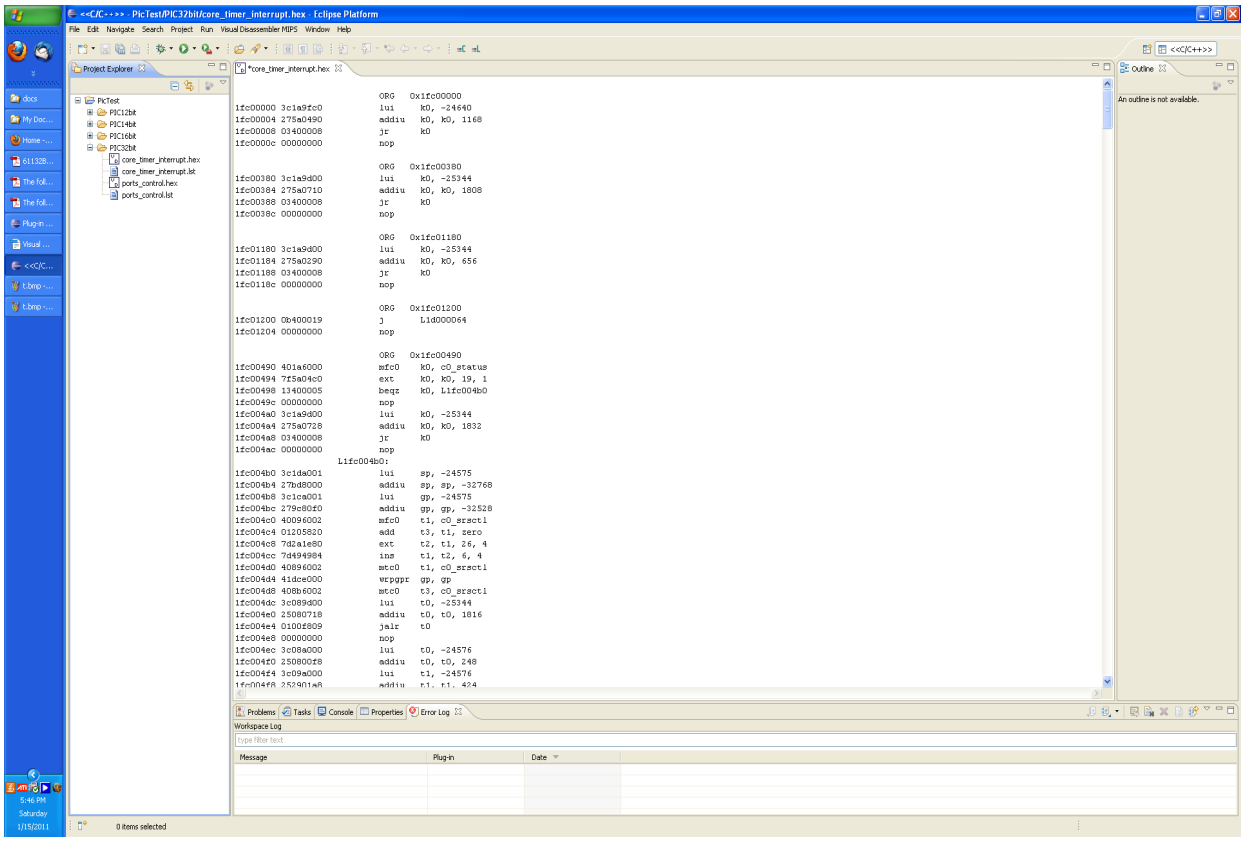


Figure 1

Open a File

Intel Hex File

Select a file with the extension .HEX or .hex and double-click.

