

Visual Disassembler  
for the  
NEC © uPD78K0  
Microprocessor Family

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## Introduction

Visual Disassembler for the NEC © uPD78K0 is an interactive multi-pass symbolic disassembler for the uPD78K0 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 is tailored to the IAR Embedded Workbench 78K tool set. It may require editing due to the requirements of the assembler.

Features:

- Part selection
  - resolves memory space, registers, and ISR vectors
- Memory space control
  - Allows definition of data (byte and word) and code areas in the memory space

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 3.4

<http://www.eclipse.org>

Visual Disassembler Jar

com.favorites4u.visualdisassembler.nec.uPD78k0\_1.0.0.jar

<http://www.CreativeRealtimeHeuristic.com>

Questions?

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# Visual Disassembler For the NEC © uPD78K0

## Requirements

### Visual Disassembler

The Visual Disassembler requires Eclipse and will run on both Windows and Linux platforms. It must be installed in the eclipse/plugins directory.

### Eclipse

Eclipse requires the Java Runtime Environment (JRE).

It can be obtained from <http://java.sun.com>

## Installation

Unzip the file in the CD into a new folder.

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

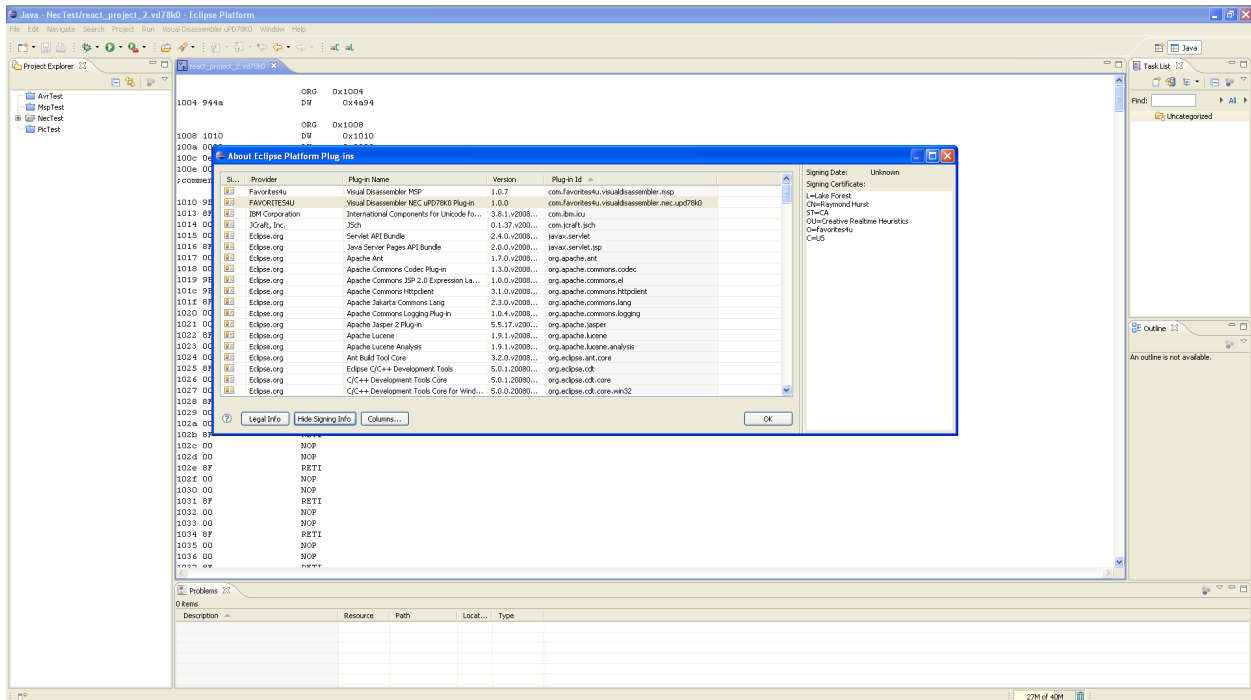
Create a shortcut to your desktop.

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\Plugin Details dialog box.



## Quick Start

1. Open hex file
2. Select Device
3. Modify Control Table
4. Add comments
5. Add labels
6. Save as vd78k0 file
7. Repeat steps 3 through 6 until satisfied with the disassembly
8. Save listing to text file

## 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 : “.vd78k0”

An alternative file extension is: “.hex” (Intel hex file)

