CodeWarrior™ Development Tools

IDE 5.9 Windows® Automation Guide

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How to Contact Us

Corporate Headquarters	Freescale Semiconductor, Inc. 7700 West Parmer Lane Austin, TX 78729 U.S.A.
World Wide Web	`http://www.freescale.com/codewarrior`
Technical Support	`http://www.freescale.com/support`

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Getting Started

This manual describes how to use external applications and scripting environments to automate the CodeWarrior™ IDE to perform certain tasks, such as manipulating CodeWarrior projects, building targets, compiling and linking project files, debugging projects, displaying IDE messages, and using version control features in the IDE.

This chapter has these sections:

- Overview of This Manual
- Related Documentation

Overview of This Manual

This manual contains information specific to CodeWarrior IDE automation on a Windows host. For unix, refer to the IDE Unix Automation Guide. Table 1.1 describes the information contained in each chapter in this manual.

Table 1.1 Contents of chapters

Chapter	Description
Getting Started	describes changes in TCLD 2.0 command window commands to Command Window 3.0 commands, and related documentation
IDE Batch-Mode Processing	describes use of the CodeWarrior IDE command-line executable program, and provides a reference to command-line switches

Table 1.1 Contents of chapters (*continued*)

Chapter	Description
Command Window Scripting	describes how to control the CodeWarrior IDE using the Tcl scripting language, describes the CodeWarrior Command Window, and provides a reference of Command Window options
Microsoft COM Automation	describes how to use Component Object Model (COM) objects that the IDE exposes and the methods you can call to work with those objects using the OLE/COM Object Viewer

Related Documentation

This section describes the supplementary CodeWarrior documentation, third-party documentation, and references to helpful code examples and web sites.

IDE Command-Line Tools

This manual only describes one of many components of the CodeWarrior command-line tool set. For information about other CodeWarrior command-line tools, refer to the *Build Tools Reference* manual and the *CodeWarrior IDE User's Guide*.

Tcl Scripting

For in-depth information about the Tcl scripting language, refer to the *Tcl8.3/Tk8.3 Manual* in the CodeWarrior help system or the Tcl web site:

`http://www.tcl.tk`

NOTE Command hints and short command forms are not available for built-in Tcl commands.

Perl Scripting

For in-depth information about the Perl scripting language, refer the Perl web site:

`http://www.perl.org`

You can find the latest version of Perl at:

`http://www.cpan.org/src`

VBScript Scripting

For in-depth information about the VBScript scripting language, refer this URL:

`http://msdn.microsoft.com/en-us/library/t0aew7h6(VS.85).aspx`

Microsoft COM Automation

To control the IDE, your Perl/VBScript scripts must manipulate the IDE's COM objects. To get a copy of Microsoft's OLE/COM Object Viewer, download and install `oleview_setup.exe`, which is a part of the Windows Resource Kit Tool, from the Microsoft web site.

NOTE To open OLE/COM Object Viewer after installing it, double-click `oleview.exe` in c:\Program Files\Resource Kit

Also, to manipulate COM objects through Perl, you need the Win32::OLE module. You might also want to use the other WIN32::OLE modules (such as Win32::OLE::Enum). You can get these modules at:

`http://www.cpan.org/`

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IDE Batch-Mode Processing

This chapter describes how to control the CodeWarrior™ IDE with the command-line executable program.

This chapter has these sections:

- Overview
- Running the IDE Command-Line Tool
- IDE Command-Line Tool Reference

Overview

The CodeWarrior IDE provides command-line access to different components of the IDE. You access the components by executing command-line tools. This chapter focuses specifically on the CodeWarrior IDE command-line tool.

The CodeWarrior IDE command-line tool allows you to instruct the IDE to manipulate and build projects, compare source files, run Tcl scripts, and obtain the version of the IDE. The IDE command-line tool for the Windows host is an executable program named `cmdIDE.exe`, and is located in the directory where you install the CodeWarrior development tools.

NOTE Command-line compiler, linker, and debugger tools may be available on your particular platform. Refer to the *Build Tools Reference* manual for information about other command-line tools available on your platform.

You interact with command-line tools through a text-based console or terminal rather than a graphical user interface. You can also specify command-line tool options (also called *switches*) on the command line.

Running the IDE Command-Line Tool

The IDE command-line tool performs operations on files you specify on the command line. If the tool successfully finishes its operation, a new prompt appears on the command line. Otherwise, it reports any problems as text messages on the command line before a new prompt appears.

You can also write scripts that automate the process to build your software. Scripts contain a list of commands and command-line tools to invoke, one after another.

For example, the `make` tool, a common software development tool, uses scripts to manage dependencies among source code files and invoke command-line compilers, assemblers, and linkers as needed, much like the CodeWarrior project manager.

IDE Command-Line Tool Reference

This section lists the various operations and switches you can use to have the IDE perform certain tasks.

The syntax for invoking the IDE command-line tool on Windows is:

```
cmdIDE [[files...] [function [options...] ...]]
```

The *`files`* parameter is a list of zero or more files on which the IDE should operate. The IDE processes files in the order you specify them on the command line. If you specify one or more CodeWarrior project files, the first project file on the command line is the CodeWarrior default project.

The *`function`* parameter is the operation you want the IDE to perform. You may specify multiple functions in a single command line for the IDE to perform.

The *`options`* parameter is a list of zero or more command-line switches that tell the IDE how to perform the specified operation. If you use a switch that is inappropriate for an operation, the IDE ignores the switch and completes processing of all other switches.

The files, options, and switches you specify on the command line depends on the operation you want the IDE to perform. The rest of this section describes the various functions and corresponding switches the IDE understands.

Startup Operations

The startup operations lets you instruct the IDE to start the CodeWarrior IDE and run the specified script. Table 2.1 describes the parameters for the startup operations.

Table 2.1 Startup Operations Command-Line Parameters

Switch	Description
/f	makes the IDE the front window options: • y - focuses to IDE (default) • n - starts minimized
/s	forces the command line to be processed in a new instance of the IDE instead of using the current IDE instance
/x <project.xml>	specifies an XML project file to import
/w n	starts the IDE with no workspace

Build Operations

The build parameters lets you instruct the IDE to build projects. Table 2.2 describes the build function parameters.

Table 2.2 Build Operations Command-Line Parameters

Switch	Description
/v	converts the project on opening options: • y - converts without asking • n - do not convert • a - asks before converting
/t *targetname*	switches the default target to the target named *targetname*
/b	builds the current target
/r	removes object code from the default build target
/c	closes the default project after the build is complete
/q	quits the IDE after the build is complete

Script Operation

The debug parameters lets you instruct the IDE to start the Command Window and run the specified script.

Syntax

```
cmdIDE /d scriptfile
```

Parameters

`scriptfile`

Supply the name or fully-qualified path to a Command Window script file (see “Command Window Scripting”).

Extended Commands

You can use extended commands to add/ remove a source tree or turn on/off black-box recording. Table 2.3 describes the extended commands:

Table 2.3 Extended Commands

Command	Description
/addabsolute I /addenv I /addregkey <name> <source>	adds source tree entry parameters: • name: specifies the source tree to be added • source: specifes absolute path, environment variable or register key
/removetree <name>	removes the source tree entry named *name*
/bbreconI/bbrecoff	turns on/off black-box recording (on by default). Provides additional information in crash dumps

Help Function

The help function tells the IDE to print a summary of all command-line arguments to the terminal.

Syntax

```
cmdIDE /?
```

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Command Window Scripting

You can control IDE functions with Tcl commands and Tcl-based CodeWarrior commands.

You can run these commands in one of three ways:

- directly through the IDE Command Window
- from a script file that you invoke with the "source" command in the Command Window
- or from a script file that you specify as an IDE command-line parameter (as shown in the section "Syntax").

This chapter has these sections:

Migrating from TCLD 2.0 to Command Window 3.0

Table 3.1 Command Window 3.0 Commands

Command	Comment
run	The run command is no longer supported. Instead, use the Tcl built-in command `source`.
load	This command has been replaced by: `project -open` for loading a project use `restore` for loading target memory from a file created by the `save` command.
close	This command has been replaced by `project -close`.
break	This command has been replaced by the command `bp`.
input, output	These StarCore® commands have been removed.

Migrating from Command Window 3.0 to 3.1

The IDE Command Window 3.1 has the following improvements as compared to 3.0:

- improved Multi-Core
- maintains its own thread context, instead of relying on which thread window had focus last
- new option **config AutoThreadSwitch** allows you to select an automatic thread switch behavior, including no switch
- improved Command Synchronization
- improved the synchronization of commands like debug, restart, make, step, and go
- new option **config runControlSync** command to specify different synchronization behaviors
- new option **config DebugTimeout** to help with fine-tuning synchronization problems
- improved memory, register, and variable Access

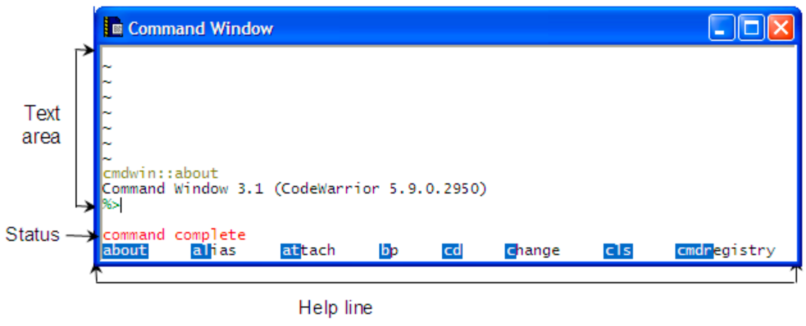
- improved memory space handling
- does not require a defined memory space if only one exists
- ability to query list of available memory spaces
- new option **config** MemIdentifier sets the default memory space
- improved formatting
- ability to specify data conversion, like %x to display in hex and %u to display unsigned decimal
- ability to swap data
- ability to insert colons for better readability, for example, 0x0000:00f0:0000:0000 instead of 0x000000f000000000
- ability to pad data with leading 0's, if desired
- for memory, ability to control the display width and the hardware access size independently
- for memory, displays both hex and ascii, same as the Memory window
- new option **MemSwap** command to specify default memory swapping behavior
- new options **config MemWidth** and **config MemAccess** commands to specify the default memory display width and access width
- ability to view register details information
- ability to view variables with the display command
- new commands **reg**, **mem**, and **var** duplicating the syntax and functionality of display and change but without the potential for ambiguity
- new commands **attach** and **connect**
- new namespace capability
- Command Window commands are now all in the namespace 'cmdwin', which is imported into the global namespace by default
- scroll bar added to window

Command Window Interface

The **Command Window** (Figure 3.1) is a window in the CodeWarrior IDE that lets you interactively execute Tcl commands.

To access this window in the Windows-hosted IDE, select **View > Command Window** from the menu bar. To access this window in the IDE hosted by Linux® or Solaris™, select **Window > Command Window** from the menu bar.

Figure 3.1 The Command Window



```
~
~
~
~
~
~
~
cmdwin::about
Command Window 3.1 (CodeWarrior 5.9.0.2950)
%>|
command complete
```

Table 3.2 describes each of the three parts of the **Command Window**.

Table 3.2 Command Window Parts

Part	Description
Text area	displays the command prompt, `%>`, and the text output of commands
Status line	displays the status of the last executed command
Help line	displays command hints for the CodeWarrior commands

To browse through all available command hints, press the space bar at an empty command prompt. The highlighted characters represent the short form of the command.

Command hints and short command forms are not available for built-in Tcl commands. Documentation for these commands is located in the *Tcl8.3/Tk8.3 Manual* in the CodeWarrior Help System, and at the Tcl web site:

```
http://www.tcl.tk
```

Issuing Commands

To issue a Tcl command, type the command at the command prompt (`%>`). For CodeWarrior commands, you may type either the normal or the short form of the command. If you specify a short-form command, pressing space or tab will auto-complete it.