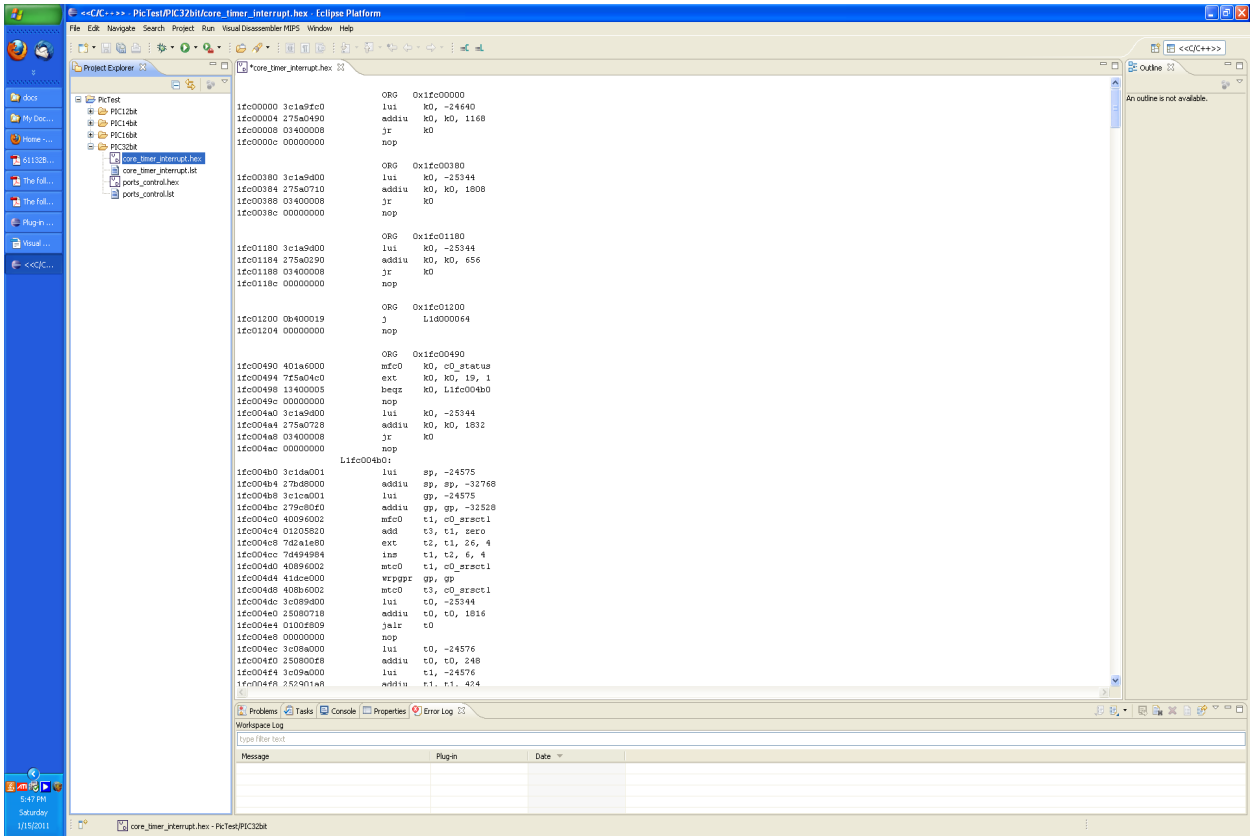


Figure 2

VDMIPS32 File – Default file format

Select a file with the file extension vdmips32 and double click (see figure 3).

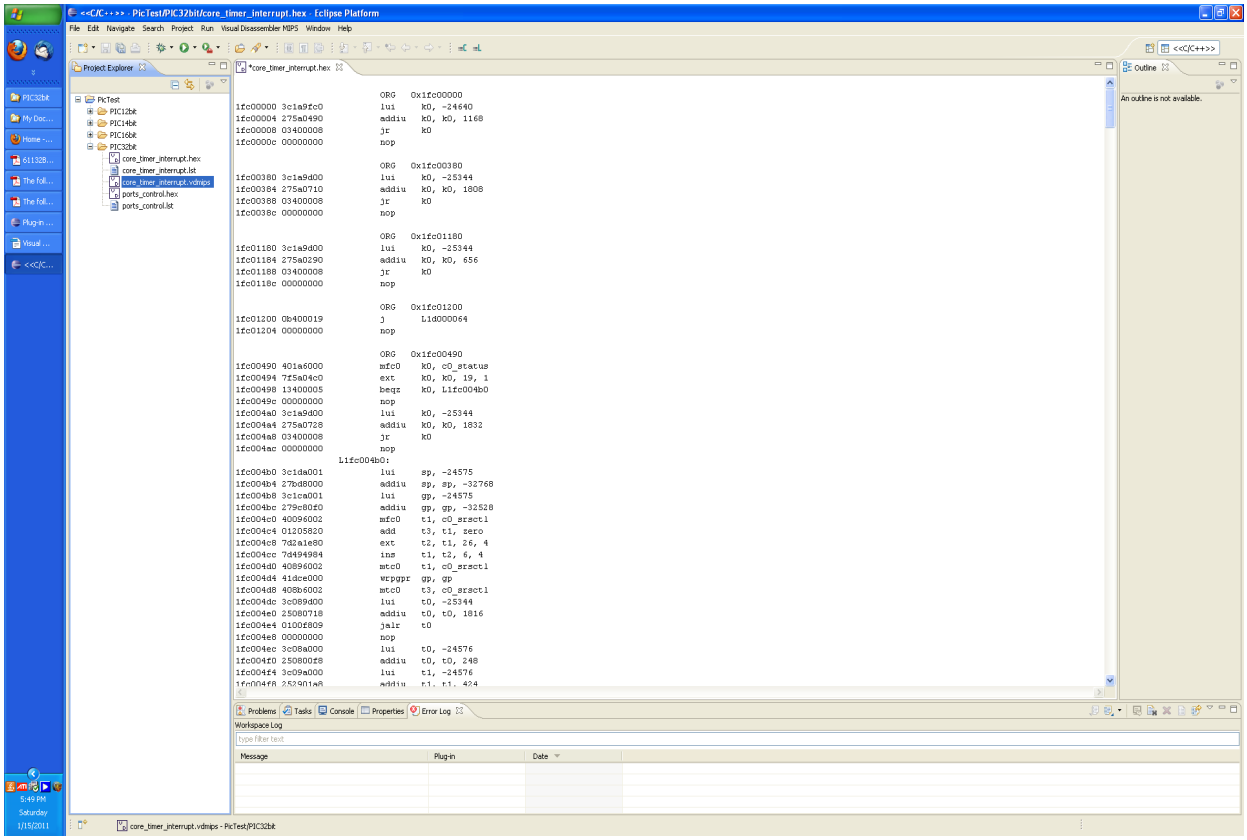


Figure 3

Menu View

Figure 4 shows the Visual Disassembler MIPS menu items.