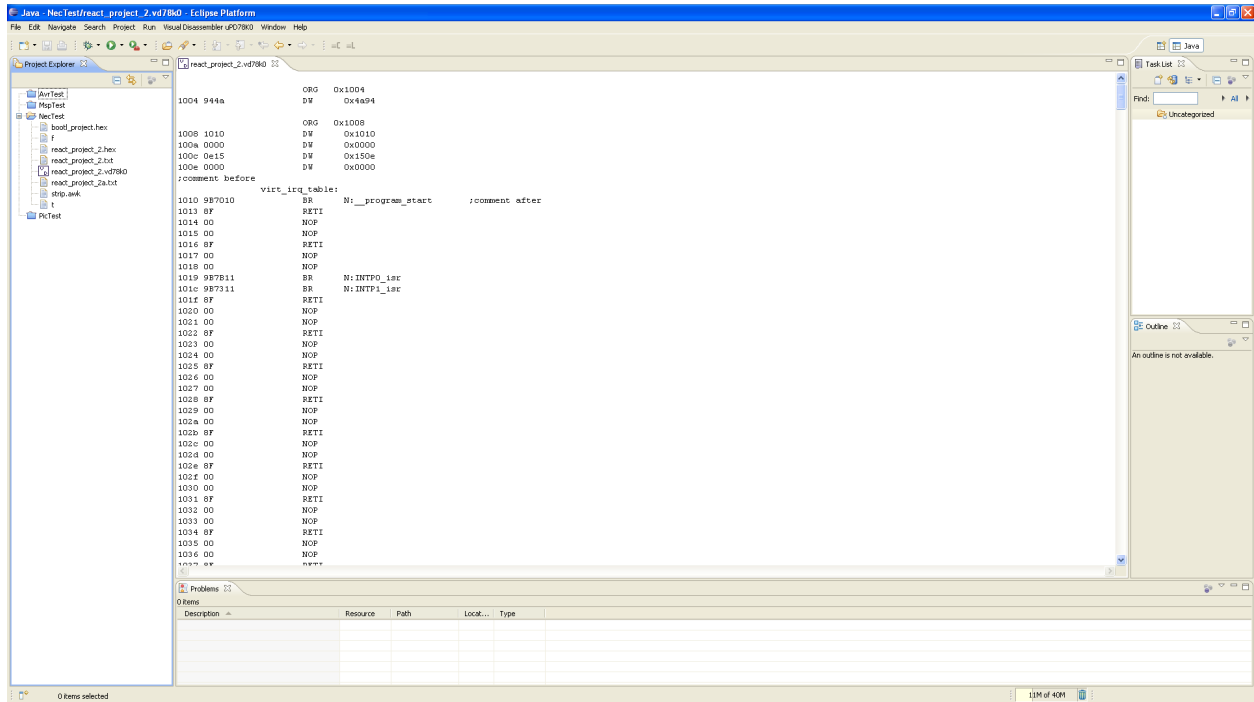


Figure 1

## Open a File

Right click the file and choose the menu option: *Open With/Other..*

### Intel Hex File

Figure 2 shows the Open With/ Other... dialog box.

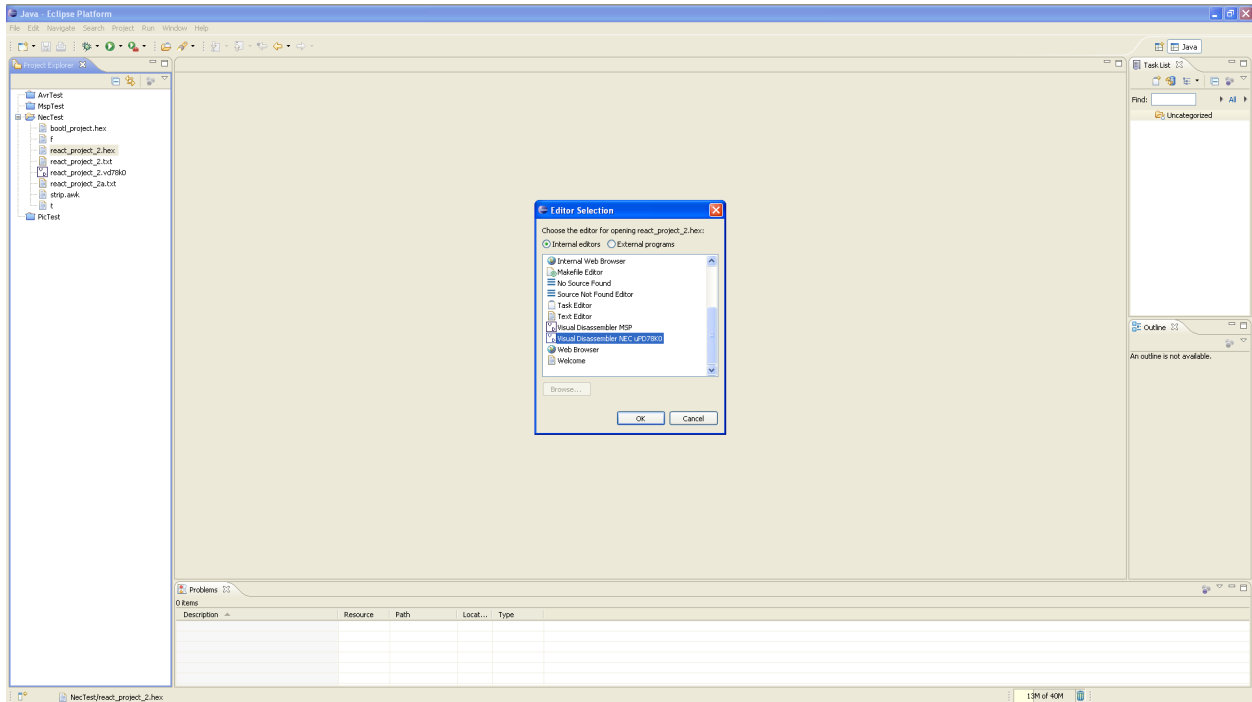


Figure 2

# Visual Disassembler For the NEC © uPD78K0

## Default file format - vd78k0

The Open With dialog box is shown in figure 3.