History Functions

To repeat the last command entered, press Enter on your keyboard. To browse through the command history, press the up arrow or down arrow keys.

Scroll Functions

To scroll the text area of the Command Window:

- Click the scroll bar arrows
- Press the page up or page down keys on your keyboard to scroll the text area by the number of lines set with the `config` command. The default value is the number of lines currently displayed. This value is updated when you resize the Command Window
- Press Control-up arrow or Control-down arrow on your keyboard to scroll the text window up or down by one line
- Press Control-left arrow or Control-right arrow on your keyboard to scroll the text window left or right by one character

Copy and Paste Functions

To copy portions of the text window to the clipboard, hold down the left mouse button and drag the selection box around the desired text. Press Enter on your keyboard or select **Edit > Copy** from the CodeWarrior menu bar.

To paste text from the clipboard into the text area of the Command Window, click the left mouse button or select **Edit > Paste** from the CodeWarrior menu bar.

Running Tcl Scripts

The built-in Tcl command `source` lets you run a sequence of Tcl commands that you have placed into a text file.

The command-line IDE lets you specify a Tcl script as a parameter. This makes it possible to run Tcl scripts from the system command-line without first opening the IDE Command Window. See “Syntax” for more information.

Each time you open the **Command Window**, the IDE searches for a script file named `tcld.tcl` in the (`%SystemRoot%`) directory. If the IDE finds this script file, the IDE attempts to run it. Place commands into this script file that you want the IDE to run each time you open the Command Window or run a Tcl script.

TIP By convention, Tcl script files have the filename extension `.tcl`.

Tcl Built-in Commands

The Tcl built-in commands are documented in the *Tcl8.3/Tk8.3 Manual*, located within the CodeWarrior Help System.

To display the version of your Tcl interpreter, type this command into the Command Window:

```
puts [info tclversion]
```

You can obtain additional information about Tcl here:

```
http://www.tcl.tk
```

CodeWarrior Commands

There are numerous CodeWarrior commands that you may use within the Tcl scripts or in the **Command Window**. This section describes each of these commands.

NOTE Shortcut command syntax (if available) is listed first, followed by formal syntax.

Note that the backslashes in Windows pathnames work only for the Tcl built-in commands, such as cd, pwd, dir, and load. For other commands, Tcl processes each backslash as an escape character and performs a "backslash substitution", thus garbling the original pathname.

This backslash substitution can be avoided in one of three ways:

- Using forward slashes in place of backslashes, which is more portable to Unix as well
- Enclosing the pathname within the curly braces
- Using two backslashes

about

Displays version information about the command window.

alias

Creates, removes, or lists an alias for a command.

NOTE Aliased commands are not available from within scripts. To create a different command name or syntax, you can wrap an existing command with a Tcl proc.

```
alias [<alias> [<command>]]
```

Shortcut

```
al
```

Parameters

`alias`

Supply the name of the alias.

`command`

Supply the command.

Examples

To display all current aliases:

```
alias
```

To create an alias that issues the dir command when ls is typed:

```
alias ls dir
```

NOTE Note that <command> must be a single string. For more complex substitutions, please use the Tcl proc command.

To remove the alias ls:

```
alias ls
```

attach

Attaches to process on target hardware.

```
attach [project_file(*.mcp)]
```

Shortcut

`at`

Parameters

`project_file`

Supply the name of a CodeWarrior project

Examples

To attach using settings of current target of default project:

```
attach
```

To attach using settings of current target of project.mcp:

```
attach project.mcp
```

bp

Sets, removes, or lists breakpoints.

```
bp
bp func_name|machine_addr
bp file_name line_number [column_number]
bp func_name|brkpt_num|all OFF|enable|disable
bp brkpt_num cond expr-elements...
```

Shortcut

`b`

Parameters

`func_name|machine_addr`

Supply the name or machine code address of the function on which you want to set the breakpoint.

`file_name line_number [column_number]`

Supply the name of the file, the line number, and (optionally) the column number where you want to set the breakpoint.

`func_name|brkpt_num|all OFF|enable|disable`

Supply the function name containing an existing breakpoint, the breakpoint number of an existing breakpoint, or `all`. Supply one of `OFF`, `enable`, or `disable` indicating the action you want to take on the breakpoint.

`brkpt_num cond expr-elements`

Supply the breakpoint number of an existing breakpoint, the condition to apply to the breakpoint, and the expressions you want to execute when the debugger encounters the condition.

Examples

To display all current breakpoints:

```
bp
```

To set a breakpoint at function `fn()`:

```
bp fn
```

To set a breakpoint in file `file.cpp` at line 101, column 1:

```
bp file.cpp 101 1
```

To remove the breakpoint at function `fn()`:

```
bp fn off
```

To set a breakpoint at memory address p:10343:

```
bp p:10343
```

To remove breakpoint number 4 (use `break` to look for the number):

```
bp #4 off
```

To disable breakpoint number 4:

```
bp #4 disable
```

To set the condition for breakpoint number 4 to trigger only if x == 3:

```
bp #4 cond x == 3
```

See also

radix

cd

Changes directory.

```
cd [path]
```

Examples

To display the current working directory:

```
cd
```

To change the current working directory to drive C:

```
cd C:
```

To change the current working directory to `D:/cw/0622/test`:

```
cd D:/cw/0622/test
```

To change the current working directory to the parent of the current working directory:

```
cd ..
```

To use a wild card to change the current working directory to `C:\Program Files`:

```
cd C:/p*s
```

To change the current working directory to `C:\notes\lib`:

```
cd C:/n*/l*
```

To change the current working directory to `C:\Acrobat3`:

```
cd c:/*3
```

Comments

After you have entered a portion of a directory name, press Tab on the keyboard to complete the directory name automatically.

change

Changes memory, registers, or variable.

```
change <item> [<options>...]
```

Shortcut

```
c
```

Memory Syntax

```
change [<ms>:]<addr> [<count>][<width>] [-s|-ns] [%<conv>]
```

`<value>`

Table 3.3 Memory Options

`<ms>`	On architectures supporting multiple memory spaces, specifies the memory space to be found in `<addr>`. Refer to information about **display -ms** for more information on memory spaces. If unspecified, the setting **config MemIdentifier** is used.
`<addr>`	Target address in hex
`<count>`	Number of memory cells
`<width>`	`[x<cell-size>][h<access-size>] | [{8,16,32,64}bit]`
	`x<cell-size>` Memory is accessed in units called cells, where each cell consists of `<cell-size>` bytes. If unspecified, the setting for **config MemWidth** is used.
	`h<access-size>` Memory is accessed with a hardware access size of <access-size> bytes. If unspecified, the setting for **config MemAccess** is used.
	`{8,16,32,64}bit` Sets both `<cell-size>` and `<access-size>` for reads and writes to target memory or memory-mapped registers.
`-s|-ns`	Specifies whether each cell is to be swapped. With a setting of `-ns`, target memory is written in order from lowest to highest byte address, otherwise, each cell is endian swapped. If unspecified, the setting for **config MemSwap** is used.
`%<conv>`	Specifies the type of data. Possible values for `<conv>` are given below. If unspecified, `%x` is used.
`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point

Table 3.3 Memory Options (*continued*)

`%[E<n>]F`	Fractional Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are defined to be to the left of the decimal. The option `E<n>` may be used to indicate that the uppermost `<n>` bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of `%E8F` and a range of (-256,256).
`%s`	Ascii

Other Memory Syntax

```
change [<ms>:]<a1>{..<a2>|#<n>} [<width>] [-{s|ns}] [%<conv>]
     <value>
```

Table 3.4 Other Memory Options

`<a1>{..<a2>|#<n>}`	Specifies a range of memory either by two endpoints, `<a1>` and `<a2>`, or by a startpoint and a count, `<a1>` and `<n>`. This alternate syntax is provided mainly for backwards compatibility. The new form of `<addr>` and `<count>` should be easier to use and thus preferred.

Register Syntax

```
change [{r|nr}:]<reg> [<n>] [-s|-ns] [%<conv>] <value>
```

```
change [{r|nr}:]<reg>{..<reg>|#<n>} [-s|-ns] [%<conv>]
     <value>
```

Table 3.5 Register Options

`{r|nr}:`	Treat the command as a register command only, either recursive (`r:`) or non-recursive (`nr:`). The change command will normally make a best guess as to whether the thing being changed is memory, register, or a variable. These options make the choice explicit and can be used to overcome any ambiguities. The register set for a particular architecture is organized to match the hierarchy of the processor architecture. The change command can be instructed to traverse the hierarchy in calculating a range. If unspecified, no recursion is performed.
`<reg>`	A register name or a register group name.
`..<reg>`	The end point for a range of registers to display.
`<n>`	Number of registers.
`-s|-ns`	Specifies whether each register value is to be swapped.
`%<conv>`	Specifies the type of the data. Possible values for `<conv>` are given below. If unspecified, `%x` is used.
`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point
`%[E<n>]F`	Fractional Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are said to be to the left of the decimal. The option `E<n>` may be used to indicate that the uppermost `<n>` bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of `%E8F` and a range of (-256,256).
`%s`	Ascii

Variable Syntax

```
change [v:]<var> [-s|-ns] [%<conv>] <value>
change v: [-s|-ns] [%<conv>] <value>
```

Table 3.6 Variable Options

`v:`	Treat the command as a variable command only. The change command will normally make a best guess as to whether the thing being changed is memory, register, or a variable. This option makes the choice explicit and can be used to overcome any ambiguities. If this option appears with no `<var>` following it, then all variables pertinent to the current scope will be printed.
`<var>`	Symbolic name of the variable to print. Can be a C expression as well.
`-s|-ns`	Specifies whether the variable data is to be swapped.
`%<conv>`	Specifies the type of data. Possible values for `<conv>` are given below. If unspecified, `%x` is used.
`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point
`%[E<n>]F`	Fractional Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are defined to be to the left of the decimal. The option `E<n>` may be used to indicate that the uppermost `<n>` bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of `%E8F` and a range of (-256,256).
`%s`	Ascii

Other Variable Syntax

```
change v <var> [-s|-ns] [%<conv>] <value>
```

`v` This alternate syntax is provided mainly for backwards compatibility.

Memory Examples

All memory examples assume the following settings:

```
radix = hex
config MemIdentifier = 0
config MemWidth = 4
config MemAccess = 4
config MemSwap = no
```

To change memory range 0x10000-3 to 0x10 (because radix is hex):

```
change 10000 10
```

To change memory range 0x10000-3, memory space 1, to 0x20

```
change 1:10000 20
```

To change each of 16 cells in the memory range 0x10000-3f to 0x20

```
change 10000 16 20
```

To change each of 16, 1-byte cells to 0x31, using a hardware access size of 8-bytes per write.

```
change 10000 16x1h8 31
```

Change memory range 0x10000-3 to c8000000.

```
change 10000 -s %d 200
```

Register Examples

To change register R1 to 0x123

```
change R1 123
```

To change registers R1 through R5 to 0x5432

```
change R1..R5 5432
```

To change register R1 in the General Purpose Register group to 0x100

```
change "General Purpose Register/R1" 100
```

Variable Examples

To change the value of variable var to 16 (0x10).

```
change var 10
```

cls

Clears the screen.

```
cls
```

Shortcut

```
cl
```

cmdregistry

Displays custom commands registered by all Command Definition Files.

```
cmdregistry [no options]
```

Shortcut

```
cmdr
```

Examples

To display custom commands registered by all Command Definition Files:

```
cmdregistry
```

config

Configures and displays **Command Window** settings.

```
config <option> [<sub-option>] <value>
config
config project | target [<target-name>]
```

Shortcut

```
conf
```

Table 3.7 Config Options

none	With no options, config displays the current configuration settings.
`onScriptError abort | continue`	Controls whether the script will continue after an error. When set to continue, one subtlety is that a catch of a CodeWarrior command will never catch an error.