Select Device...	Allows the user to select a PIC32 device file (*resolves registers, vectors and memory space*) Note: this feature currently not implemented
Edit Comment...	Allows the user to add comments at any location in the source file
Edit Program Label...	Allows the user to add labels at any program location *(These labels are resolved on data access, branch and call instructions.)*
Edit Control Table...	Allows the user to define the memory space boundaries. Program and data space.

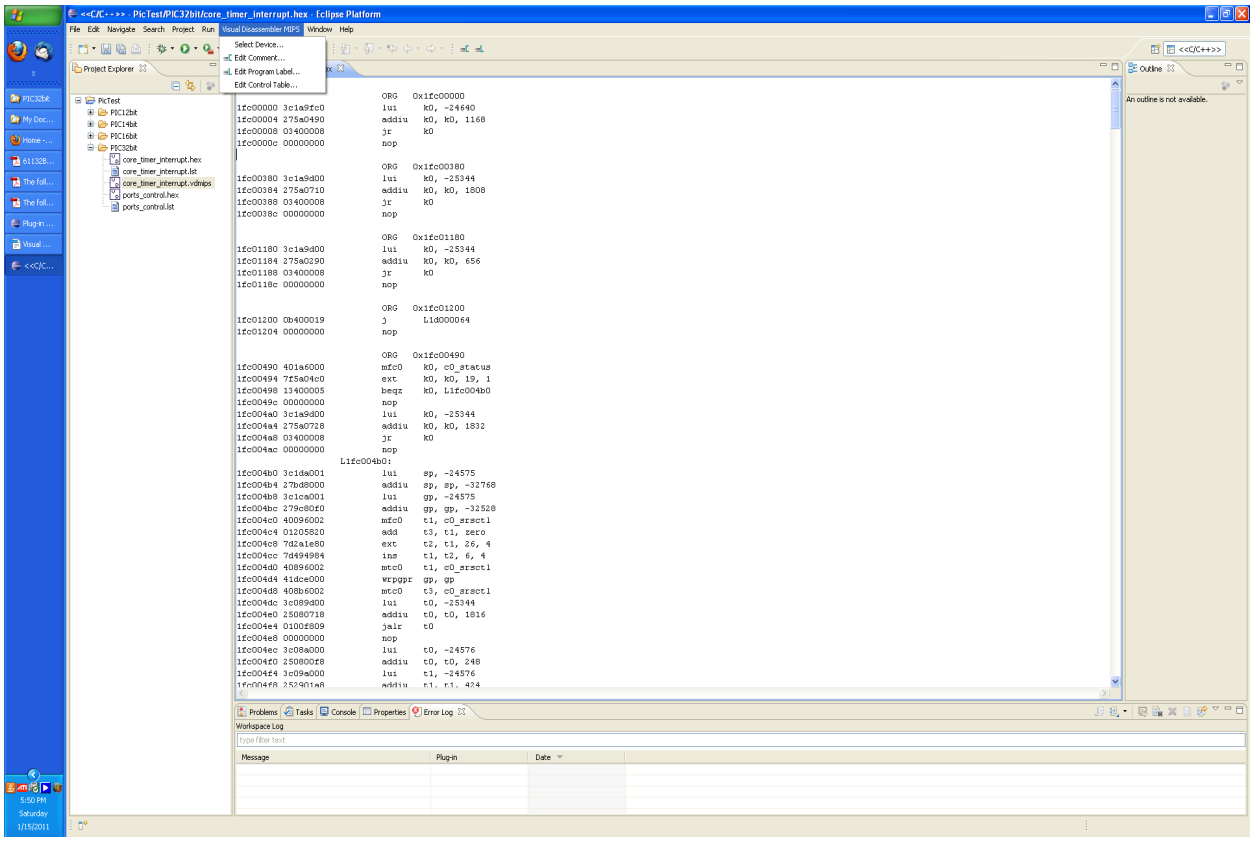


Figure 4

Menu Item – Select Device... (feature not implemented)

This menu item allows the user to select a specific device to use for the dis-assembly. It provides memory space, register, and ISR vector information to the disassembler.

ToolBar Button View – Update Comment Tooltip

The Visual Disassembler Update Comment Button shown in figure 5 duplicates the menu item in the Visual Disassembler MIPS / Update Comment... menu.

Update Comment - Allows the user to add comments at any location in the source file