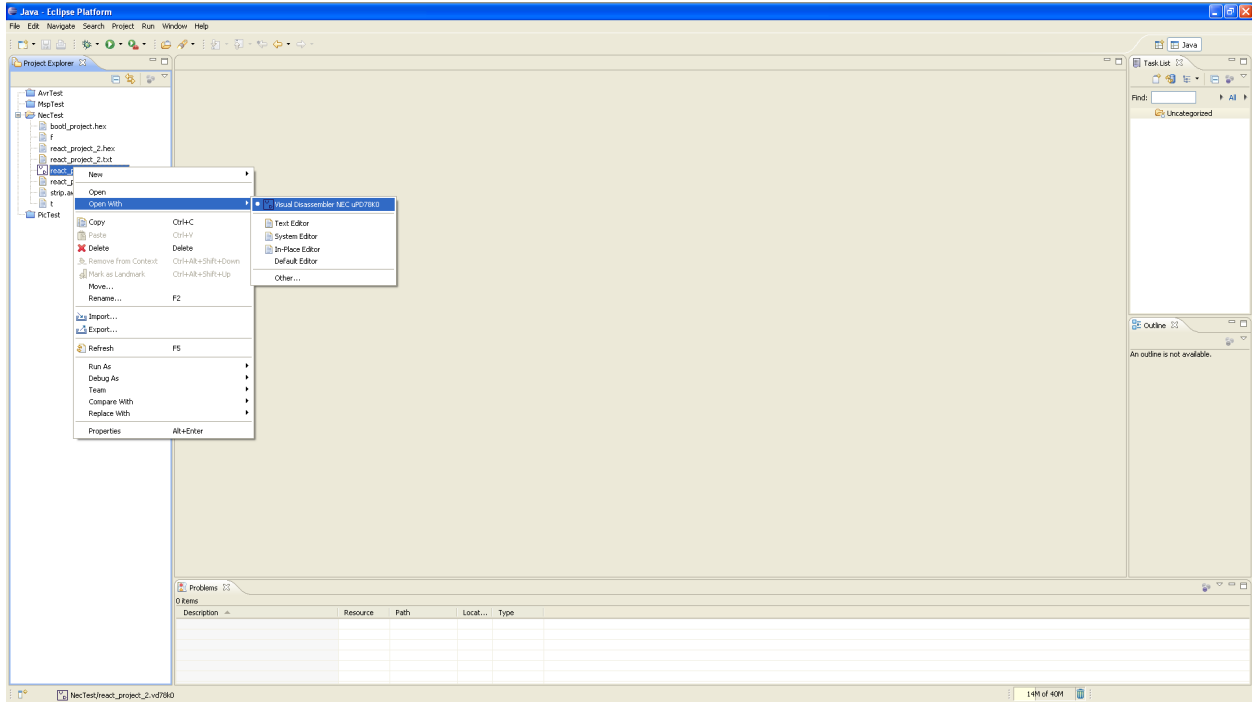


Figure 3

# Visual Disassembler For the NEC © uPD78K0

## Menu View

Figure 4 shows the Visual Disassembler menu items.

- Select Device... Allows the user to select a uPD78K0 device file (*resolves registers, vectors and memory space*)
- Edit Comment... Allows the user to add comments at any location in the source file Before and After the source line.
- 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 Choices are: CODE, BYTE (8 bit) and WORD (16 bit).