Table 3.7 Config Options (*continued*)

`color {rmcsen} <red> <green> <blue> [<bg-red> <bg-green> <bg-blue>]`	Selects the display color for text foreground and background. There are multiple text types, each with its own coloration, each selectable by choosing one of "`rmcsen`". The default text color is specified with an `n`. Other text types are: register `r`, memory `m`, command `c`, script `s`, and error `e`. Colors are specified with a <red> <green> <blue> triple of 8-bit values.
`scroll lineNum`	Sets the number of lines for page-up and page-down scrolling.
`page on | off`	For commands that generate multiple pages of output, enables or disables the buffering of output.
`hexPrefix <prefix>`	Sets the string to be used as the prefix for hex values.
`binPrefix <prefix>`	Sets the string to be used as the prefix for binary values.
`showCommas off | on`	When on, decimal data is displayed with commas inserted every three digits. Hex and binary data is displayed with a colon inserted every four digits.
`hexPadding on | off`	When on, hex values are padded with leading zeroes.
`decPadding off | on`	When on, decimal values are padded with leading zeroes.
`memIdentifier <mem-space-id>`	Sets the string to be used for the main memory space prefix.
`memReadMax <max-bytes>`	Limits the amount of memory to be read in a single command. This prevents the Command Window from locking up on abnormally large memory read requests.
`memCache off | on`	With memCache off, the Command Window will always read target memory. This setting is useful if your target memory may change while the target is paused. With memCache on, the Command Window will cache target memory reads while your target is paused. This setting will improve the performance of the Command Window.

Table 3.7 Config Options (*continued*)

`memSwap off | on`	When set, memory values are swapped on cell boundaries by default.
`memWidth <bits>`	Specifies the default width for display of memory data.
`memAccess <bits>`	Specifies the default hardware access size for target memory.
`debugTimeout <seconds>`	The maximum amount of time to wait for a debug command to finish. You can also press ESC key to stop waiting.
`runControlSync off | script-only | on`	Sets how to synchronize run control commands. If set to “on”, then all run control commands will wait until a thread stopped event. If set to “off”, then all run control commands will return immediately. If set to “script-only”, then all run control commands will wait while running a script but will return immediately while running interactively.
`autoThreadSwitch off | interactive-only | on`	Allows the user to control whether the Command Window will perform automatic thread-switching. Possible settings are always on, always off, and on when running interactively, i.e. not from a script. If enabled, automatic thread switching is done in the following cases: 1) If no thread is currently selected or if the current thread exits, then the first one detected will become the current. 2) If the current thread is running and another thread stops, then the current thread will switch to the stopped thread.
`variable <sub-option> [on | off]`	Enables or disables certain fields in the output of the “evaluate” command. If neither on nor off are specified, then the field is enabled. Possible values for <sub-option> are: `echo` - the variable name `location` - the address of the variable `size` - the size of the variable is bytes `type` - the variable type

Table 3.7 Config Options (*continued*)

`variable format <format>`	Controls the output format of the “evaluate” command. Possible values for <format> are:
	`- | Default`
	`d | Signed`
	`u | Unsigned`
	`x | h | Hex`
	`c | Char`
	`s | CString`
	`p | PascalString`
	`f | Float`
	`e | Enum`
	`i | Fixed`
	`Fract`
	`b | Binary`
	`Boolean`
	`SignedFixed`
	`o | w | Unicode`

`project`	Displays all open projects. See also the “project” command.
`target [<default-target>]`	With no options, displays the default target. The value <default-target> may be used to set the default target.

Examples

To display the current config settings:

```
config
```

To display the current build target:

```
config target
```

To display the current project:

config project

To change the default build target to `XXX`:

```
config target XXX
```

To abort the script if a command fails (onScriptError):

```
config o abort
```

To set the error text color to red:

```
config c e $ff $0 $0
```

To set the register display color to black, background color to white:

```
config color r $0 $0 $0 $ff $ff $ff
```

NOTE Refer to Table 3.8 for a list of text color codes.

To set page-up, page-down scrolling size to hexadecimal 10 (decimal 16) lines:

```
config scroll $10
```

To display hexadecimal numbers with the prefix “0x”:

```
config hexprefix 0x
```

To show hexadecimal and binary numbers with a colon, as in $0000:0000, and show decimal numbers with a comma, as in 1,000,000.00:

```
config ShowCommas on
```

To show hex and binary numbers with leading zeroes, as in 0x0000:

```
config HexPadding off
```

To use “m” as the memory identifier:

```
config memidentifier m
```

To display expressions and variable names for the “evaluate” command:

```
config var echo on
```

To set default display format to decimal (see Table 3.9):

```
config var format d
```

To disable the display of types for expressions or variables:

```
config var types off
```

To display location information for variables:

```
config var location on
```

To display size information for variables:

```
config var size on
```

To limit memory commands to 2048 (decimal) bytes, preventing a large memory read command from tying up the IDE:

```
config MemReadMax 2048
```

CodeWarrior pre-fetches chunks of memory when memory caching is on. Turning memory caching off reduces performance but provides the user with better control for memory accesses. Note that this command only works in the **Command Window**. To turn off caching of target memory:

```
config MemCache off
```

To wait up to 10 seconds for debug command to finish:

```
config DebugTimeout 10
```

To run control commands that will wait for thread-stopped event:

```
config RunControlSync on
```

If commands are being entered interactively, i.e. not from a script, automatic thread switching will be performed. If no thread is currently selected or if the current thread exits, then the first one detected will become the current. If the current thread is running and another thread stops, then the current thread will switch to the stopped thread.

```
config AutoThreadSwitch interactive-only
```

To include the variable name in the output of the “evaluate” command:

```
config var echo on
```

To set the default display format of the “evaluate” command to decimal:

```
config var format d
```

The format may be one of the following strings or the corresponding character abbreviation:

```
Default(-), Signed(d), Unsigned(u), Hex(h|x), Char(c)

CString(s), PascalString(p), Float(f), Enum(e), Fixed(i)

Fract(no abbreviation), Binary(b), Boolean(no
abbreviation), SignedFixed(no abbreviation)

Unicode(o|w)
```

To exclude the variable type name in the output of the “evaluate” command:

```
config var type off
```

To include the memory address in the output of the “evaluate” command:

```
config var location on
```

To include the variable size in the output of the “evaluate” command:

```
config var size on
```

To wrap line output that exceeds 80 characters in length:

```
config wordwrap 80
```

Table 3.8 Codes for Text Color

Message Type	Code
command	c
errors	e
memory	m
normal	n
register	r
script	s

Table 3.9 Format Type Abbreviations

Format Type	Abbreviation	Alternate Abbreviation
`Binary`	`b`	
`Boolean`		
`Char`	`c`	
`CString`	`s`	
`Default`	`-`	
`Enum`	`e`	
`Fixed`	`i`	
`Float`	`f`	
`Fract`		
`Hex`	`h`	`x`
`PascalString`	`p`	
`Signed`	`d`	
`SignedFixed`		

Table 3.9 Format Type Abbreviations (*continued*)

Format Type	Abbreviation	Alternate Abbreviation
`Unicode`	`o`	`w`
`Unsigned`	`u`	

connect

Connects to target hardware.

```
connect [project_file(*.mcp)]
```

Shortcut

```
conn
```

Parameters

```
project_file
```

Examples

To connect using default project remote connection:

```
connect
```

To connect using the remote connection set in the current target of project.mcp:

```
connect project.mcp
```

copy

Copies memory.

```
copy addr_block addr
```

Shortcut

```
co
```

Examples

To copy memory addresses 00 through 1F to address 30:

```
copy p:00..1f p:30
```

To copy 10 memory locations beginning at memory address 20 to memory beginning at address 50:

```
copy p:20#10 p:50
```

See also

radix

debug

Starts a debugging session for a project.

```
debug [project_file(*.mcp) [number of projects]] |
     [executable_file(*.elf | *.eld)]
```

Shortcut

```
de
```

Examples

To debug the current default project:

```
debug
```

To open the project `des.mcp` and start debugging the default build target in it:

```
debug des.mcp
```

To start a debugging session for the project file named `8102.mcp` with three sub-projects to debug, waiting until all four projects are open before starting the debug session:

```
debug 8102.mcp 4
```

Comments

Only use the `[number of projects]` parameter for 8102 projects.

dir

Lists the contents of a directory.

```
dir [path|files|-d]
```

Shortcut

```
dir
```

Examples

```
dir
dir *.txt
dir c:/tmp
```

disassemble

Disassembles instructions at the memory block.

```
disassemble
disassemble reset
disassemble pc|<ms>:<addr> [<count>]
```

Shortcut

```
di
```

Table 3.10 Options

[none]	With no options, the next block of instructions is displayed. After a target stop event, the next block starts at the PC.
<ms>	On architectures supporting multiple memory spaces, specifies the memory space in which <addr> is to be found. If unspecified, the setting “config MemIdentifier” is used.
<addr>	Target address in hex.
pc	The current program counter.

Table 3.10 Options (*continued*)

<count>	Number of instructions to be displayed.
reset	Reset the next block to the PC and the instruction count to one screenful.

Other Syntax

```
disassemble <ms>:<a1>{..<a2>|#<n>}
```

`<a1>{..<a2>|#<n>}` Specifies a range of memory either by two endpoints, <a1> and <a2>, or by a startpoint and a count, <a1> and <n>. This alternate syntax is provided mainly for backwards compatibility. The new form of <addr> and <count> should be easier to use and thus preferred. The instruction count will be set to the number of disassembled instructions.

Examples

To display the next block of instructions:

```
disassemble
```

To reset the next block to the PC and the instruction count to one screenful:

```
disassemble reset
```

To display instructions starting at the PC:

```
disassemble pc
```

To display 4 instructions starting at the PC. Sets the instruction count to 4:

```
disassemble pc 4
```

To display instructions starting at program memory address 0x1000:

```
disassemble p:1000
```

To display 4 instructions starting at program memory address 1000. Sets the instruction count to 4:

```
disassemble p:1000 4
```

To display instructions from program memory address block 0 to 1f:

```
disassemble p:0..1f
```

To disassemble 16 bytes starting at program memory 0x50:

```
disassemble p:$50#10
```

display

Displays registers, memory, or variables.

```
display <item> [<options>...]
```

Shortcut

```
d
```

Memory Syntax

```
display [<ms>:]<addr> [<count>][<width>] [-np] [-s|-ns]
      [%<conv>]
```

Table 3.11 Memory Options

`<ms>`	On architectures supporting multiple memory spaces, specifies the memory space in which <addr> is to be found. See the option -ms below for more information on memory spaces. If unspecified, the setting **config MemIdentifier** is used.
`<addr>`	Target address in hex.
`<count>`	Number of memory cells.
`<width>`	[x<cell-size>][h<access-size>] | [{8,16,32,64}bit]
	x<cell-size> Memory is displayed in units called cells, where each cell consists of <cell-size> bytes. If unspecified, the setting **config MemWidth** is used.
	h<access-size> Memory is accessed with a hardware access size of <access-size> bytes. If unspecified, the setting **config MemAccess** is used.
	{8,16,32,64}bit Sets both <cell-size> and <access-size>.
`-np`	Don't print anything to the display, only return the data. Scripts run faster when no data has to be printed.

Table 3.11 Memory Options (*continued*)

`-s|-ns`	Specifies whether each cell is to be swapped. With a setting of -ns, target memory is displayed in order from lowest to highest byte address. Otherwise, each cell is endian swapped. If unspecified, the setting **config MemSwap** is used.
`%<conv>`	Specifies the type of data. Possible values for <conv> are given below. If unspecified, %x is used.
`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point
`%[E<n>]F`	Fractional. Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are defined to be to the left of the decimal. The option E<n> may be used to indicate that the uppermost <n> bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of %E8F and a range of (-256,256).
`%s`	Ascii
`-ms`	On architectures supporting multiple memory spaces, displays the list of available memory spaces including a mnemonic and/or an integer index which may be used when specifying a target address.