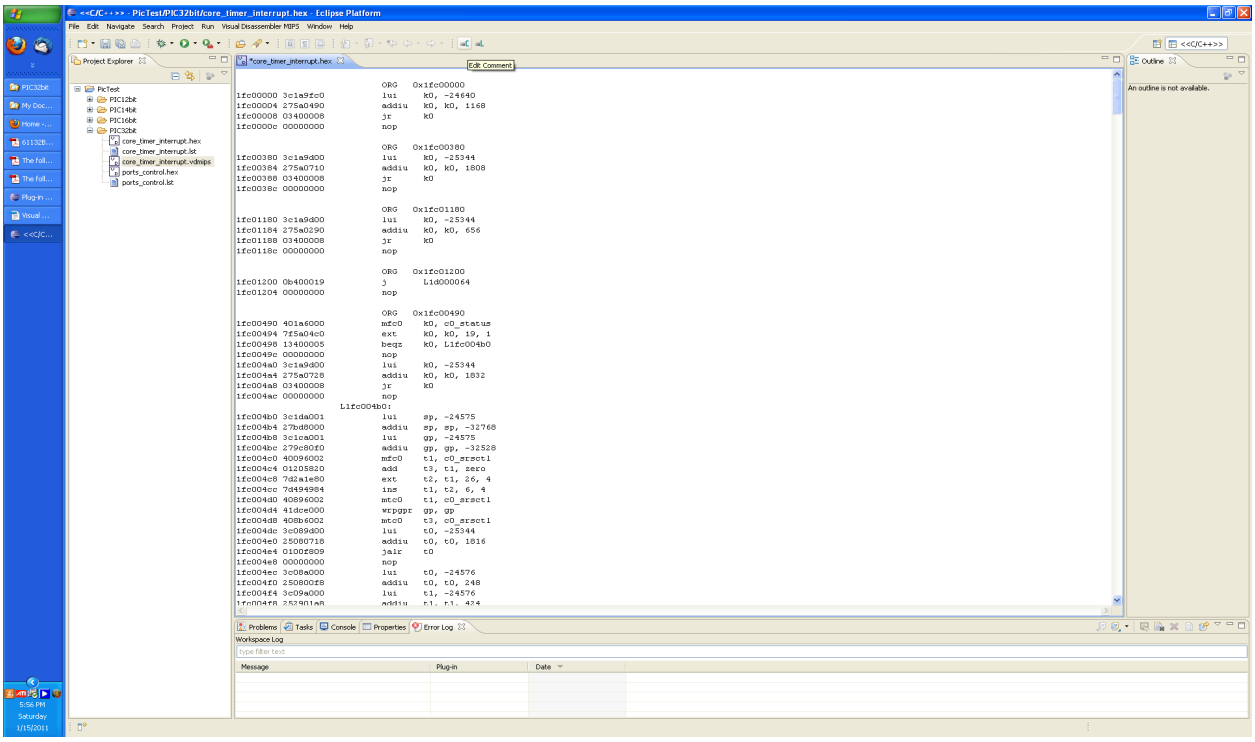


Figure 5

Dialog View – Update Comment

Figures 6 and 7 show the Visual Disassembler Update Comment dialog box.
This dialog box allows entering a comment before or after any line in the source file