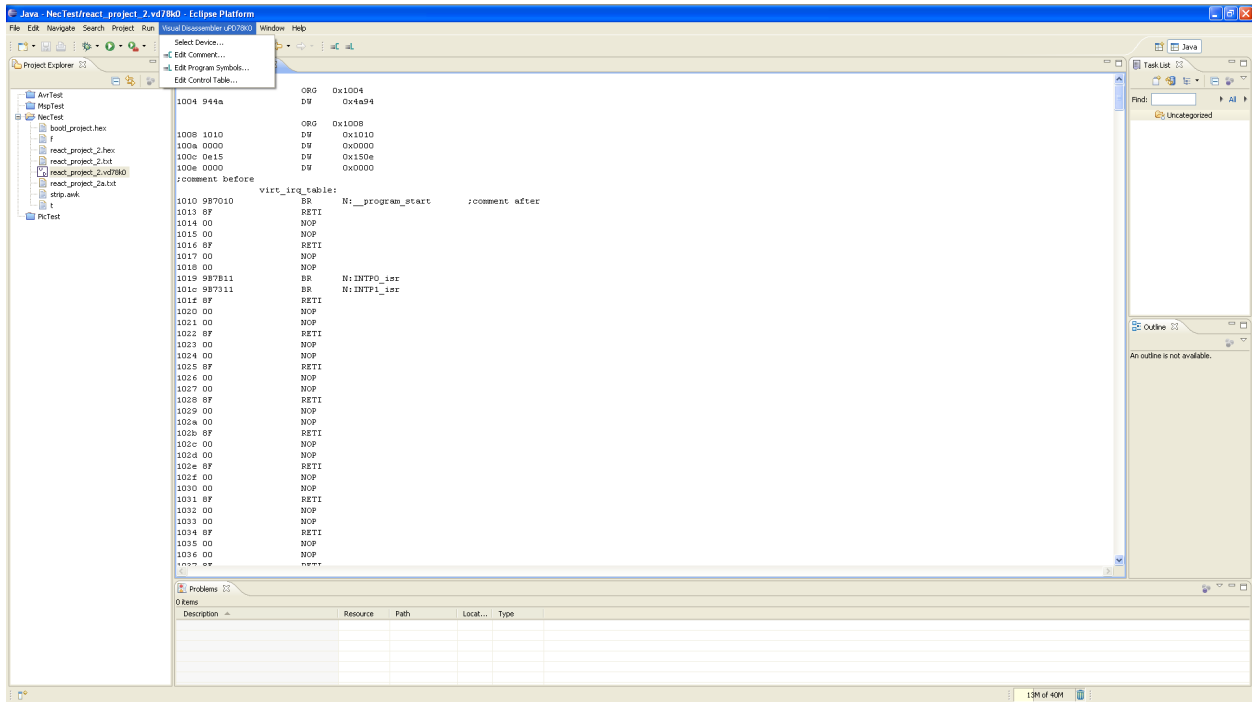


Figure 4



# Visual Disassembler For the NEC © uPD78K0

## 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. Figure 5 shows the view of the dialog box.

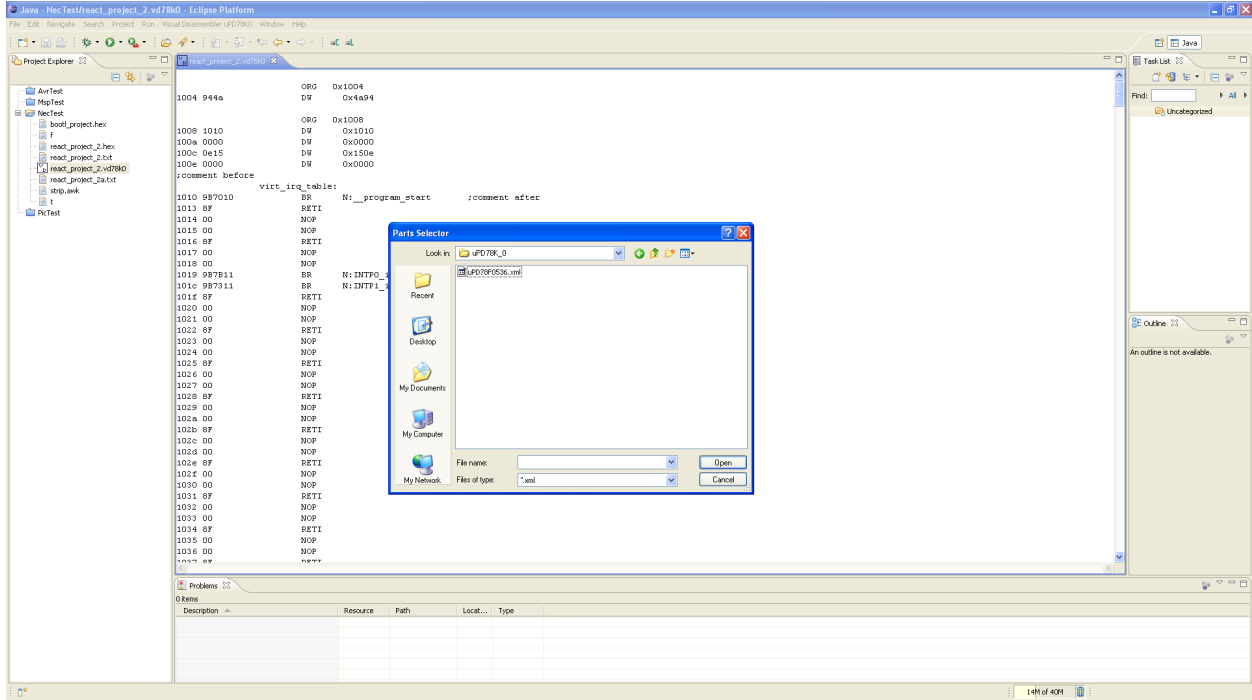


Figure 5

## ToolBar Button View – Edit Comment Tooltip

The Visual Disassembler *Edit Comment* button is shown in figure 6. The button duplicates the same action as the menu item: *Visual Disassembler uPD78K0 / Update Comment...*

### Update Comment

Allows the user to add comments at any location in the source file before and after a source line