Other Memory Syntax

```
display [<ms>:]<a1>{..<a2>|#<n>} [<width>] [-np] [-s|-ns]
      [%<conv>]
```

Other Memory Options

`<a1>{..<a2>|#<n>}`

Specifies a range of memory either by two endpoints, <a1> and <a2>, or by a startpoint and a count, <a1> and <n>. This alternate syntax is provided mainly for backwards compatibility. The new form of <addr> and <count> should be easier to use and thus preferred.

Register Syntax

```
display [{r|nr}:]<reg> [<n>] [-{d|nr|nv|np} ...] [-s|-ns]
[%<conv>]
```

```
display [{r|nr}:]<reg>{..<reg>|#<n>} [-{d|nr|nv|np} ...] [-
s|-ns] [%<conv>]
```

```
display all|r:|nr: [-{d|nr|nv|np} ...] [-s|-ns] [%<conv>]
```

```
display [-]regset
```

Table 3.12 Register Options

`{r|nr}:`	Treat the command as a register command only, either recursive (r:) or non-recursive (nr:). The display command will normally make a best guess as to whether the thing being displayed is memory, register, or a variable. These options make the choice explicit and can be used to overcome any ambiguities. The register set for a particular architecture is organized to match the hierarchy of the processor architecture. The display command can be instructed to traverse the hierarchy in calculating a range. If unspecified, no recursion is performed.
`<reg>`	A register name or a register group name.
`..<reg>`	The end point for a range of registers to display.
`<n>`	Number of registers.
`-d`	Print detailed data book information.
`-nr`	Print only register groups, that is, no registers.
`-nv`	Print only register group and register names, that is, no values.
`-np`	Don't print anything to the display, only return the data. Scripts run faster when no data has to be printed.
`-s|-ns`	Specifies whether each register value is to be swapped.
`%<conv>`	Specifies the type of the data. Possible values for <conv> are given below. If unspecified, %x is used.
`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point

Table 3.12 Register Options (*continued*)

`%[E<n>]F`	Fractional Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are said to be to the left of the decimal. The option E<n> may be used to indicate that the uppermost <n> bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of %E8F and a range of (-256,256).
%s	Ascii
regset	Display the register group hierarchy.

Variable Syntax

```
display [v:]<var> [-np] [-s|-ns] [%<conv>]
display v: [-np] [-s|-ns] [%<conv>]
```

Table 3.13 Variable Options

`v:`	Treat the command as a variable command only. The display command will normally make a best guess as to whether the thing being displayed is memory, register, or a variable. This option makes the choice explicit and can be used to overcome any ambiguities. If this option appears with no <var> following it, then all variables pertinent to the current scope will be printed.
`<var>`	Symbolic name of the variable to print. Can be a C expression as well.
`-np`	Don't print anything to the display, only return the data. Scripts run faster when no data has to be printed.
`-s|-ns`	Specifies whether the variable data is to be swapped.
`%<conv>`	Specifies the type of data. Possible values for <conv> are given below. If unspecified, %x is used.
`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point

Table 3.13 Variable Options (*continued*)

`%[E<n>]F`	Fractional Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are defined to be to the left of the decimal. The option E<n> may be used to indicate that the uppermost <n> bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of %E8F and a range of (-256,256).
`%s`	Ascii

Memory Examples

All memory examples assume the following settings:

```
radix = hex

config MemIdentifier = 0

config MemWidth = 4

config MemAccess = 4

config MemSwap = no
```

Display memory range 0x10000-3 as one cell.

```
display 10000
```

Display memory range 0x10000-3, memory space 1, as one cell.

```
display 1:10000
```

Display memory range 0x10000-3f as 16 cells.

```
display 10000 16
```

Display 16, 1-byte cells, with a hardware access size of 8-bytes per read.

```
display 10000 16x1h8
```

Display one byte, with a hardware access size of one byte.

```
display 10000 8bit
```

Return one cell, but don't print it to the Command Window.

```
display 10000 -np
```

Display one cell with the data endian-swapped.

```
display 10000 -s
```

Display one cell in decimal format.

```
display 10000 %d
```

Display the available memory spaces, if any.

```
display -ms
```

Register Examples

To list all the available register set(s) on the target chip:

```
display regset
```

Tp display the value of register R1:

```
display R1
```

To display the value of register R1 in the General Purpose Register group:

```
display "General Purpose Register/R1"
```

To display detailed “data book” contents of R1, including bitfields and definitions:

```
display R1 -d
```

To begin with register R1, display the next 25 registers. Register groups will not be recursively searched.

```
display nr:R1 25
```

Variable Examples

To display the endian-swapped contents of variable var in decimal.

```
display var -s %d
```

Comments

Displaying a register also returns a value to Tcl. Examples:

```
set myReg [display gpr0]; puts $myReg ;
set multiReg [display gpr0..gpr3]; puts $multiReg ;
```

ep::pause

Sets, removes, or lists Pause Points.

```
ep::pause -list
ep::pause <func_name>|[<ms>:]<addr>
ep::pause <file_name> <line_number> [<column_number>]
ep::pause <func_name|#<bkrpt_num>|all -off|-enable|-disable
ep::pause #<brkpt_num> -cond <expr_elements...>
```

Shortcut

`ep::pa`

Parameters

`<func_name>|[<ms>:]<addr`

Supply the name or machine code address of the function on which you want to set the pause point

`<file_name> <line_number> [<column_number>]`

Supply the name of the file, the line number, and (optionally) the column number where you want to set the pause point

`<func_name|#<bkrpt_num>|all -off|-enable|-disable`

Supply the function name containing an existing pause point, the pause point number of an existing pause point, or `all`. Supply one of `off`, `enable`, or `disable` indicating the action you want to take on the pause point.

`#<brkpt_num> -cond <expr_elements...>`

Supply the pause point number of an existing pause point, the condition to apply to the pause point, and the expressions you want to execute when the debugger encounters the condition.

Examples

To displays all pause points:

```
ep::pause -list
```

To set a pause point in file.cpp at line 22:

```
ep::pause file.cpp 22
```

To set a pause point at function main execution:

```
ep::pause main
```

To clear pause point 4:

```
ep::pause #4 -off
```

To disable pause point on function main:

```
ep::pause main -disable
```

To set a condition on pause point #4:

```
ep::pause #4 -cond "x == 3"
```

ep::script

Sets, removes, or lists Script Points.

```
ep::script -list
ep::script <func_name>|[<ms>:]<addr> -cmds "<commands>"|-
    file "<scriptfile>" [-stop|-go]
ep::script <file_name> <line_number> [<column_number>] -cmds
    "<commands>"|-file "<scriptfile>" [-stop|-go]
ep::script <func_name|#<bkrpt_num>|all -off|-enable|-
    disable
ep::script #<brkpt_num> -cond <expr_elements...>
```

Shortcut

`ep::sc`

Parameters

`<func_name>|[<ms>:]<addr> -cmds "<commands>"|-file "<scriptfile>" [-stop|-go]`

Supply the name or machine code address of the function on which you want to set the script point and the command or script file to be executed. Supply `stop` or `go` indicating whether to stop or continue the execution.

`<file_name> <line_number> [<column_number>] -cmds "<commands>"|-file "<scriptfile>" [-stop|-go]`

Supply the name of the file, the line number, and (optionally) the column number where you want to set the script point. Supply the command or script file to be executed and one of `stop` or `go` to indicate whether to stop or continue the execution.

`<func_name|#<bkrpt_num>|all -off|-enable|-disable`

Supply the function name containing an existing script point, the script point number of an existing script point, or `all`. Supply one of `off`, `enable`, or `disable` indicating the action you want to take on the script point.

`#<brkpt_num> -cond <expr_elements...>`

Supply the script point number of an existing script point, the condition to apply to the script point, and the expressions you want to execute when the debugger encounters the condition.

Examples

To display all script points:

```
ep::script -list
```

To set a script point in file.cpp at line 22 that will execute script file script.tcl and stop execution:

```
ep::script file.cpp 22 -file "script.tcl" -stop
```

To set a script point at function main that displays memory and continues execution:

```
ep::script main -cmds "display 0..ff" -go
```

To clear script point 4:

```
ep::script #4 -off
```

To disable script point on function main:

```
ep::script main -disable
```

To set a condition on script point #4:

```
ep::script #4 -cond "x == 3"
```

evaluate

Displays C variable type or value.

```
evaluate [#formatchar|#fullformatname] [variable_Name]
```

Shortcut

```
e
```

Examples

To list the types for all the variables in current and global stack:

```
evaluate
```

To return the value of variable 'i':

```
evaluate i
```

To return the value of variable 'i' formatted in binary (Table 3.14):

```
evaluate #b i
```

Table 3.14 Format Type Abbreviations

Format Type	Abbreviation	Alternate Abbreviation
`#Binary`	`#b`	
`#Boolean`		
`#Char`	`#c`	
`#CString`	`#s`	
`#Default`	`#-`	
`#Enum`	`#e`	
`#Fixed`	`#i`	
`#Float`	`#f`	
`#Fract`		
`#Hex`	`#h`	`#x`
`#PascalString`	`#p`	
`#Signed`	`#d`	
`#SignedFixed`		
`#Unicode`	`#o`	`#w`
`#Unsigned`	`#u`	

exit

Closes the command line window.

```
exit
```

Shortcut

```
ex
```

finish

Executes until the current function returns.

```
finish
```

Shortcut

```
f
```

See also

step, next, stepi, nexti

getpid

Returns the process ID of the last stopped debug process.

```
getpid
```

Shortcut

```
ge
```

See Also

switchtarget

go

Start target program from the current instruction.

```
go [ALL | NOWAIT | time_period]
```

Shortcut

```
g
```

Comments

If run from the command window, go returns immediately.

If run from a script file, the Command Window polls for keyboard input until the target stops (for example, the target encounters a breakpoint). It will then run the next command. You may press the ESC key to stop the script if the target never stops and the Command Window continues to poll.

```
go 1
```

Stop polling the target if a breakpoint is not encountered within 1 second. The Tcl variable `still_running` is set to 1.

```
go nowait
```

If run from a script file, Tcld will execute the next script command without waiting for the target to stop.

help

Displays help for commands.

```
help [command] | [shortcut]
```

Shortcut

```
h
```

Examples

To list all the Command Window commands:

```
help
```

To display help on the command `break`:

```
help break
```

To display help on the command `break`:

```
help b
```

history

Lists the command history.

```
history
```

Shortcut

```
hi
```

kill

Closes the current debug session.

```
kill [all]
```

Shortcut

```
k
```

log

Logs commands or a session.

```
log [OFF] [C(commands)|S(session) filename ]
```

Shortcut

```
lo
```

Examples

To display currently opened log files:

```
log
```

To log all display entries to the file `session1.log`:

```
log s session.log
```

To log internal command contents to the file `command.log`:

```
log c command.log
```

To terminate command logging:

```
log off c
```

To terminate all logging:

```
log off
```

make

Builds the specified project or the default project if none is specified.

```
make [project file(*.mcp)]
```

Shortcut

```
m
```

Examples

To build the default project:

```
make
```

To build the project `test.mcp`:

```
make test.mcp
```

mem

Reads and writes memory.

```
mem
mem -ms
mem [<ms>:]<addr> [<count>][<width>] [-s|-ns] [%<conv>] [-np]
mem [<ms>:]<addr> [<count>][<width>] [-s|-ns]
     [%<conv>]=<value>
```

Shortcut

```
m
```

Table 3.15 mem Options

[none]	With no options, the next block of memory is read.
`<ms>`	On architectures supporting multiple memory spaces, specifies the memory space in which <addr> is to be found. See the help for the option -ms of display or mem for more information on memory spaces. If unspecified, the setting “config MemIdentifier” is used.
`<addr>`	Target address in hex.
`<count>`	Number of memory cells.