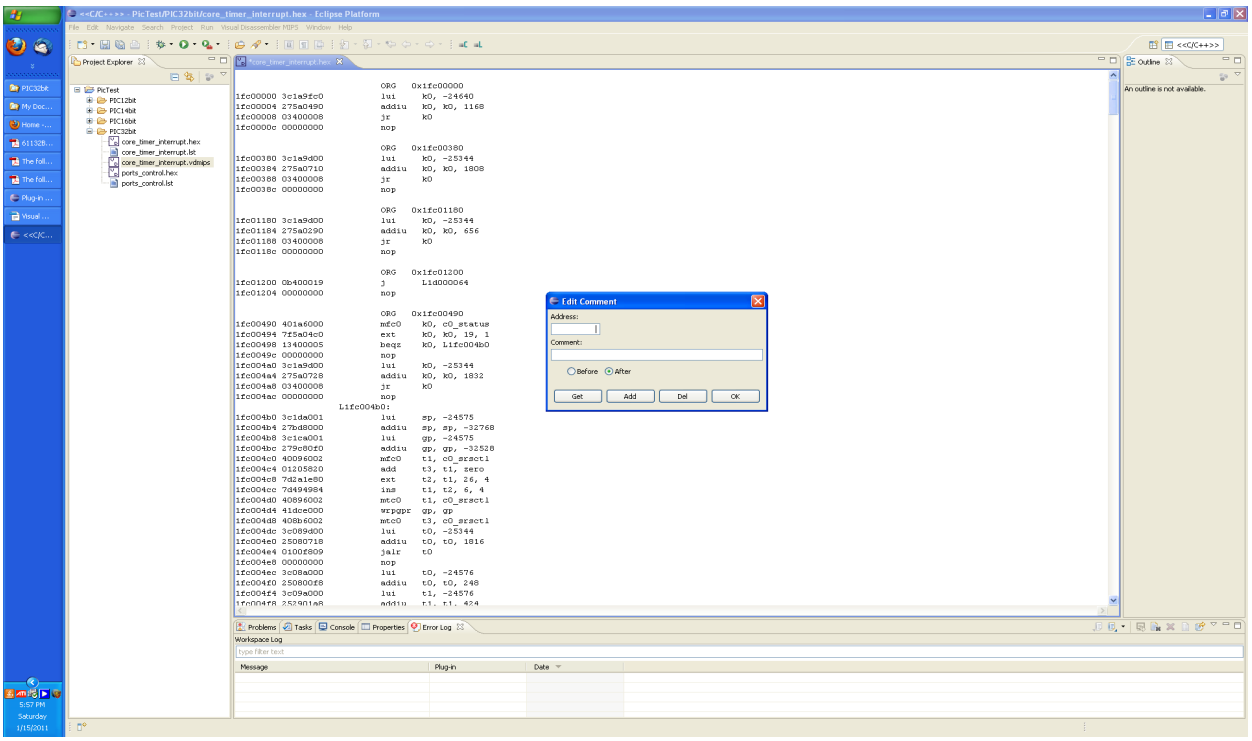


Figure 6

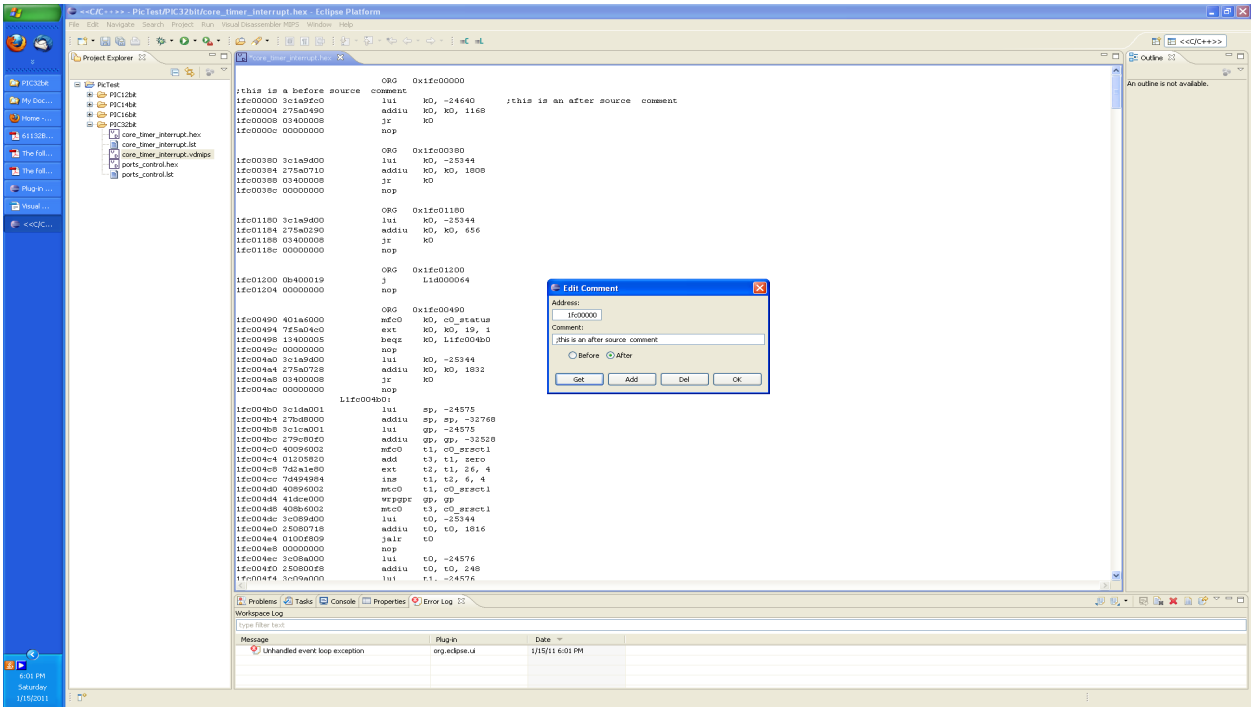

Project Explorer
Outline
An outline is not available.
Edit Comment
Address:
1fc00000
Comment:
;this is an after source comment
Before
After
Get
Add
Del
OK
Problems
Tasks
Console
Properties
Error Log
Workspace Log
Message
Plug-in
Date
Unhandled event loop exception
org.eclipse.ui
1/15/11 6:01 PM

Figure 7

ToolBar Button View – Edit Program Label Tooltip

Figure 8 shows the Visual Disassembler button item – Edit Program Label
This button duplicates the menu item Visual Disassembler MIPS - Edit Program Label... menu item

Edit Program Label... Allows the user to add labels at any data/program location
(These labels are resolved on data access, branch and call instructions.)