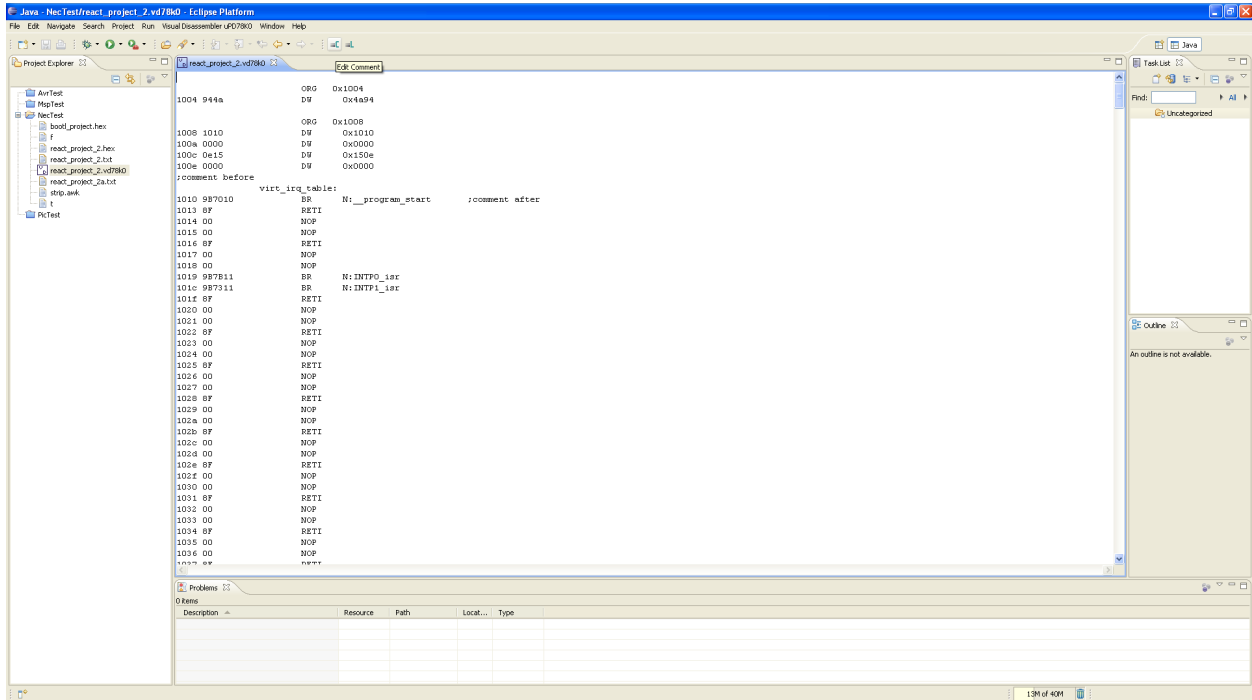


Figure 6

# Visual Disassembler For the NEC © uPD78K0

## Dialog View – Edit Comment

Figures 7 and 8 show the Visual Disassembler Edit Comment dialog box.  
This dialog box allows entering a comment before or after any line in the source file

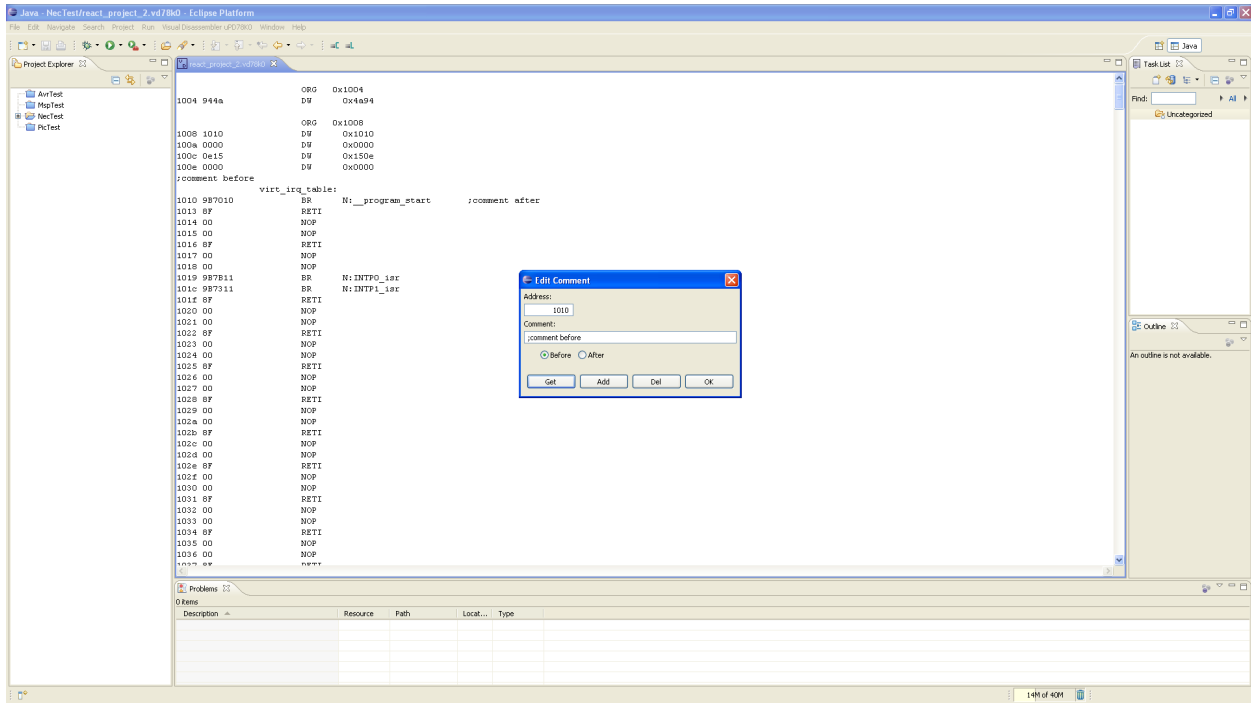
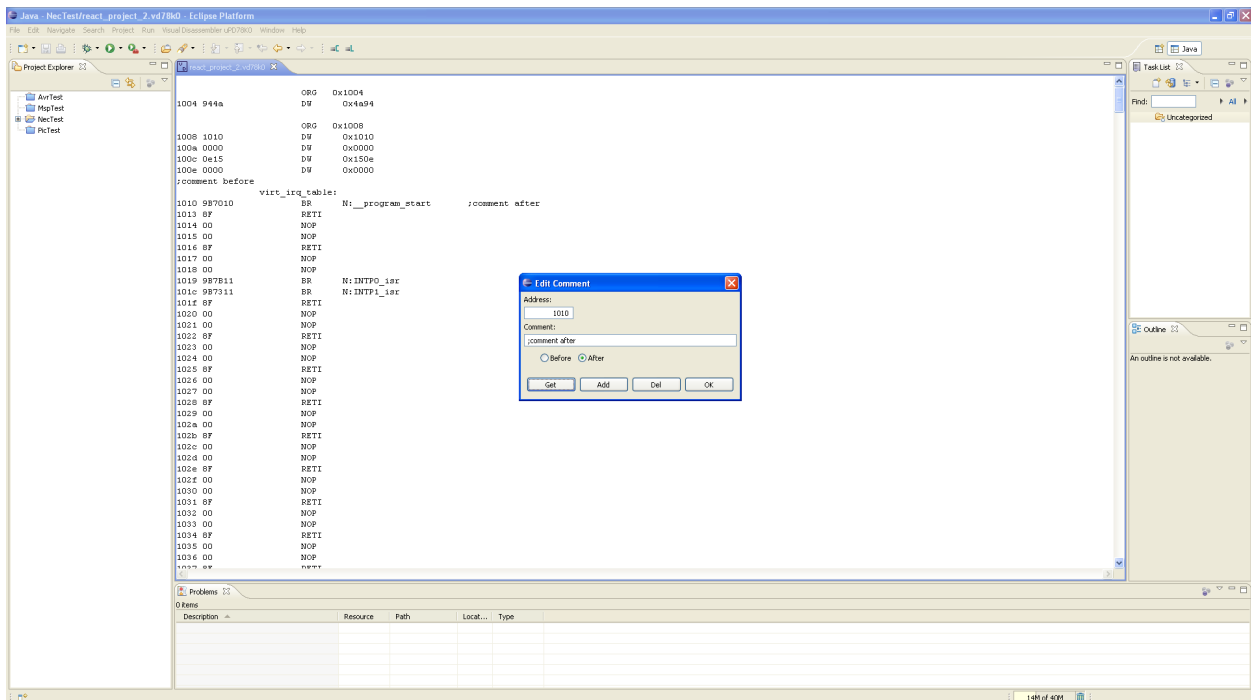


