

Visual Disassembler
for the
Texas Instruments
MSP430
Microprocessor Family

Copyright © Creative Realtime Heuristic
July 19, 2018

Table of Contents

Introduction.....	3
Requirements.....	4
Visual Disassembler.....	4
Eclipse.....	4
Installation.....	4
Quick Start.....	4
Typical View.....	5
Open a File.....	6
Intel Hex File.....	6
VDMSP File – Default file format.....	7
Menu View.....	8
Menu Item – Select Device.....	9
ToolBar Button View – Update Comment ToolTip.....	10
Menu Item – Update Comment.....	11
ToolBar Button View – Edit Data/Program Label Tooltip.....	13
Menu Item – Edit Data/Program Label.....	14
Menu Item – Edit Control Table.....	15
Saving the Assembly Listing.....	16

Introduction

Visual Disassembler for the Texas Instruments © MSP430 is an interactive multi-pass disassembler for the MSP430 microprocessor 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 disassembly 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.

New features

- Added MSP430 part selection
 - resolves memory space, registers, and ISR vectors
- Added memory space control
 - Allows definition of data and code areas in the memory space

The program is a plug-in for the Eclipse IDE and includes the following:

This can be bundled with the Visual Disassembler:

Visual Disassembler Jar

com.favorites4u.visualdisassembler_2.0.4.v20180624.jar

com.favorites4u.visualdisassembler.msp_2.0.0.v20180624.jar

Questions?

Contact us: rhurst24811@gmail.com

Requirements

Visual Disassembler

The Visual Disassembler will run on both Windows and Linux platforms.

It was developed with the following Eclipse IDE and Java version:

Eclipse Oxygen.3a Release (4.7.3a) Build id: 20180405-1200

Java version "1.8.0_171"

The plugins must be installed in the eclipse/plugins directory.

Eclipse can be downloaded at www.eclipse.org.

Visual Disassembler For the Texas Instruments © MSP430

Installation

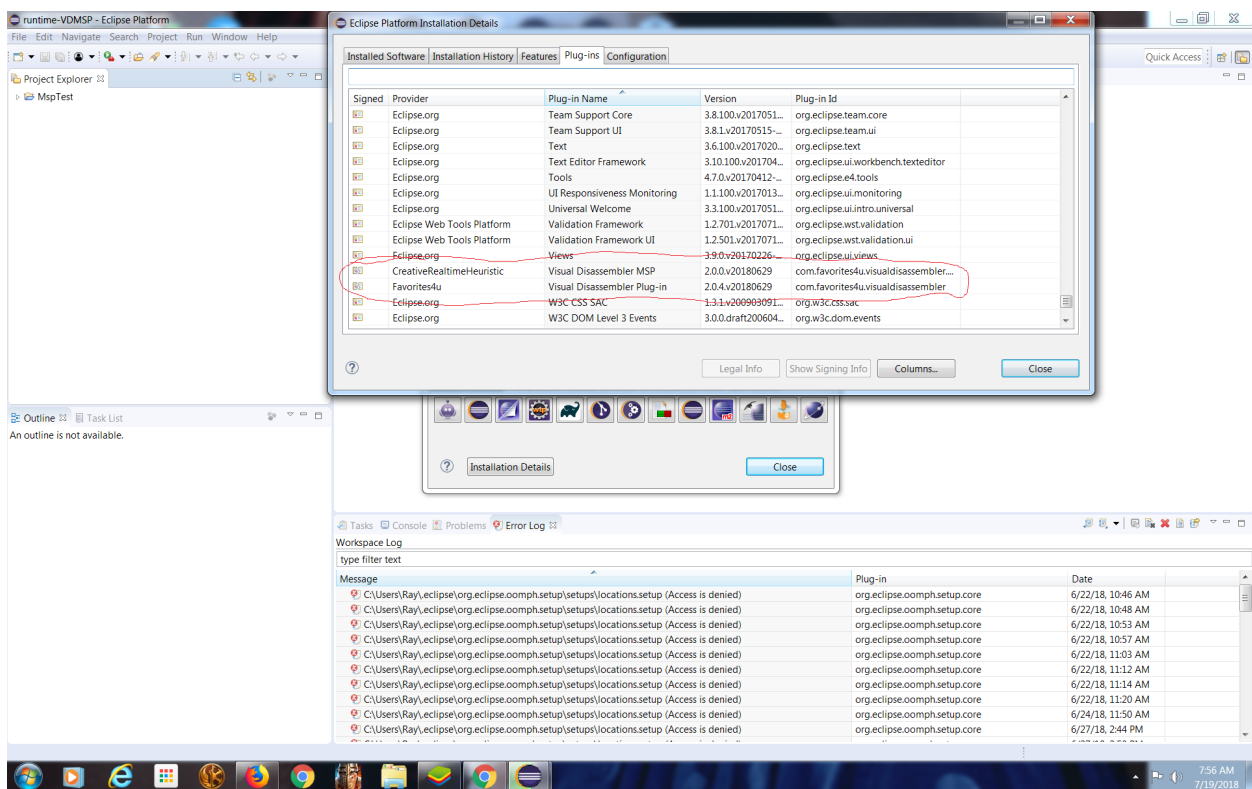
Unzip the release zip file into a new folder.