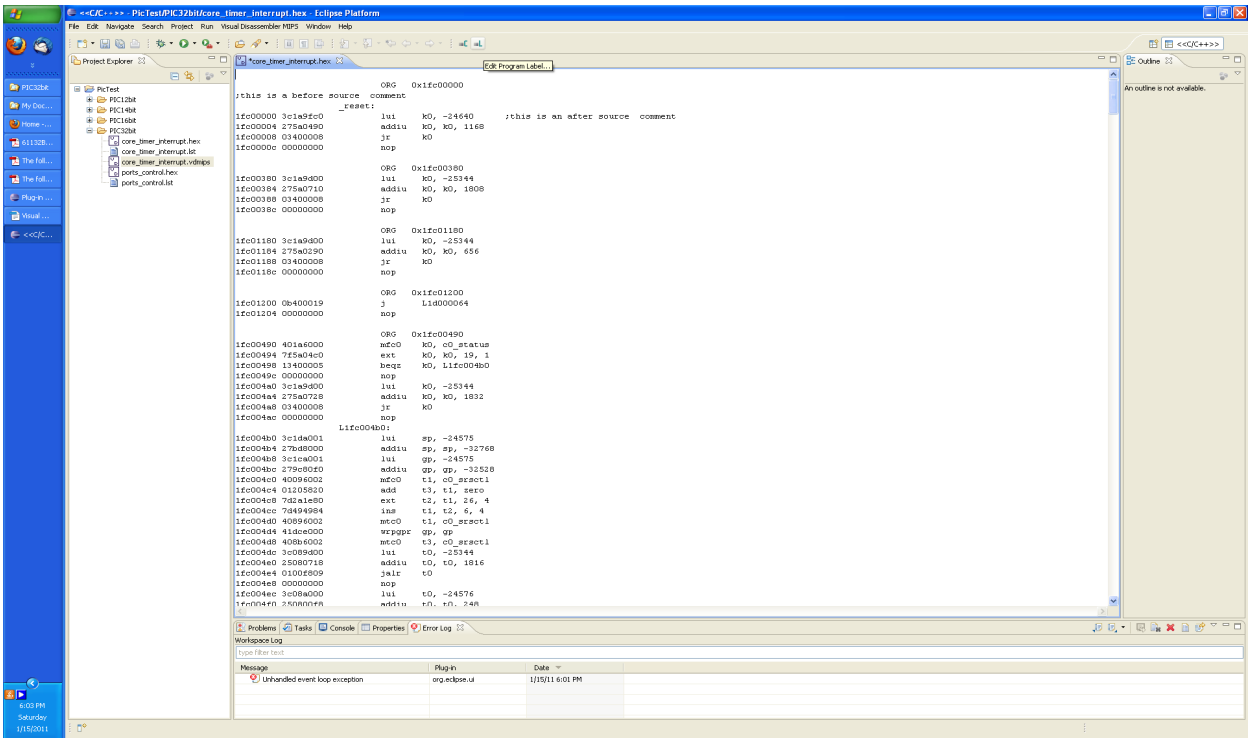


Figure 8

Menu Item – Edit Data/Program Label...

Figures 9 and 10 display the Visual Disassembler Edit Program Label dialog box.

Edit Program Label... Allows the user to add labels at any data/program location
(These labels are resolved on data access, branch and call instructions.)

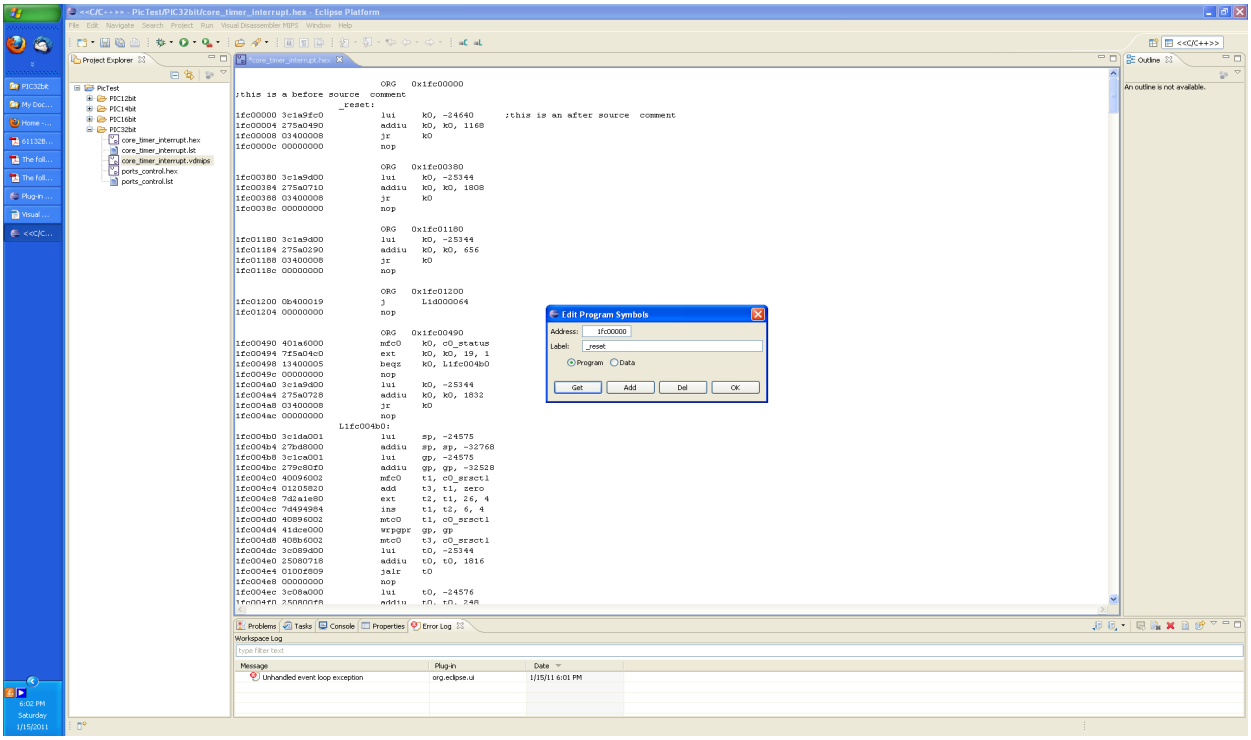


Figure 9

Menu Item – Edit Control Table...

This menu item allows the user to modify the memory space parameters. The user can select between DATA and CODE space. A memory region specified as DATA space forces the disassembler to disassemble all opcodes as defined word (DW). The disassembler will disassemble all MIPS opcodes in regions defined as CODE.