Figure 7 above      Figure 8 below



## ToolBar Button View – Edit Program Symbols Tooltip

Figure 9 shows the Visual Disassembler button item – *Edit Program Symbols*  
This button duplicates the menu item:

*Visual Disassembler uPD78K0 - Edit Program Symbols...*

### Edit Program Symbols

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

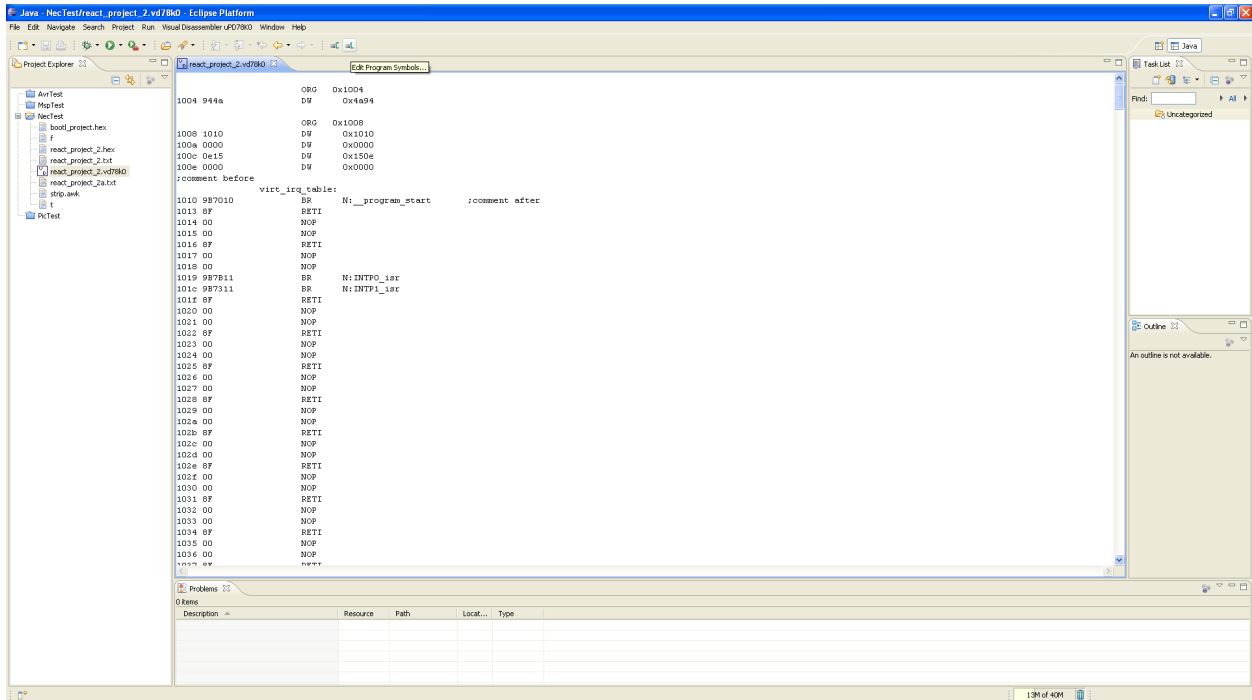


Figure 9

# Visual Disassembler For the NEC © uPD78K0

## Menu Item – Edit Data/Program Label...

Figures 10 and 11 display the Visual Disassembler Edit Program Symbols dialog box.