Table 3.15 mem Options (*continued*)

`<width>`	[x<cell-size>][h<access-size>] | [{8,16,32,64}bit]
	x<cell-size> Memory is accessed in units called cells, where each cell consists of <cell-size> bytes. If unspecified, the setting for **config MemWidth** is used.
	`h<access-size>` Memory is accessed with a hardware access size of <access-size> bytes. If unspecified, the setting for **config MemAccess** is used.
	{8,16,32,64}bit Sets both <cell-size> and <access-size>
`-s|-ns`	Specifies whether each cell is to be swapped. With a setting of -ns, target memory is written in order from lowest to highest byte address. Otherwise, each cell is endian swapped. If unspecified, the setting "config MemSwap" is used.
`%<conv>`	Specifies the type of the data. Possible values for <conv> are given below. If unspecified, %x is used.
`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point
`%[E<n>]F`	Fractional. Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are defined to be to the left of the decimal. The option E<n> may be used to indicate that the uppermost <n> bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of %E8F and a range of (-256,256).
`%s`	Ascii

Table 3.15 mem Options (*continued*)

`-np`	Don't print anything to the display, only return the data.
`-ms`	On architectures supporting multiple memory spaces, displays the list of available memory spaces including a mnemonic and/or an integer index which may be used when specifying a target address.

Examples

The examples assume the following settings:

```
radix = hex
config MemIdentifier = 0
config MemWidth = 4
config MemAccess = 4
config MemSwap = no
```

To display the next block of memory:

```
mem
```

To display memory range 0x10000-3 as one cell:

```
mem 10000
```

To display memory range 0x10000-3, memory space 1, as one cell:

```
mem 1:10000
```

To display memory range 0x10000-3f as 16 cells:

```
mem 10000 16
```

To display 16, 1-byte cells, with a hardware access size of 8-bytes per read:

```
mem 10000 16x1h8
```

To display one byte, with a hardware access size of one byte:

```
mem 10000 8bit
```

To return one cell, but don't print it to the Command Window:

```
mem 10000 -np
```

To display one cell with the data endian-swapped:

```
mem 10000 -s
```

To display one cell in decimal format:

```
mem 10000 %d
```

To display the available memory spaces, if any.

```
mem -ms
```

To change memory range 0x10000-3 to 0x10 (because radix is hex):

```
mem 10000 =10
```

To change memory range 0x10000-3, memory space 1, to 0x20:

```
mem 1:10000 =20
```

To change each of 16 cells in the memory range 0x10000-3f to 0x20:

```
mem 10000 16 =20
```

To change each of 16, 1-byte cells to 0x31, using a hardware access size of 8-bytes per write:

```
mem 10000 16x1h8 =31
```

To change memory range 0x10000-3 to c8000000:

```
mem 10000 -s %d =200
```

next

Runs to the next source line or assembly instruction in the current frame.

```
next
```

Shortcut

```
n
```

Comment

The `display` command is automatically run after the `next` command finishes.

nexti

Executes over function calls, if any, to the next assembly instruction

```
nexti
```

Shortcut

```
nexti
```

Examples

To executes the thread to the next assembly instruction unless the current instruction is a function call, in which case the thread is executed until the function returns:

```
nexti
```

See also

stepi, step, next, finish

project

Opens or closes a project file or ELF file.

```
project -o[pen] file (.mcp|.elf|.elf)
```

```
project -c[lose]
```

```
project
```

Shortcut

```
proj
```

Examples

To open the project `des.mcp`:

```
proj -o des.mcp
```

To close the default project:

```
proj -c
```

To list open projects:

```
proj
```

pwd

Displays current working directory.

```
pwd
```

quitIDE

Quits the CodeWarrior IDE.

```
quitIDE
```

Shortcut

```
q
```

radix

Changes the number base for input and memory/register displays.

```
radix [B(bin)|D(dec)|F(frc)|H(hex)|U(unsigned)]
    [reg[_block]|addr{_block] ...]
```

Shortcut

```
r
```

Examples

To display the default radix currently enabled:

```
radix
```

To change input radix to decimal:

```
radix D
```

To change input radix to hexadecimal:

```
radix H
```

To change the display radix for the specified registers fractional:

```
radix f r0..r7
```

To change the display radix for the specified registers and memory blocks to decimal:

```
radix d m:0#10 r1
```

Comments

The default value for the input and output radix is hexadecimal.

The input radix may not be changed to fractional.

Hexadecimal constants may always be specified by preceding the constant with a dollar sign ($).

Decimal constants may always be specified by preceding the constant with a grave accent (‘).

Binary constants may always be specified by preceding the constant with a percent sign (%).

reg

Reads and writes registers.

```
reg [{r|nr}:]<reg> [<n>] [-{d|nr|nv|np} ...] [-s|-ns]
[%<conv>]
```

```
reg [{r|nr}:]<reg>{..<reg>|#<n>} [-{d|nr|nv|np} ...] [-s|-ns]
[%<conv>]
```

```
reg all|r:|nr: [-{d|nr|nv|np} ...] [-s|-ns] [%<conv>]
```

```
reg [{r|nr}:]<reg> [<n>] [-s|-ns] [%<conv>] =<value>
```

```
reg [{r|nr}:]<reg>{..<reg>|#<n>} [-s|-ns] [%<conv>] =<value>
```

```
reg -regset
```

```
reg
```

Shortcut

```
r
```

Table 3.16 reg Options

`{r|nr}:`	If multiple registers are specified, then the prefix r: causes a recursive, depth-first traversal of the register hierarchy. The prefix nr: prevents recursion. If unspecified, no recursion is performed.
`<reg>`	A register name or a register group name.
`..<reg>`	The end point for a range of registers to access.
`<n>`	Number of registers.
`-s|-ns`	Specifies whether each register value is to be swapped.
`%<conv>`	Specifies the type of the data. Possible values for <conv> are given below. If unspecified, %x is used.

Table 3.16 reg Options (*continued*)

`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point
`%[E<n>]F`	Fractional. Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are defined to be to the left of the decimal. The option E<n> may be used to indicate that the uppermost <n> bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of `%E8F` and a range of (-256,256).
`%s`	Ascii
`-d`	Print detailed data book information.
`-nr`	Print only register groups, i.e. no registers.
`-nv`	Print only register group and register names, i.e. no values.
`-np`	Don't print anything to the display, only return the data.
`regset`	Display the register group hierarchy.

Examples

To list all the available register sets on the target chip:

```
reg -regset
```

To display the value of register R1:

```
reg R1
```

To display the value of register R1 in the General Purpose Register group:

```
reg “General Purpose Register/R1”
```

To display detailed “data book” contents of R1, including bitfields and definitions:

```
reg R1 -d
```

To beginning with register R1, display the next 25 registers. Register groups are not recursively searched:

```
reg nr:R1 25
```

To change register R1 to 0x123:

```
reg R1 =123
```

To change registers R1 through R5 to 0x5432:

```
reg R1..R5 =5432
```

To change register R1 in the General Purpose Register group to 0x100:

```
reg “General Purpose Register/R1” =100
```

removeobj

Removes object code and binaries

```
removeobj [#a[lltargets]] [#c[ompact]] [#r[ecurse]]
     [project file(*.mcp)]
```

Shortcut

```
rem
```

Examples

To remove binaries for the default target for default project:

```
removeobj
```

To remove binaries for all targets for the default project:

```
removeobj #all
```

To remove binaries and compact data for the default project and all subprojects:

```
removeobj #recurse #compact
```

To remove binaries for the project `test.mcp`:

```
removeobj test.mcp
```

reset

Resets the target hardware.

```
reset [h/ard | s/oft][run]
```

Shortcut

reset

Examples

If hard or soft is not specified with the reset command, then the default depends on the hardware support. If soft is supported, then that is the default. Otherwise, if hard is supported, then that is the default.

```
reset
```

To perform soft reset, if supported:

```
reset soft
```

To perform hard reset, if supported:

```
reset hard
```

To allow the target to run after the reset, also called “reset to user”. Otherwise, the target is halted at the reset vector.

```
reset run
```

restart

Restarts the debugging session.

```
restart
```

Shortcut

```
re
```

Examples

```
restart
```

This command will download the code again.

Comments

NOTE For remote connections, this command causes the debugger to download code again.

If you change the debugging session memory where the program code stores the startup CRT code, the command restart will not set the PC back to the `main()` function.

restore

Writes file contents to memory.

```
restore -h *.lod [addr|offset] [8bit|16bit|32bit|64bit]
restore -b *.lod addr [8bit|16bit|32bit|64bit]
```

Shortcut

```
rest
```

Example

To load the contents of hexfile `dat.lod` into memory:

```
restore -h dat.lod
```

To load the contents of binary file `dat.lod` into memory beginning at $20:

```
restore -b dat.lod p:$20
```

To load the contents of binary file `dat.lod` into memory with an offset of $20, relative to the address saved in `dat.lod`:

```
restore -h dat.lod $20
```

Comments

The `[8bit | ...]` option controls the access size for reads and writes to target memory or memory-mapped registers.

See Also

save

save

Saves memory contents to a file.

```
save -h/-b addr_block... filename [-a/-o]
     [8bit|16bit|32bit|64bit]
```

Shortcut

```
sa
```

Examples

To save two memory blocks to `filename.lod` in hexadecimal format. If `filename.lod` exists, appends data to existing file:

```
save -h p:0..10 p:20..28 filename -a
```

To save memory blocks to `filename.lod` in binary format. If `filename.lod` exists, overwrites existing file:

```
save -b p:0..10 p:20..28 filename -o
```

Comments

The `[8bit | ...]` option controls the access size for reads and writes to target memory or memory-mapped registers.

setvisible

Hides or makes a command visible.

```
setvisible on|off <name> ...
```

<name> is either a fully qualified command or a command namespace.

Shortcut

```
setv
```

Examples

To make the command “cmdwin::step” visible:

```
setvisible on cmdwin::step
```

To hide the command “cmdwin::step”

```
setvisible off cmdwin::step
```

To make all commands in the namespace “com::acme::cmds” visible:

```
setvisible on com::acme::cmds
```

NOTE Built-in Tcl commands cannot be hidden.

sourcedisplay

Changes the source view in the front-most debugger thread window.

```
sourcedisplay [code|asm|mixed|cycle]
```

Shortcut

```
so
```

Examples

To cycle through available display modes:

```
sourcedisplay cycle
```

To change the view to display source code:

```
sourcedisplay code
```

To change the view to display assembly:

```
sourcedisplay asm
```

To change the view to display both source and assembly:

```
sourcedisplay mixed
```

stack

Displays the call stack.

```
stack [num_frames] [-default]
```

Shortcut

```
stac
```

Examples

To print the entire call stack unless limited with stack -default:

```
stack
```

To print the 6 innermost call stack levels:

```
stack 6
```

To print the 6 outer-most call stack levels:

```
stack -6
```

To limit the number of stack frames shown to the 6 innermost levels:

```
stack 6 -default
```

To remove the stack frame limit:

```
stack -default
```

status

Displays the debug status of all active targets.

```
status
```

Shortcut

```
sta
```

step

Steps through the target program.

```
step [into|over|out|asm|all]
step [into|li(lines)|out|in(struction)|all]
step [nve|nxt|fwd|end|aft]
```

Shortcut

```
st
```

Examples

To step over a source line:

```
step
step li
step over
```

To step a single assembly instruction:

```
step asm
sep in
step instruction
```

To step into a source line:

```
step into
```

To step out of a function:

```
step out
```

For supported targets, step a single assembly instruction on all cores:

```
step all
```

For supported targets, optimized code debugging step non optimized action:

```
step nve
```

For supported targets, optimized code debugging step next action:

```
step nxt
```

For supported targets, optimized code debugging step forward action:

```
step fwd
```

For supported targets, optimized code debugging step end of statement action:

```
step end
```

For supported targets, optimized code debugging step end all previous action:

```
step aft
```