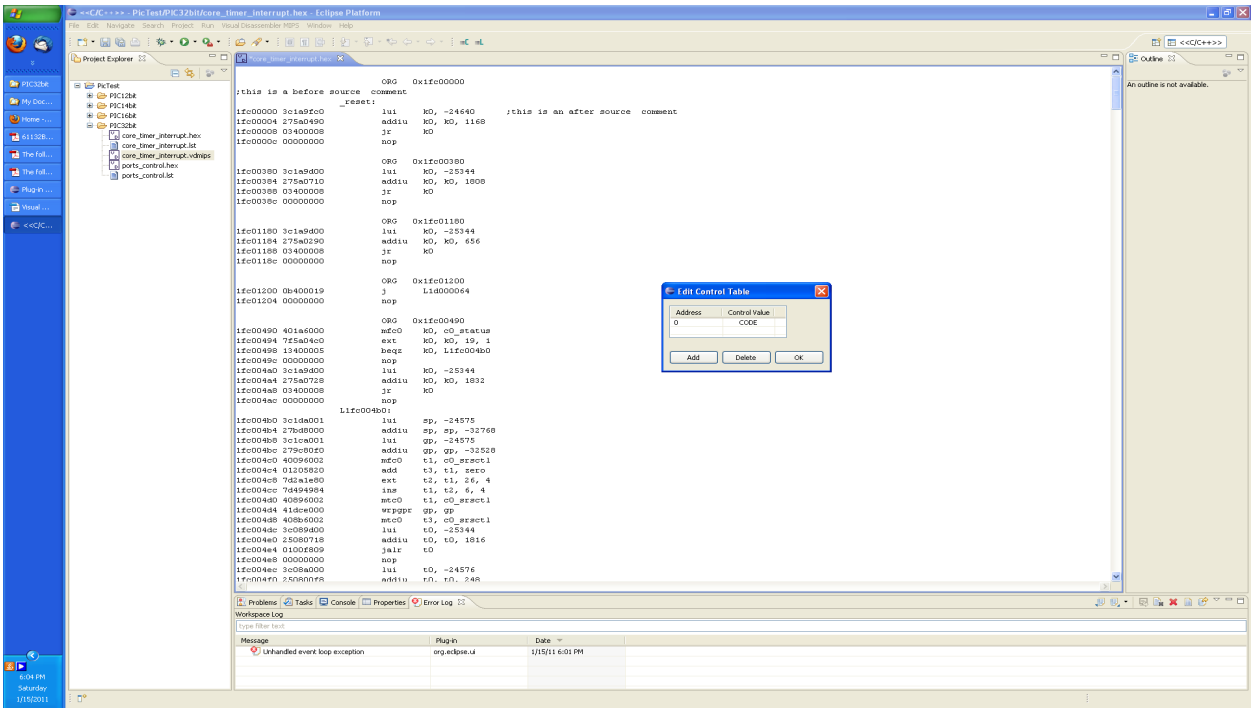
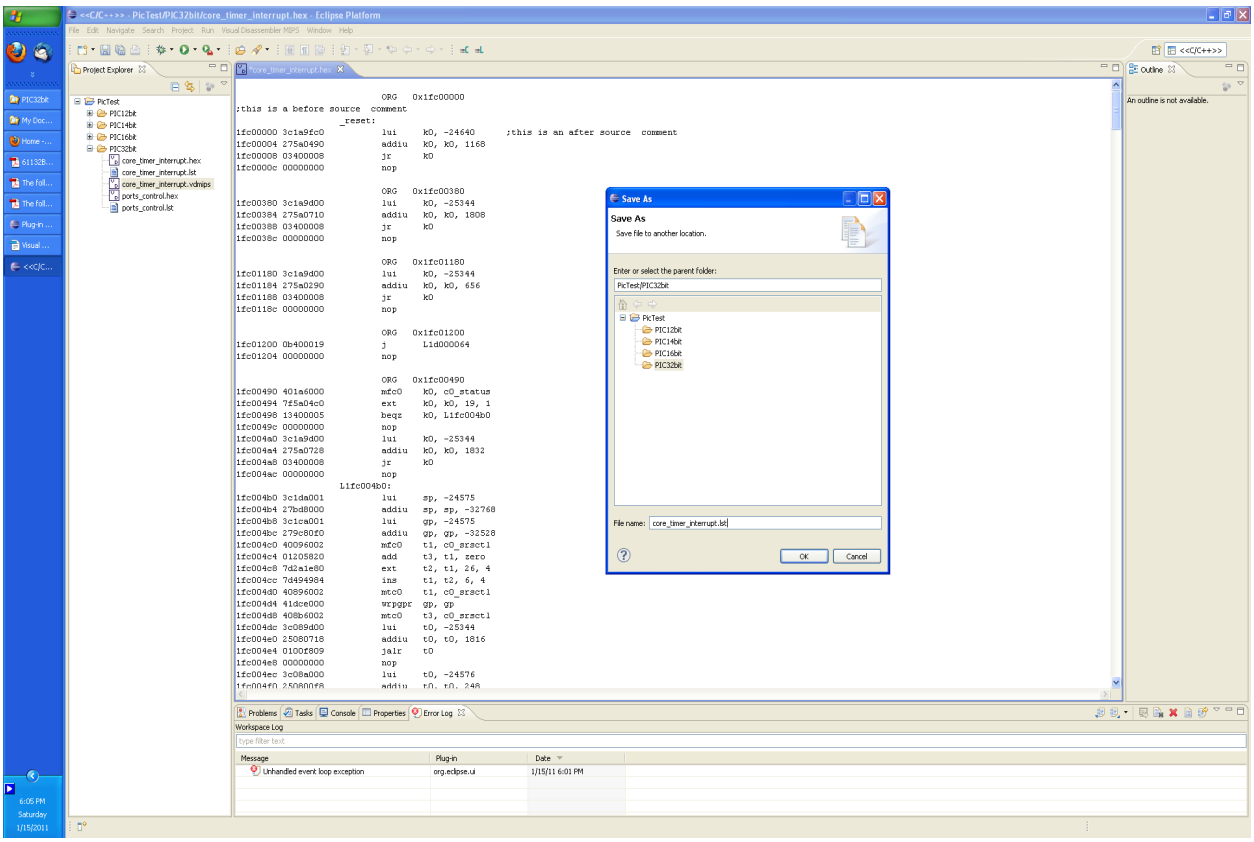