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

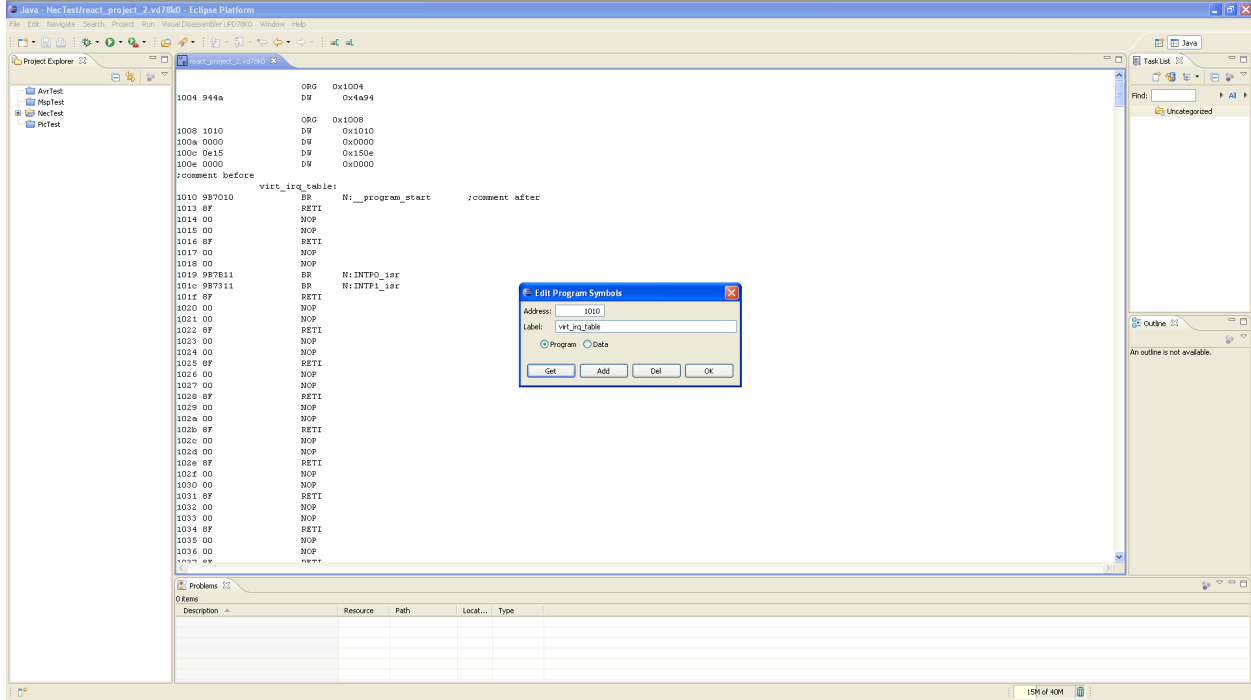
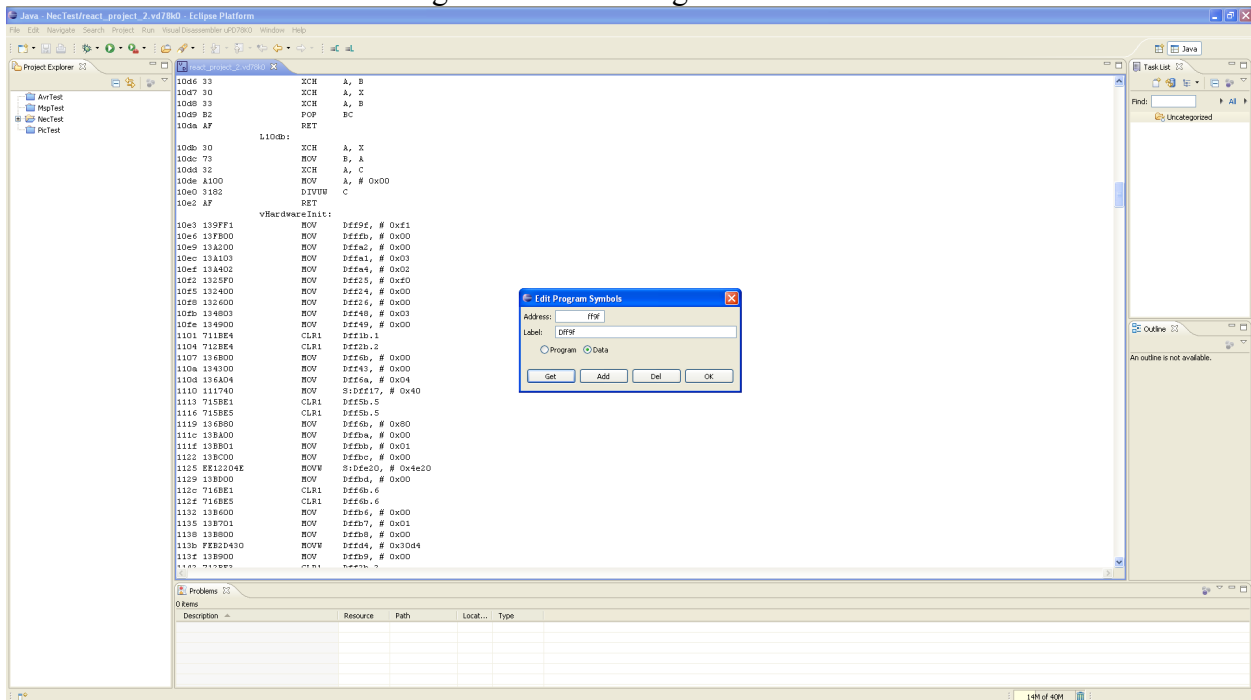


Figure 10 above Figure 11 below



# Visual Disassembler For the NEC © uPD78K0

## Menu Item – Edit Control Table...

This menu item allows the user to modify the memory space parameters. The user can select either CODE, BYTE or WORD. A memory region specified as BYTE forces the disassembler to disassemble all opcodes as defined byte (DB). A memory region specified as WORD forces the disassembler to disassemble all opcodes as defined word (DW). The disassembler will disassemble all microprocessor opcodes in regions defined as CODE. The dialog box view is shown in figure 12.