Comments

The `display` command is automatically run after a successful `step` command.

stepi

Executes to the next assembly instruction.

```
stepi
```

Shortcut

```
stepi
```

Examples

To execute exactly one assembly instruction:

```
stepi
```

See also

nexti, step, next, finish

stop

Stops the target program after the command `go`, `step out`, or `next`.

```
stop
```

Shortcut

```
s
```

switchtarget

During multi-core debugging, select the debug session to which the IDE sends debug commands.

```
switchtarget [pid]
```

Shortcut

```
sw
```

Examples

To list currently available debug sessions:

```
switchtarget
```

To select the debug session whose PID is 0:

```
switchtarget 0
```

system

Executes a system command.

```
system [command]
```

Shortcut

```
sy
```

Examples

To delete any file with the extension `.tmp`:

```
system del *.tmp
```

var

Reads and writes variables or C-expressions.

```
var [v:]<var> [-np] [-s|-ns] [%<conv>]
var v: [-np] [-s|-ns] [%<conv>]
var [v:]<var> [-s|-ns] [%<conv>] =<value>
```

Shortcut

```
v
```

Table 3.17 var Options

`v:`	If this option appears with no <var> following it, then all variables pertinent to the current scope are printed.
`<var>`	Symbolic name of the variable to print. Can also be a C expression.
`-s|-ns`	Specifies whether the variable data is to be swapped.
%<conv>	Specifies the type of data. Possible values for <conv> are given below. If unspecified, %x is used.
`%x`	Hexadecimal
`%d`	Signed decimal
`%u`	Unsigned decimal
`%f`	Floating point
`%[E<n>]F`	Fractional. Normally fractional values occupy the range (-1,1), where all bits in the value are to the right of the decimal point. On some architectures, a certain number of high order bits are defined to be to the left of the decimal. The option E<n> may be used to indicate that the uppermost <n> bits are to the left of the decimal. For example, a 40-bit value with 8 bits to the left of the decimal would have a format of `%E8F` and a range of (-256,256).
`%s`	Ascii
`-np`	Don't print anything to the display, only return the data.

Examples

To display the endian-swapped contents of variable `myVar` in decimal:

```
var myVar -s %d
```

To change the value of variable `myVar` to 16 (0x10):

```
var myVar=10
```

wait

Waits for a specified time.

```
wait [milliseconds]
```

Shortcut

```
w
```

Examples

To wait until the user hits ESC:

```
wait
```

To wait for 2 seconds:

```
wait 2000
```

watchpoint

Adds, removes, or displays a watchpoint.

```
watchpoint [variable_name|watchpoint_id OFF]
```

Shortcut

```
wat
```

Examples

To display the watchpoint list:

```
watchpoint
```

To add watchpoint on variable `i`:

```
watchpoint i
```

window

Opens a specific IDE debugger window.

```
window [breakpoints | expressions | globals | memory |
     processes | registers | symbolics]
```

Shortcut

```
win
```

Examples

To open the symbolics window associated with the current debug session:

```
window
```

To open the debugger breakpoints window:

```
window breakpoints
```

To open the debugger expressions window:

```
window expressions
```

To open the debugger globals window:

```
window globals
```

To open a memory window:

```
window memory
```

To open the processes window:

```
window processes
```

To open the debugger registers window:

```
window registers
```

To open the symbolics window associated with the current debug session:

```
window symbolics
```

4

Microsoft COM Automation

This chapter describes how to automate certain tasks performed by the CodeWarrior IDE. These tasks include:

- Managing project files
- Building, compiling, linking, and debugging projects
- Using the version control system
- Logging CodeWarrior messages

While you can use any of the several different scripting tools (Perl, VBScript) to create automation scripts for the IDE. The CodeWarrior IDE uses Perl. Perl offers an industry-standard, flexible way to create scripts to control various objects, including the IDE. All the examples in this chapter use Perl.

This chapter has these sections:

Viewing OLE/COM Objects

You can view the Component Object Model (COM) objects the IDE exposes and the methods you can call to work with those objects using the OLE/COM Object Viewer (Figure 4.1). The following sub-sections describe how to work with the OLE/COM Object Viewer.

- Setting the View to Expert Mode
- Opening the CodeWarrior Type Library
- Finding Method Details

Setting the View to Expert Mode

The remainder of these instructions assume that you have set your Object Viewer to Expert Mode. To do so:

1. Select **View** > **Expert Mode**.

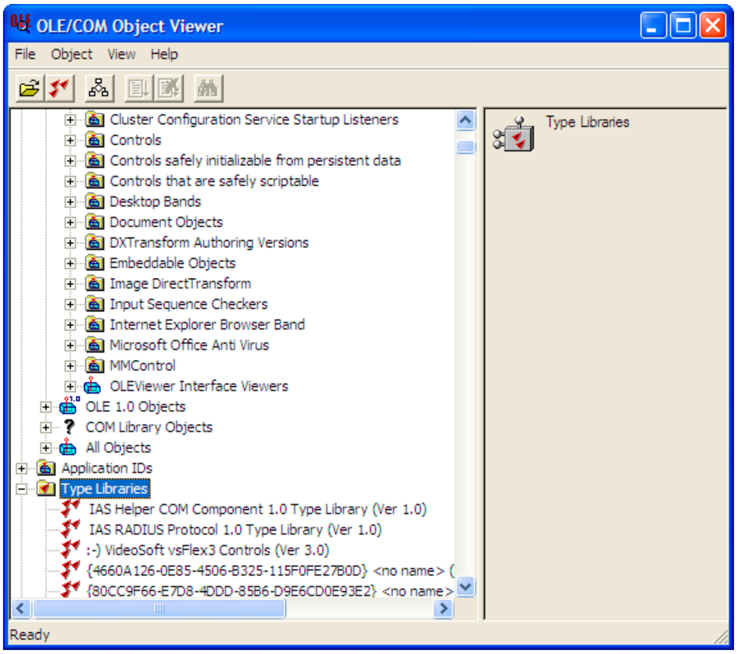
This setting provides more detail than would otherwise appear in the Object Viewer.

Opening the CodeWarrior Type Library

To view the interfaces and enumerations that you can use to control the IDE:

1. In the left pane, expand the **Type Libraries** list (Figure 4.1).

Figure 4.1 Expand Type Libraries List

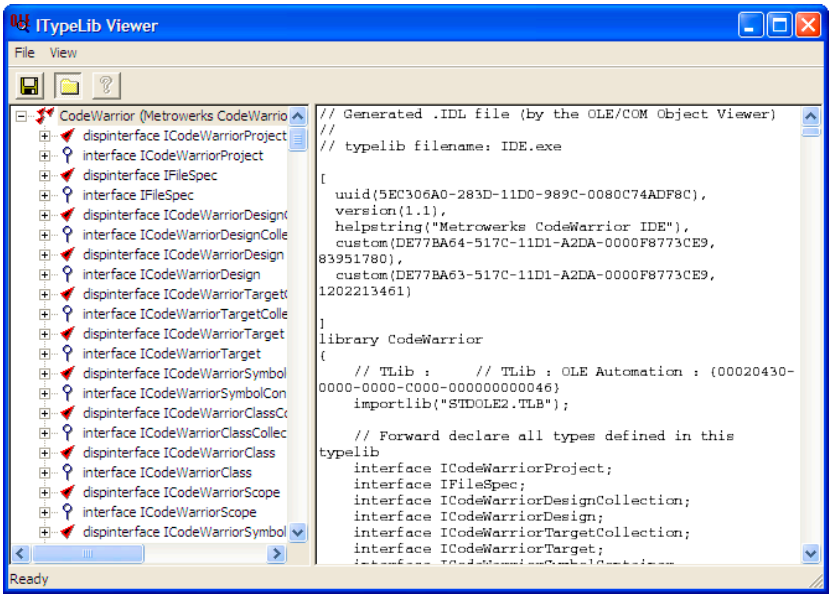


Cluster Configuration Service Startup Listeners
Controls
Controls safely initializable from persistent data
Controls that are safely scriptable
Desktop Bands
Document Objects
DXTransform Authoring Versions
Embeddable Objects
Image DirectTransform
Input Sequence Checkers
Internet Explorer Browser Band
Microsoft Office Anti Virus
MMControl
OLEViewer Interface Viewers
OLE 1.0 Objects
COM Library Objects
All Objects
Application IDs
Type Libraries
IAS Helper COM Component 1.0 Type Library (Ver 1.0)
IAS RADIUS Protocol 1.0 Type Library (Ver 1.0)
:-) VideoSoft vsFlex3 Controls (Ver 3.0)
{4660A126-0E85-4506-B325-115F0FE27B0D} <no name> (
{80CC9F66-E7D8-4DDD-85B6-D9E6CD0E93E2} <no name>

2. Double-click the **Metrowerks CodeWarrior IDE (Ver 1.1)** item in the **Type Libraries** tree.

   The **ITypeLib Viewer** (Figure 4.2) appears, showing the interfaces and enumerations you can use to control the IDE.

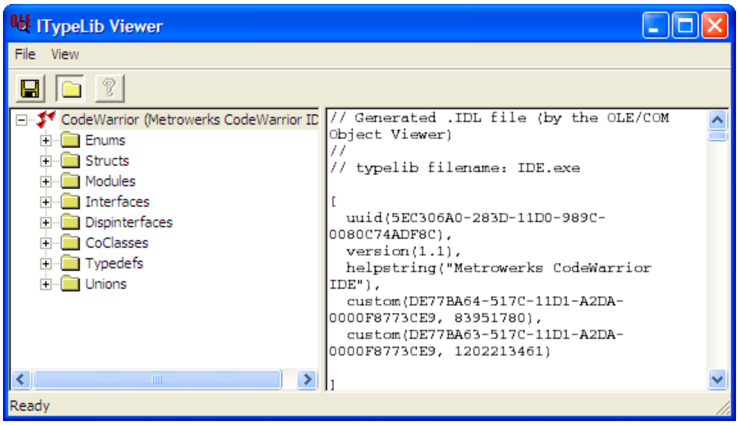
Figure 4.2 ITypeLib Viewer


ITypeLib Viewer
File
View
CodeWarrior (Metrowerks CodeWarrio
dispinterface ICodeWarriorProject
interface ICodeWarriorProject
dispinterface IFileSpec
interface IFileSpec
dispinterface ICodeWarriorDesign(
interface ICodeWarriorDesignColle
dispinterface ICodeWarriorDesign
interface ICodeWarriorDesign
dispinterface ICodeWarriorTarget(
interface ICodeWarriorTargetColle
dispinterface ICodeWarriorTarget
interface ICodeWarriorTarget
dispinterface ICodeWarriorSymbol
interface ICodeWarriorSymbolCon
dispinterface ICodeWarriorClassC(
interface ICodeWarriorClassCollec
dispinterface ICodeWarriorClass
interface ICodeWarriorClass
dispinterface ICodeWarriorScope
interface ICodeWarriorScope
dispinterface ICodeWarriorSymbol
Ready

```
// Generated .IDL file (by the OLE/COM Object Viewer)
//
// typelib filename: IDE.exe

[
  uuid(5EC306A0-283D-11D0-989C-0080C74ADF8C),
  version(1.1),
  helpstring("Metrowerks CodeWarrior IDE"),
  custom(DE77BA64-517C-11D1-A2DA-0000F8773CE9,
83951780),
  custom(DE77BA63-517C-11D1-A2DA-0000F8773CE9,
1202213461)

]
library CodeWarrior
{
    // TLib :      // TLib : OLE Automation : {00020430-
0000-0000-C000-000000000046}
    importlib("STDOLE2.TLB");

    // Forward declare all types defined in this
typelib
    interface ICodeWarriorProject;
    interface IFileSpec;
    interface ICodeWarriorDesignCollection;
    interface ICodeWarriorDesign;
    interface ICodeWarriorTargetCollection;
    interface ICodeWarriorTarget;
```