Download the Eclipse IDE and install into a new folder.

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

Note: some people have had to copy the files to the eclipse\dropins directory.

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



Quick Start

1. Create a project folder
2. Copy hex file into the project folder
3. Open hex file
4. Select Device
5. Modify Control Table
6. Add comments
7. Add labels
8. Save as: vdmosp file (change extension from hex to “.vdmosp”)
9. Repeat steps 3 through 6 until satisfied with disassembly
10. Save listing to text file – Do Save As and change extension to “.lst”

Visual Disassembler For the Texas Instruments © MSP430

Typical View

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

File Types Opened by the Application:

The default file extensions are “.hex” and “.vdmosp”

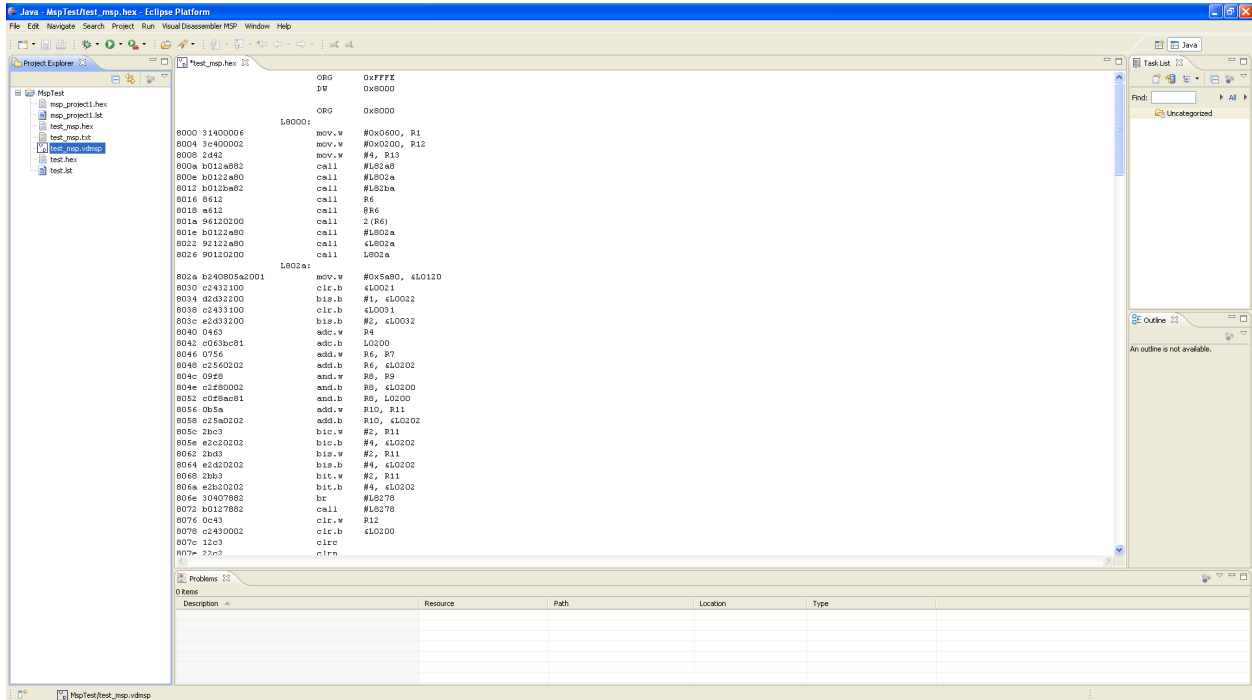


Figure 1

Open a File

Intel Hex File

VDMSP File

The hex and vdmosp files should be highlighted in the project window.