Figure 10

Saving the Assembly Listing

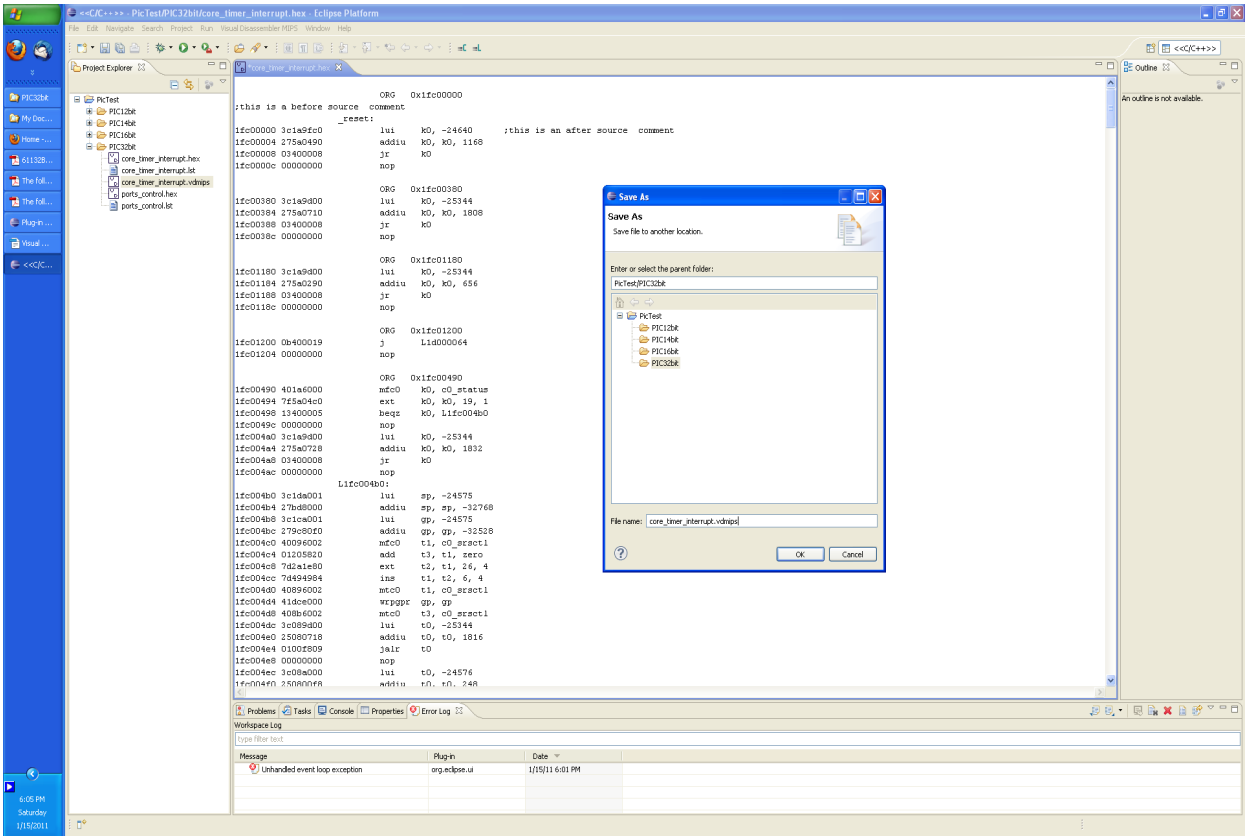
Select menu item File/SaveAs... , change the file extension to .lst and click OK.
The project window on the left should update and show a new text file with the saved name.
Editing the Assembly Listing may be required for the desired assembler.

Note: The address and opcode fields must be removed before it can be assembled.



Saving the Project File

Select menu item File/SaveAs... , change the file extension to vdmips and click OK. The project window on the left should update and show a new project file with the saved name. Double-click this file to resume editing.



Device Part Files

The device part files are located in the directory:

`plugins/com.favorites4u.visualdisassembler.parts/pic/pic32`

These are XML files that describe the part memory space. To create a new part just copy one of the given parts and modify it.