3. Select **View** > **Group by type kind** in the **ITypeLib Viewer** window. All the entries are grouped (Figure 4.3).

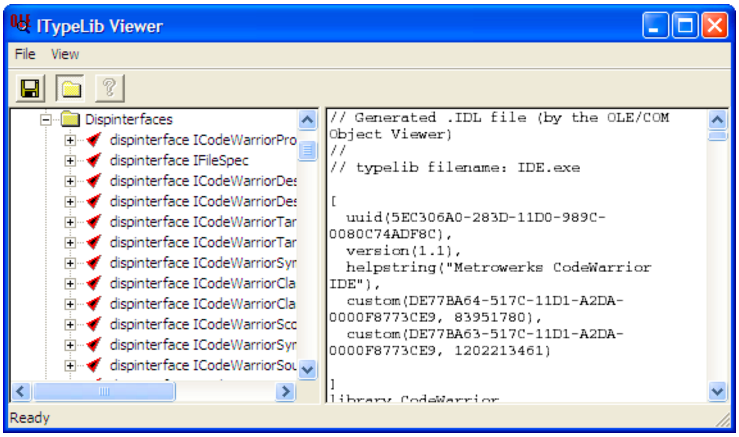
Figure 4.3 Grouping Entries



```
// Generated .IDL file (by the OLE/COM
Object Viewer)
//
// typelib filename: IDE.exe

[
  uuid(5EC306A0-283D-11D0-989C-
0080C74ADF8C),
  version(1.1),
  helpstring("Metrowerks CodeWarrior
IDE"),
  custom(DE77BA64-517C-11D1-A2DA-
0000F8773CE9, 83951780),
  custom(DE77BA63-517C-11D1-A2DA-
0000F8773CE9, 1202213461)

]
```

4. Expand the **Dispinterfaces** list (Figure 4.4) to display the interfaces and methods you can use in a Perl script.

Figure 4.4 Expand Dispinterfaces List


ITypeLib Viewer
File View
Dispinterfaces
dispinterface ICodeWarriorPro
dispinterface IFileSpec
dispinterface ICodeWarriorDes
dispinterface ICodeWarriorDes
dispinterface ICodeWarriorTar
dispinterface ICodeWarriorTar
dispinterface ICodeWarriorSyr
dispinterface ICodeWarriorCla
dispinterface ICodeWarriorCla
dispinterface ICodeWarriorScc
dispinterface ICodeWarriorSyr
dispinterface ICodeWarriorSou
Ready

```
// Generated .IDL file (by the OLE/COM
Object Viewer)
//
// typelib filename: IDE.exe

[
  uuid(5EC306A0-283D-11D0-989C-
0080C74ADF8C),
  version(1.1),
  helpstring("Metrowerks CodeWarrior
IDE"),
  custom(DE77BA64-517C-11D1-A2DA-
0000F8773CE9, 83951780),
  custom(DE77BA63-517C-11D1-A2DA-
0000F8773CE9, 1202213461)

]
library CodeWarrior
```

NOTE Use the `Dispinterfaces` list, rather than the `Interfaces` list, when scripting in Perl. The methods in the `Dispinterfaces` list show the correct return types and parameters for Perl scripting.

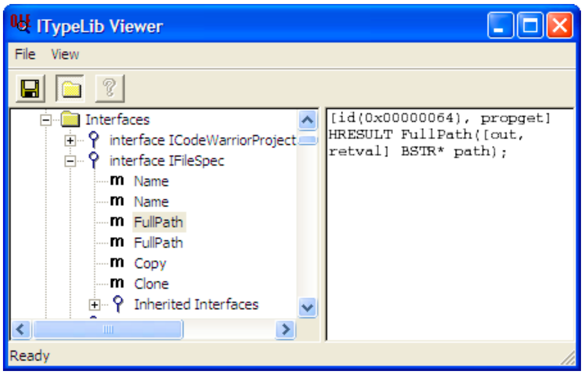
Finding Method Details

To see the details of the methods within an interface:

1. In the ITypeLib Viewer's left pane, expand the interface you want to use from the **Interfaces** list.
2. Click the method you want to use.

   The right pane shows the definition of the selected method (Figure 4.5).

Figure 4.5 Select Method



```
[id(0x00000064), propget]
HRESULT FullPath([out,
retval] BSTR* path);
```

Because the Object Viewer uses Interface Definition Language (IDL), you can see which parameters provide input and which parameters hold return values.

NOTE When using Perl to script CodeWarrior COM objects, remove the "I" from the beginning of each interface name. For example, use `CodeWarriorApp` rather than `ICodeWarriorApp`.

Creating a CodeWarrior Instance

Before you can manipulate the IDE in any way, you must first create a CodeWarrior instance. The following block of code shows how to get the IDE's application object (`CodeWarriorApp`):

```
# Win32::OLE gives access to COM objects,
# including the IDE's COM # objects
use Win32::OLE;
```

```
# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");
```

Managing Files in Projects

You can use Perl scripts to add and remove files within projects.

- Adding Files to Projects
- Removing Files From Projects

Adding Files to Projects

To add a file, you must get a reference to a project. You must then add the file to one or more targets within the project. The following script shows how to add a file to all the targets within a project:

```
# Script to add a file to all targets within a project

# Win32::OLE gives access to COM objects,
# including the IDE’s COM # objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0];
$filetoadd = @ARGV[1];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)

$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the target list object
# Targets()

$targets = $project->Targets();

# Count the targets in the list
# Count()
```

```
$numtargets = $targets->Count();

# Add the file to each target
# Item (long index)
# AddFile (BSTR path,
#   BSTR groupPath)

for ($i = 0; $i < $numtargets; $i++)
{
  $targets->Item($i)->AddFile($filetoadd, "");
}

# end of script
```

To use this script, type:

`perl addfile.pl` *`someproject`*`.mcp` *`somefile.***`*

NOTE You can modify the above script to add multiple files or to read file names from an input file.

Removing Files From Projects

To remove a file, you must get a reference to a project. You must then remove the file from one or more targets within the project. The following script shows how to remove a file from all the targets within a project:

```
# Script to remove a file from all targets within a project

# Win32::OLE gives access to COM objects,
# including the IDE's COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0];
$filetoremove = @ARGV[1];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the collection of files that match the file spec
#FindFileByName(BSTR filename)
$projectfiles =  $project->FindFileByName($filetoremove);

# Get the number of files to remove
# Count()
$filecount = $projectfiles->Count();

# Remove the files
# Item(long index)
# RemoveFile(ICodeWarriorProjectFile* projectFile)
for ($i = 0; $i < $filecount; $i++)
{
  $file = $projectfiles->Item($i);
  $project->RemoveFile($file);
}

# end of script
```

NOTE You can modify the above script to remove multiple files or to read file names from an input file.

Manipulating Projects

You can use Perl script to manipulate projects in the IDE. You can remove the object code from a project before building it (or at any time).

Removing Object Code From Projects

The IDE exposes separate methods for removing object code. Thus, you can remove object code at any time. However, common practice calls for removing object code before building the project.

`CodeWarriorProject` offers two methods to remove object code:

- RemoveObjectCode
- RemoveObjectCodeWithOptions

RemoveObjectCode

The `RemoveObjectCode` method removes the object code from the specified project. This method includes an option to remove the data files created during the latest build.

The following script shows an example using the `RemoveObjectCode` method:

```
# Script to remove the object code from a project

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line argument
$projecttoopen = @ARGV[0];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Remove the object code
# RemoveObjectCode(ECodeWarriorWhichTargetOptions whichTarget, # 0 =
all; 1 = current
#   VARIANT_BOOL deleteDataFiles)
$project->RemoveObjectCode(0, true);

# end of script
```

RemoveObjectCodeWithOptions

The `RemoveObjectCodeWithOptions` method removes the object code from the specified project. This method includes an option to remove the data files created during the latest build and an option to remove object code from all subprojects included within the specified project.

The following script shows an example using the `RemoveObjectCodeWithOptions` method:

```
# Script to remove the object code from a project and all subprojects

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line argument
$projecttoopen = @ARGV[0];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Remove the object code
# RemoveObjectCodeWithOptions(
# ECodeWarriorWhichTargetOptions whichTarget, # 0 = all; 1 = current
#   VARIANT_BOOL recurseSubProject,
#   VARIANT_BOOL deleteDataFiles)
$project->RemoveObjectCodeWithOptions(0, true, true);

# end of script
```

Building Projects

`CodeWarriorProject` offers four methods to build a project:

- Build
- BuildWithOptions
- BuildAndWaitToComplete
- BuildAndWaitToCompleteWithOptions
- A Combined Example

Build

The `Build` method builds the specified project, with no options and no error messages.

The following script shows an example using the `Build` method:

```
# Script to build a project

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line argument
$projecttoopen = @ARGV[0];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Build the project
# Build()
$project->Build();

# end of script
```

BuildWithOptions

The `BuildWithOptions` method builds the specified project, with the option to skip dependencies.

The following script shows an example using the `BuildWithOptions` method:

```
# Script to build a project and not run after the build

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line argument
$projecttoopen = @ARGV[0];
```

```
# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Build the project
# BuildWithOptions(ECodeWarriorBuildOptions options, # 0 = Normal; 1 =
Skip Dependencies
#   ECodeWarriorRunMode runMode) # 0 = Don't run; 1 = Run; 2 = Run in
Debug Mode
$project->BuildWithOptions(0, 0);

# end of script
```

BuildAndWaitToComplete

The `BuildAndWaitToComplete` method builds the specified project and waits until the build is complete to create a collection of all the messages created during the build.

The following script shows an example using the `BuildAndWaitToComplete` method:

```
# Script to build a project, wait until all build messages have been
collected,
# and then print the messages

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line argument
$projecttoopen = @ARGV[0];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);
```

```
# Build the project
# BuildAndWaitToComplete()
$messages = $project->BuildAndWaitToComplete();

# Print the build messages
# Errors()
# ErrorCount()
# Warnings()
# WarningCount()
# Informations()
# InformationCount()
# Definitions()
# DefinitionCount()
# Item(long index)
# ErrorNumber()
# MessageText()
$errors = $messages->Errors();
$numerrors = $messages->ErrorCount();
$warnings = $messages->Warnings();
$numwarnings = $messages->WarningCount();
$informations = $messages->Informations();
$numinformations = $messages->InformationCount();
$definitions = $messages->Definitions();
$numdefinitions = $messages->DefinitionCount();

print ("Number of Errors: $numerrors\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numerrors; $i++)
{
  $errortoprint = $errors->Item($i);
  $errornum = $errortoprint->ErrorNumber();
  $stringtoprint = $errortoprint->MessageText();
  print("$errornum: $stringtoprint\n");
}

print ("\nNumber of Warnings: $numwarnings\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numwarnings; $i++)
{
  $warningtoprint = $warnings->Item($i);
  $Warningnum = $warningtoprint->ErrorNumber();
  $stringtoprint = $warningtoprint->MessageText();
  print("$warningnum: $stringtoprint\n");
}

print ("\nNumber of Informations: $numinformations\n");
print ("----------------------------------\n");
```

```
for ($i = 0; $i < $numinformations; $i++)
{
  $informationtoprint = $informations->Item($i);
  $informationnum = $informationtoprint->ErrorNumber();
  $stringtoprint = $informationtoprint->MessageText();
  print("$informationnum: $stringtoprint\n");
}

print ("\nNumber of Definitions: $numdefinitions\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numdefinitions; $i++)
{
  $definitiontoprint = $definitions->Item($i);
  $definitionnum = $definitiontoprint->ErrorNumber();
  $stringtoprint = $definitiontoprint->MessageText();
  print("$definitionnum: $stringtoprint\n");
}

# end of script
```

BuildAndWaitToCompleteWithOptions

The `BuildAndWaitToCompleteWithOptions` method builds the specified project and waits until the build is complete to create a collection of all the messages created during the build. It offers the option to skip dependencies.