Double – click either of the file types to open it.

Menu View

Figure 4 shows the Visual Disassembler MSP menu items.

- Select Device... Allows the user to select a MSP device file
(*resolves registers, vectors and memory space*)
- Edit Comment... Allows the user to add comments at any location in the source file
- Edit Data/Program Label... Allows the user to add labels at any data or 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

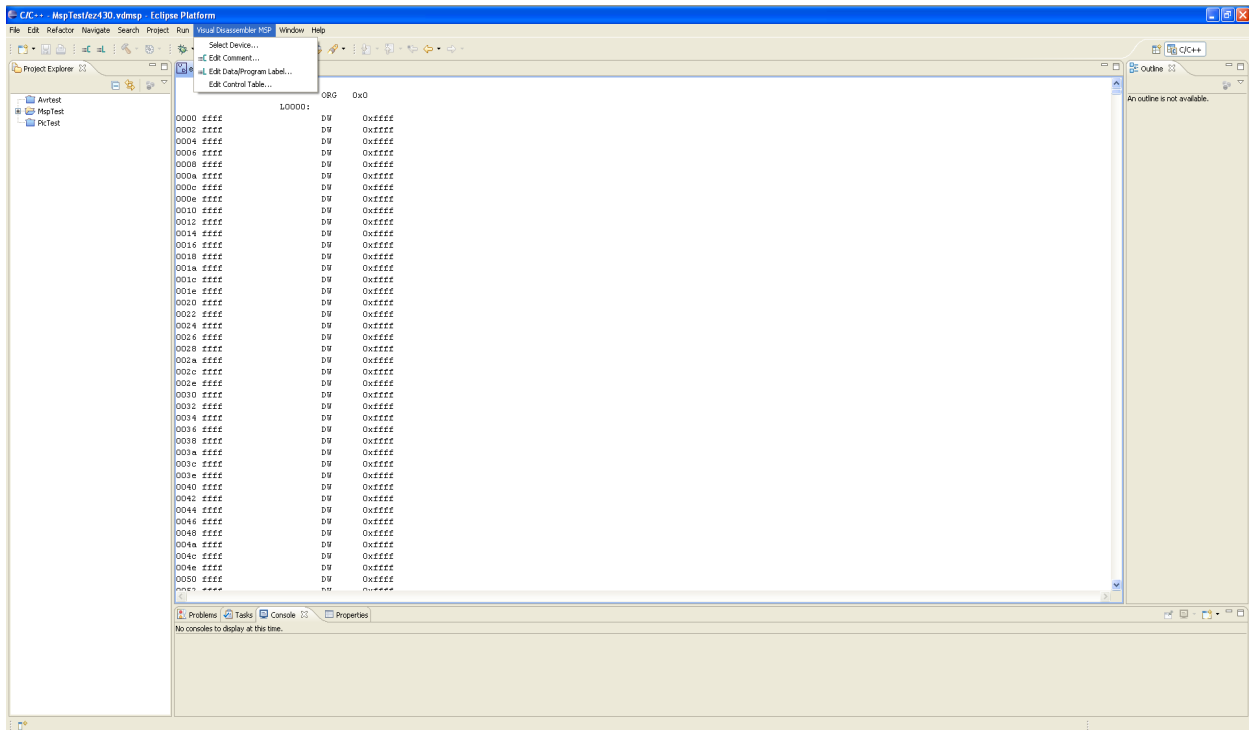
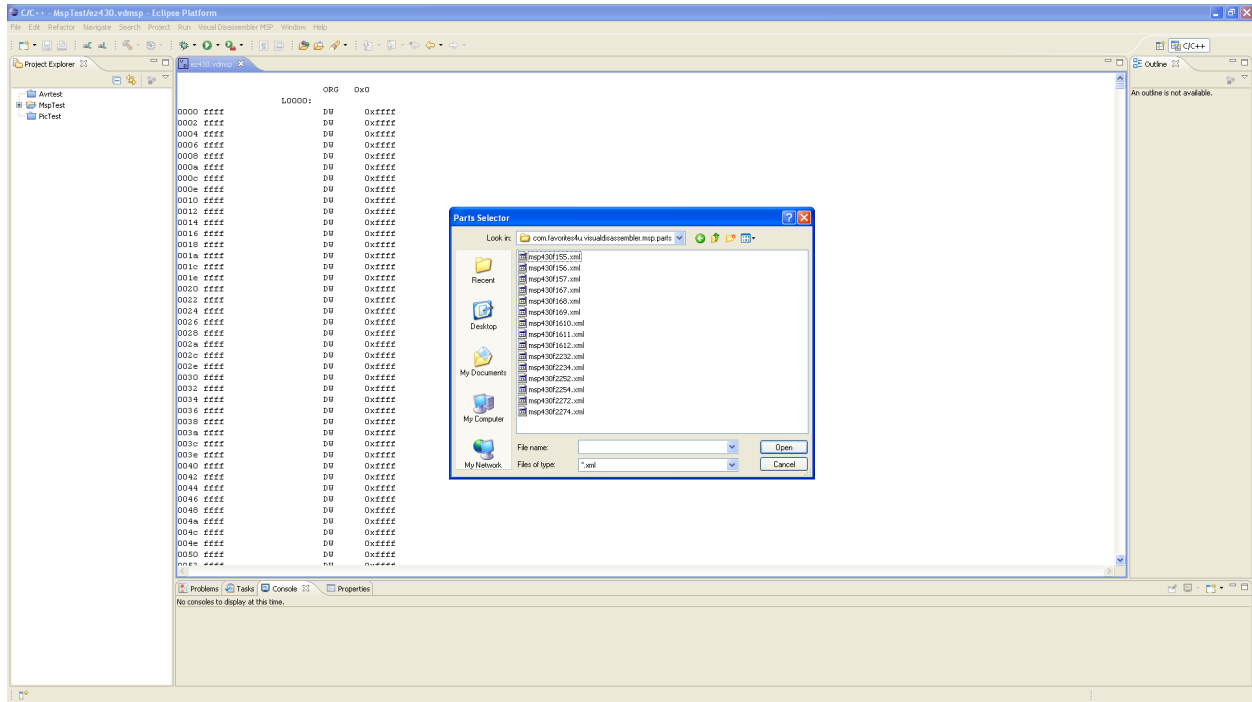