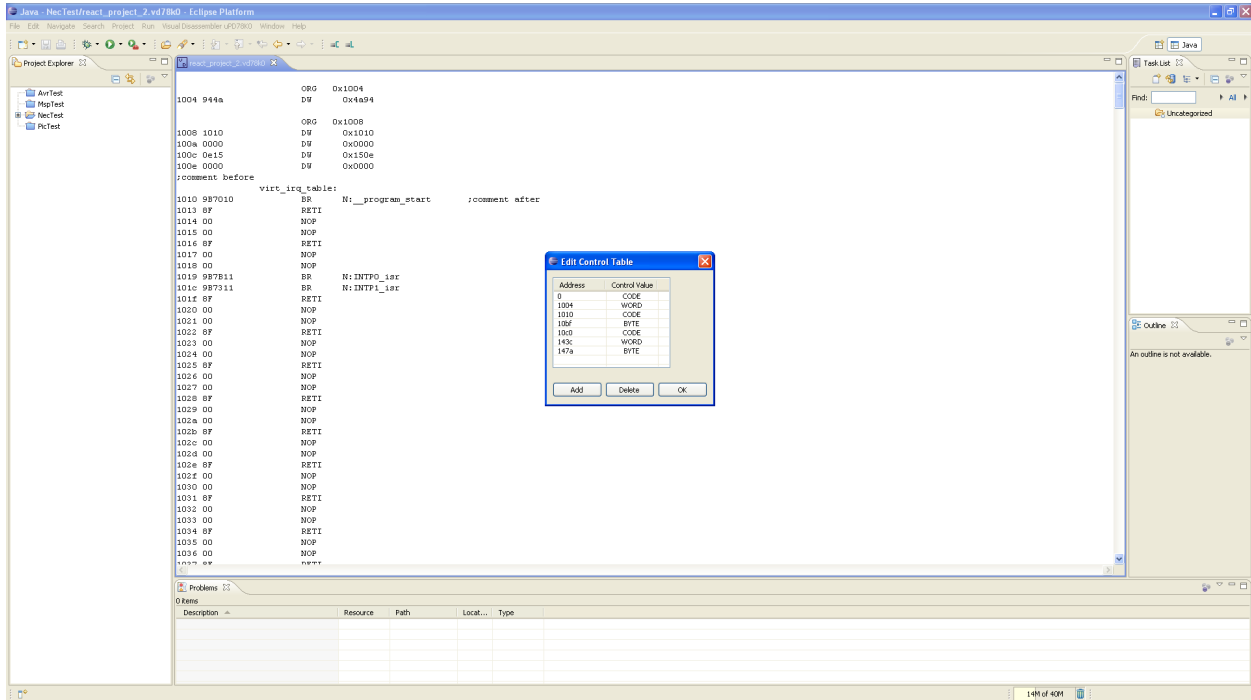


Figure 12

## Saving the Assembly Listing

Select all of the text in the Visual Disassembler text window (ctrl-A)

Copy all of the text in the Visual Disassembler text window (ctrl-C)

Open a text editor window: see Figure 13.

Paste the text from the Visual Disassembler text window into the text editor window.

Perform a Save-As and save the contents.

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.

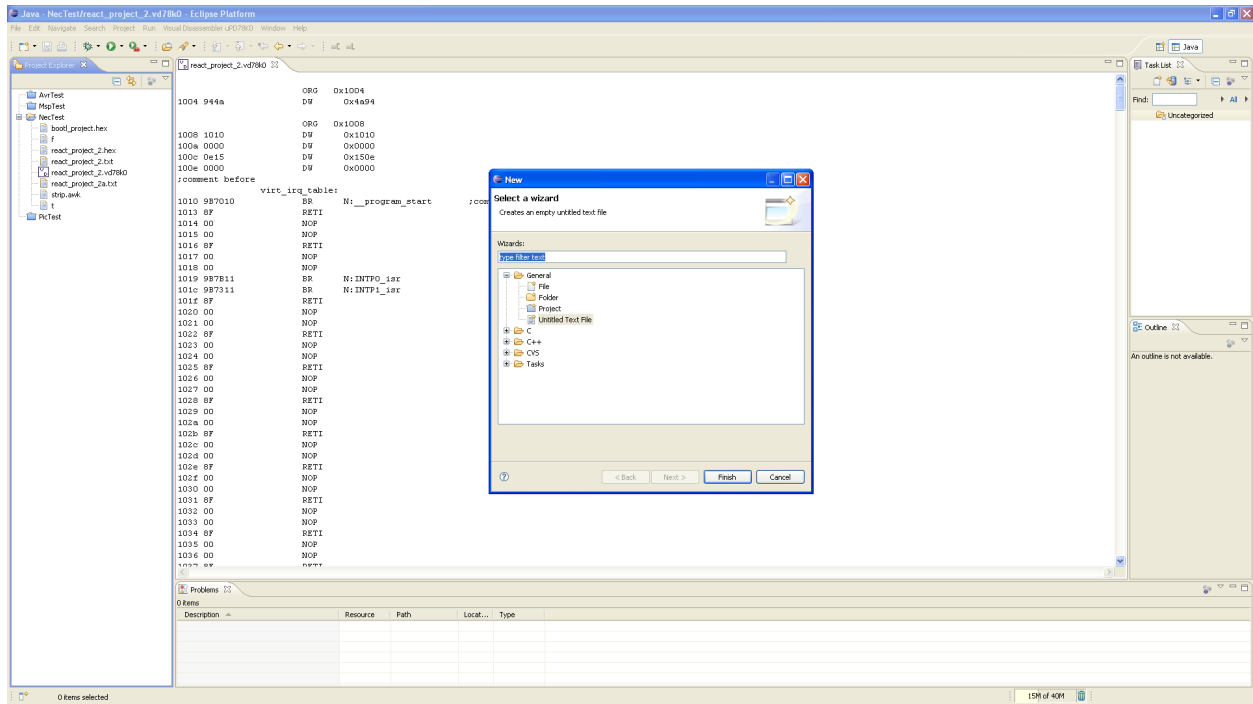


Figure 13