Figure 4

Visual Disassembler For the Texas Instruments © MSP430

Menu Item – Select Device...

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



Visual Disassembler For the Texas Instruments © MSP430

ToolBar Button View – Update Comment ToolTip

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

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

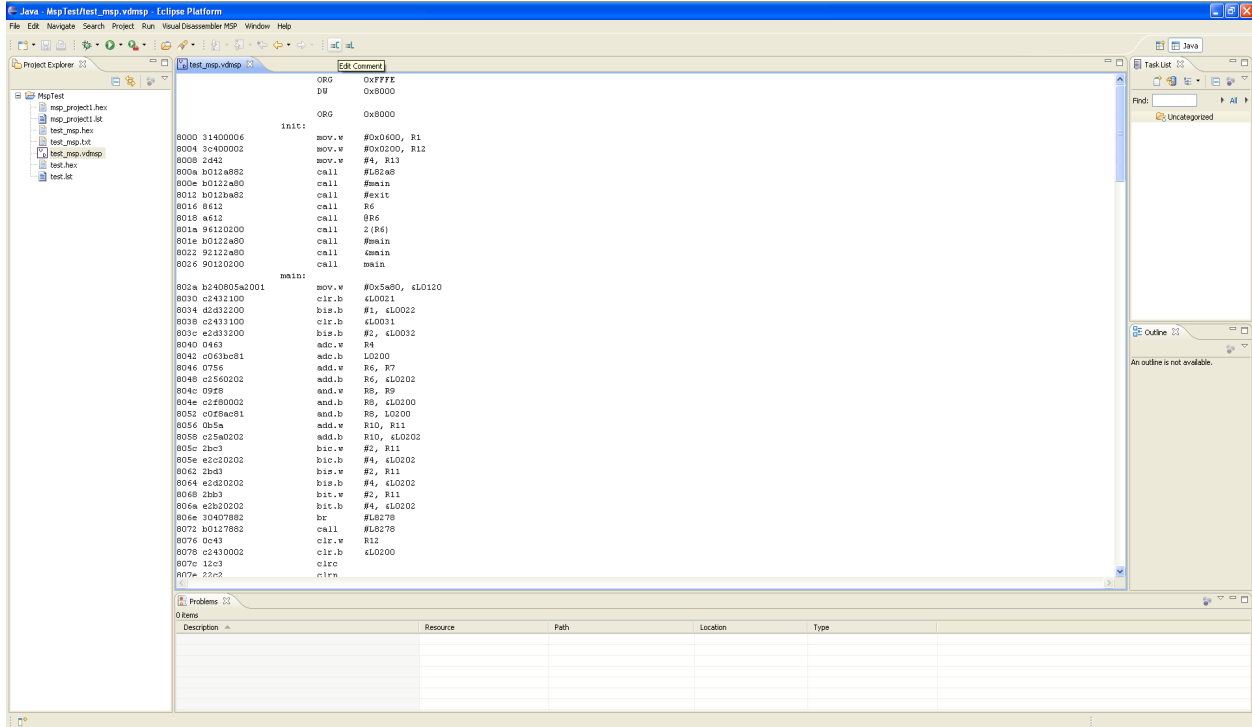


Figure 5

Visual Disassembler For the Texas Instruments © MSP430

Menu Item – 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

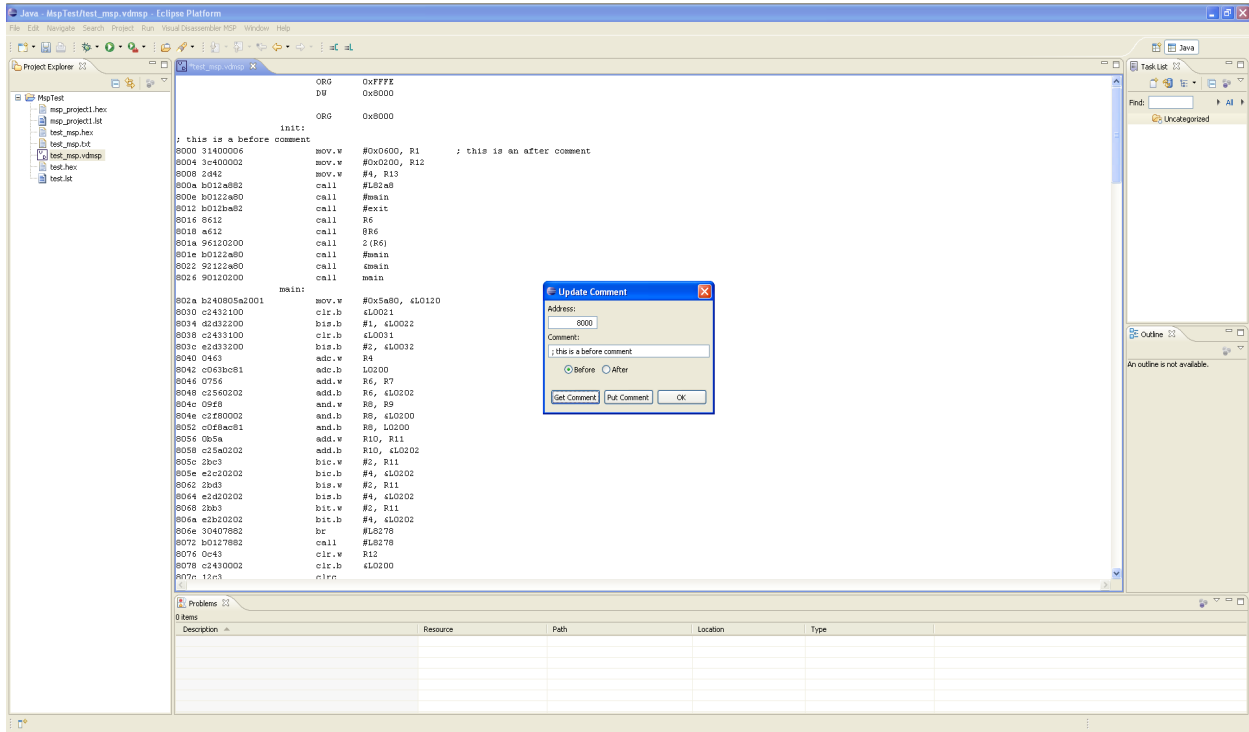


Figure 6

Visual Disassembler For the Texas Instruments © MSP430

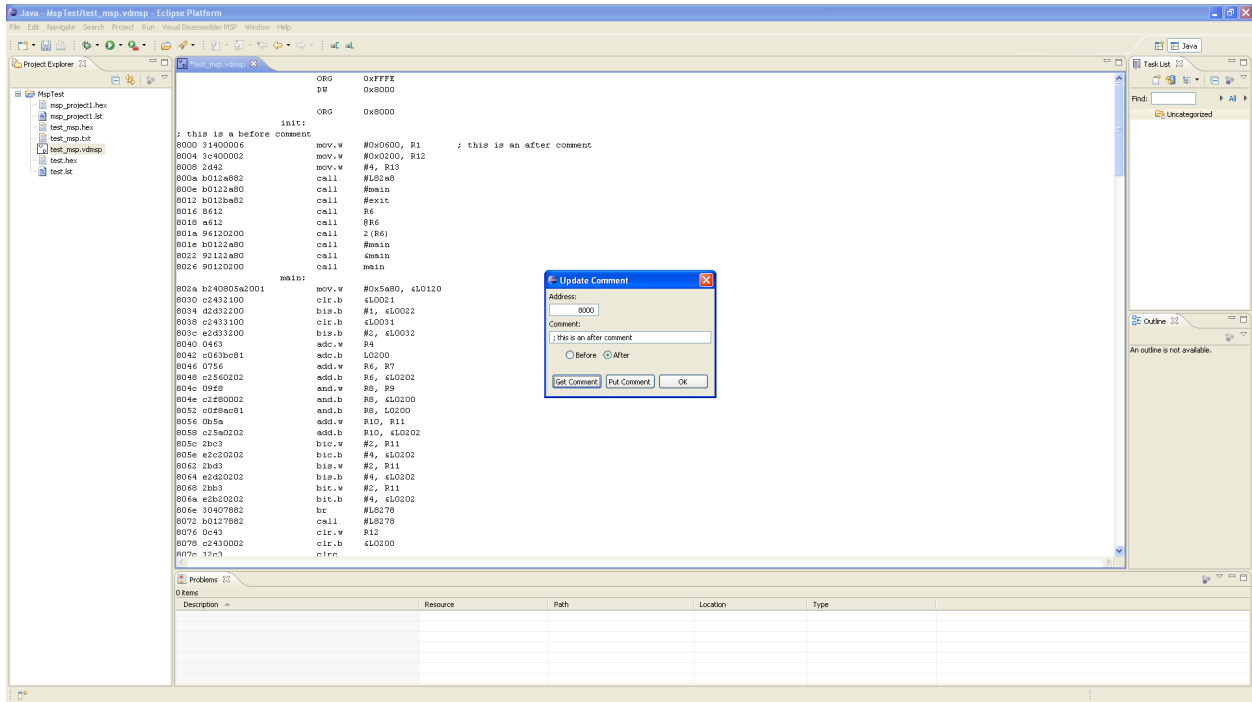


Figure 7

Visual Disassembler For the Texas Instruments © MSP430

ToolBar Button View – Edit Data/Program Label Tooltip

Figure 8 shows the Visual Disassembler button item – Edit Program Label

This button duplicates the menu item Visual Disassembler MSP - Edit Program Label... menu item

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

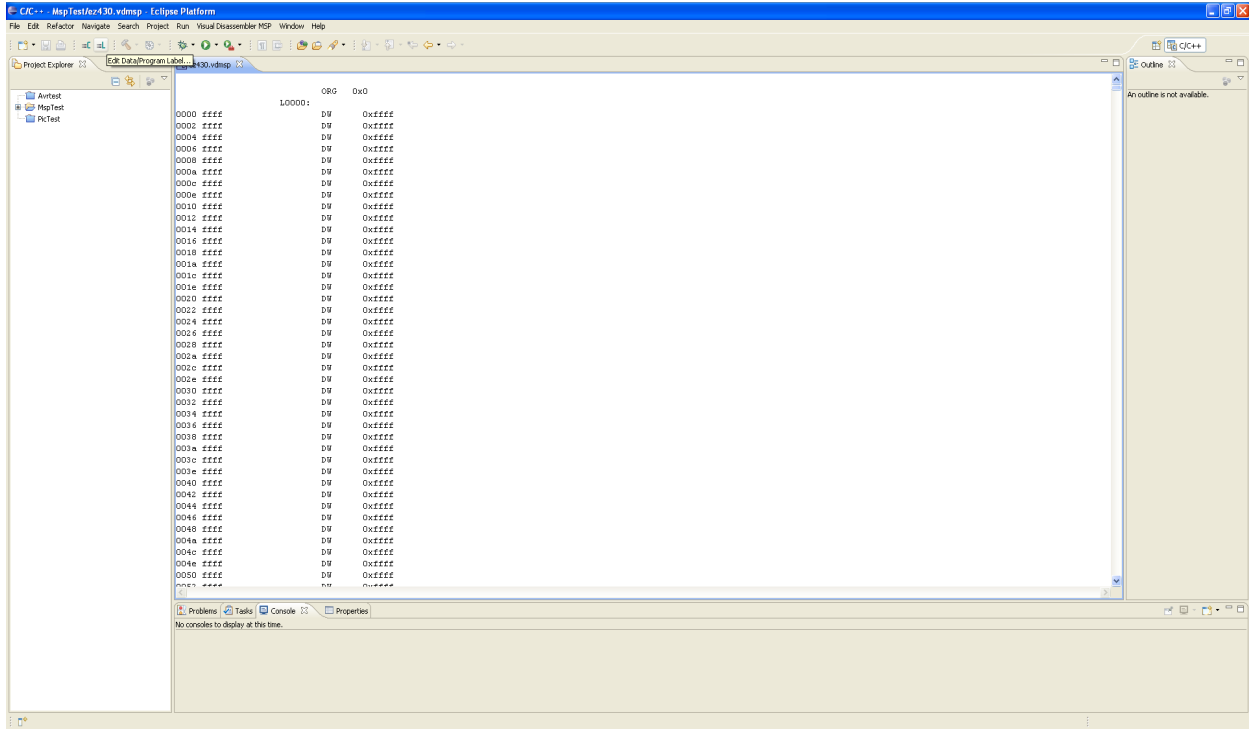


Figure 8

Visual Disassembler For the Texas Instruments © MSP430

Menu Item – Edit Data/Program Label...

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

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

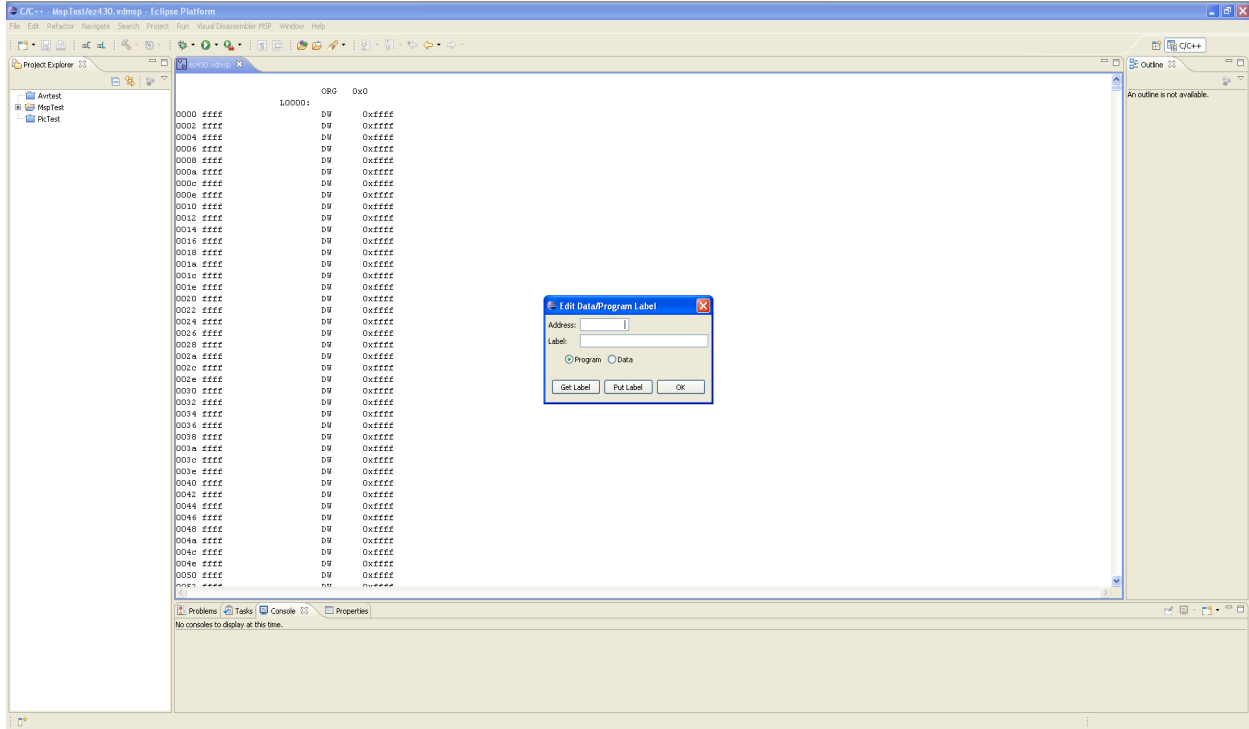
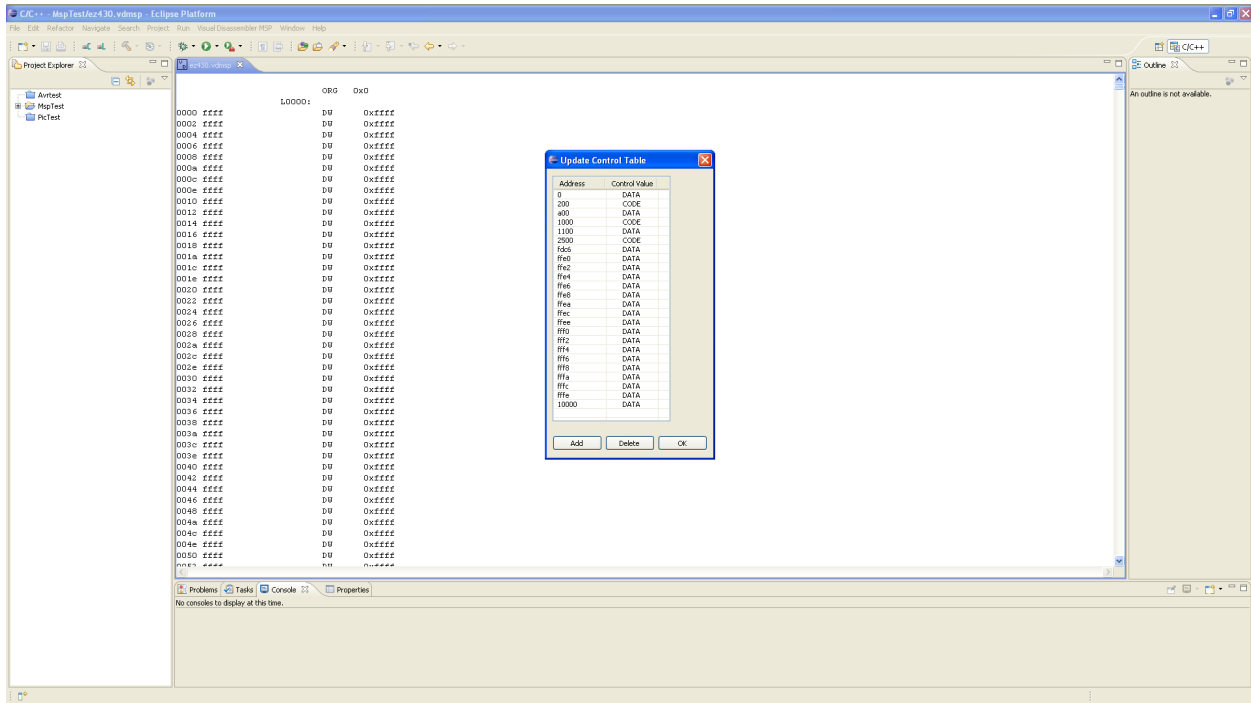


Figure 9

Visual Disassembler For the Texas Instruments © MSP430

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 MSP opcodes in regions defined as CODE.



Saving the Assembly Listing

With project window selected select Save As and change the extension of the file to “.lst”. A “.lst” text file is created with the assembly text.

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.