The following script shows an example using the `BuildAndWaitToCompleteWithOptions` method:

```
# Script to build a project, wait until all build messages have been
collected,
# and then print the messages

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line argument
$projecttoopen = @ARGV[0];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Build the project
# BuildAndWaitToCompleteWithOptions(
#   ECodeWarriorBuildOptions options) # 0 = Normal; 1 = Skip
Dependencies
$messages = $project->BuildAndWaitToCompleteWithOptions(0);

# Print the build messages
# Errors()
# ErrorCount()
# Warnings()
# WarningCount()
# Informations()
# InformationCount()
# Definitions()
# DefinitionCount()
# Item(long index)
# ErrorNumber()
# MessageText()
$errors = $messages->Errors();
$numerrors = $messages->ErrorCount();
$warnings = $messages->Warnings();
$numwarnings = $messages->WarningCount();
$informations = $messages->Informations();
$numinformations = $messages->InformationCount();
$definitions = $messages->Definitions();
$numdefinitions = $messages->DefinitionCount();

print ("Number of Errors: $numerrors\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numerrors; $i++)
{
  $errortoprint = $errors->Item($i);
  $errornum = $errortoprint->ErrorNumber();
  $stringtoprint = $errortoprint->MessageText();
  print("$errornum: $stringtoprint\n");
}

print ("\nNumber of Warnings: $numwarnings\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numwarnings; $i++)
{
  $warningtoprint = $warnings->Item($i);
  $Warningnum = $warningtoprint->ErrorNumber();
  $stringtoprint = $warningtoprint->MessageText();
  print("$warningnum: $stringtoprint\n");
}

print ("\nNumber of Informations: $numinformations\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numinformations; $i++)
{
  $informationtoprint = $informations->Item($i);
  $informationnum = $informationtoprint->ErrorNumber();
  $stringtoprint = $informationtoprint->MessageText();
  print("$informationnum: $stringtoprint\n");
}

print ("\nNumber of Definitions: $numdefinitions\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numdefinitions; $i++)
{
  $definitiontoprint = $definitions->Item($i);
  $definitionnum = $definitiontoprint->ErrorNumber();
  $stringtoprint = $definitiontoprint->MessageText();
  print("$definitionnum: $stringtoprint\n");
}

# end of script
```

A Combined Example

Build scripts often remove object code from a project and then build the project. The following example uses `RemoveObjectCodeWithOptions` and `BuildAndWaitToComplete` to perform those tasks:

```
# Script to remove all object code, build a project, wait until
# all build messages have been collected, and print the messages

# Win32::OLE gives access to COM objects,
# including the IDE's COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line argument
$projecttoopen = @ARGV[0];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Remove the object code
# RemoveObjectCodeWithOptions(
# ECodeWarriorWhichTargetOptions whichTarget, # 0 = all; 1 = current
#   VARIANT_BOOL recurseSubProject,
#   VARIANT_BOOL deleteDataFiles)
$project->RemoveObjectCodeWithOptions(0, true, true);

# Build the project
# BuildAndWaitToComplete()
$messages = $project->BuildAndWaitToComplete();

# Print the build messages
# Errors()
# ErrorCount()
# Warnings()
# WarningCount()
# Informations()
# InformationCount()
# Definitions()
# DefinitionCount()
# Item(long index)
# ErrorNumber()
# MessageText()
$errors = $messages->Errors();
$numerrors = $messages->ErrorCount();
$warnings = $messages->Warnings();
$numwarnings = $messages->WarningCount();
$informations = $messages->Informations();
$numinformations = $messages->InformationCount();
$definitions = $messages->Definitions();
$numdefinitions = $messages->DefinitionCount();

print ("Number of Errors: $numerrors\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numerrors; $i++)
{
  $errortoprint = $errors->Item($i);
  $errornum = $errortoprint->ErrorNumber();
  $stringtoprint = $errortoprint->MessageText();
  print("$errornum: $stringtoprint\n");
}
```

```
print ("\nNumber of Warnings: $numwarnings\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numwarnings; $i++)
{
  $warningtoprint = $warnings->Item($i);
  $Warningnum = $warningtoprint->ErrorNumber();
  $stringtoprint = $warningtoprint->MessageText();
  print("$warningnum: $stringtoprint\n");
}

print ("\nNumber of Informations: $numinformations\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numinformations; $i++)
{
  $informationtoprint = $informations->Item($i);
  $informationnum = $informationtoprint->ErrorNumber();
  $stringtoprint = $informationtoprint->MessageText();
  print("$informationnum: $stringtoprint\n");
}

print ("\nNumber of Definitions: $numdefinitions\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numdefinitions; $i++)
{
  $definitiontoprint = $definitions->Item($i);
  $definitionnum = $definitiontoprint->ErrorNumber();
  $stringtoprint = $definitiontoprint->MessageText();
  print("$definitionnum: $stringtoprint\n");
}

# end of script
```

Compiling Projects

You can compile collections of files within a project or target. The following sections explain how to do:

- Compiling From Projects
- Compiling From Build Targets

Compiling From Projects

`CodeWarriorProject` offers one method for compiling collections of files (including collection that consist of one file):

CompileFilesWithChoice

The `CompileFilesWithChoice` method performs one of the following actions on the specified collection of files:

- Check Syntax
- Preprocess
- Precompile
- Compile
- Disassemble

Because `CompileFilesWithChoice` associates with the project, it compiles the file for all targets. See "Compiling From Build Targets" for how to compile files for a single target.

The following script shows how to use `CompileFilesWithChoice` to compile an individual file within a project:

```
# Script to compile a file within a project

# Win32::OLE gives access to COM objects,
# including the IDE's COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0];
$filetocompile = @ARGV[1];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get a file collection (required by the compiling method)
$filecoll = $project->FindFileByName($filetocompile);


#Compile the file
# CompileFilesWithChoice(
#   ICodeWarriorProjectFileCollection* collection,
#   ECodeWarriorCompileChoice compileChoice);
# ECodeWarriorCompileChoice
#    0 = Check Syntax
#    1 = Preprocess
#    2 = Precompile
#    3 = Compile
#    4 = Disassemble
$project->CompileFilesWithChoice($filecoll, 3);

# Note: Ignoring the return value

# end of script
```

This example script compiles a single file, but you can modify it to compile a number of files or to read filenames from an input file.

Compiling From Build Targets

The `CodeWarriorTarget` method offers three methods for compiling collections of files (including collection that consist of one file):

- CompileFiles
- CompileFilesAndWaitToComplete
- CompileFilesWithChoice

CompileFiles

The `CompileFiles` method compiles the specified collection of files within the target.

The following script shows how to use `CompileFiles` to compile an individual file within a target:

```
# Script to compile a file within a target

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0];
$targettoopen = @ARGV[1];
$filetocompile = @ARGV[2];
```

```
# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the target
$targettouse = $project->FindTarget($targettoopen);

# Get the project file collection
#   containing the file to compile
$filecoll = $project->FindFileByName($filetocompile);

# Compile the file
# CompileFiles(ICodeWarriorProjectFileCollection* collection);
$targettouse->CompileFiles($filecoll);

# end of script
```

This example script compiles a single file, but you can modify it to compile a number of files or to read filenames from an input file.

CompileFilesAndWaitToComplete

The `CompileFilesAndWaitToComplete` method compiles the specified collection of files within the target. `CompileFilesAndWaitToComplete` generates messages, which your script can print or save.

The following script shows how to use `CompileFilesAndWaitToComplete` to compile an individual file within a target:

```
# Script to compile a file within a target,
# gather the resulting messages,
# and print the messages

# Win32::OLE gives access to COM objects,
# including the IDE's COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0];
```

```
$targettoopen = @ARGV[1];
$filetocompile = @ARGV[2];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the target
$targettouse = $project->FindTarget($targettoopen);

# Get the project file collection
#   containing the file to compile
$filecoll = $project->FindFileByName($filetocompile);

# Compile the file and create the messages
# CompileFilesAndWaitToComplete(ICodeWarriorProjectFileCollection*
collection);
$messages = $targettouse->CompileFilesAndWaitToComplete($filecoll);

# Print the messages
# Errors()
# ErrorCount()
# Warnings()
# WarningCount()
# Informations()
# InformationCount()
# Definitions()
# DefinitionCount()
# Item(long index)
# ErrorNumber()
# MessageText()
$errors = $messages->Errors();
$numerrors = $messages->ErrorCount();
$warnings = $messages->Warnings();
$numwarnings = $messages->WarningCount();
$informations = $messages->Informations();
$numinformations = $messages->InformationCount();
$definitions = $messages->Definitions();
$numdefinitions = $messages->DefinitionCount();

print ("Number of Errors: $numerrors\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numerrors; $i++)
{
  $errortoprint = $errors->Item($i);
  $errornum = $errortoprint->ErrorNumber();
  $stringtoprint = $errortoprint->MessageText();
  print("$errornum: $stringtoprint\n");
}

print ("\nNumber of Warnings: $numwarnings\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numwarnings; $i++)
{
  $warningtoprint = $warnings->Item($i);
  $Warningnum = $warningtoprint->ErrorNumber();
  $stringtoprint = $warningtoprint->MessageText();
  print("$warningnum: $stringtoprint\n");
}

print ("\nNumber of Informations: $numinformations\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numinformations; $i++)
{
  $informationtoprint = $informations->Item($i);
  $informationnum = $informationtoprint->ErrorNumber();
  $stringtoprint = $informationtoprint->MessageText();
  print("$informationnum: $stringtoprint\n");
}

print ("\nNumber of Definitions: $numdefinitions\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numdefinitions; $i++)
{
  $definitiontoprint = $definitions->Item($i);
  $definitionnum = $definitiontoprint->ErrorNumber();
  $stringtoprint = $definitiontoprint->MessageText();
  print("$definitionnum: $stringtoprint\n");
}

# end of script
```

This example script compiles a single file, but you can modify it to compile a number of files or to read filenames from an input file.

CompileFilesWithChoice

The `CompileFilesWithChoice` method performs one of the following actions on the specified collection of files:

- Check Syntax
- Preprocess
- Precompile
- Compile
- Disassemble

The following script shows how to use `CompileFilesWithChoice` to compile an individual file within a target:

```
# Script to perform one of a number of possible actions
# on a file within a target

# Win32::OLE gives access to COM objects,
# including the IDE's COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0];
$targettoopen = @ARGV[1];
$filetocompile = @ARGV[2];
$action = @ARGV[3];

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the target
$targettouse = $project->FindTarget($targettoopen);

# Get the project file collection
#   containing the file to compile
$filecoll = $project->FindFileByName($filetocompile);

# Compile the file
# CompileFilesWithChoice(
#   ICodeWarriorProjectFileCollection* collection,
#   ECodeWarriorCompileChoice compileChoice);
# ECodeWarriorCompileChoice:
#   0 = Check Syntax
#   1 = Preprocess
#   2 = Precompile
#   3 = Compile
#   4 = Disassemble
$targettouse->CompileFilesWithChoice($filecoll, $action);

# Note: Ignoring the return value

# end of script
```

This example script compiles a single file, but you can modify it to compile a number of files or to read filenames from an input file.

Linking Projects

`CodeWarriorTarget` lets you obtain the linker name and specify whether to link against specific files in targets.

Obtaining the Linker Name

The COM Application Programming Interface (API) exposes a method that lets you obtain the name of the current linker plug-in. To do so, use:

- `GetLinkerName`

GetLinkerName

The `GetLinkerName` method obtains the name of the linker for a target.

The following script shows how to use `GetLinkerName` to obtain the name of the linker for a target:

```
# Script to get the name of the current linker

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0];
$targettoopen = @ARGV[1];
```

```
# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the target
# FindTarget(BSTR Name)
$target = $project->FindTarget($targettoopen);

# Get the linker name
# GetLinkerName()
$linkername = $target->GetLinkerName();

# Print the linker name
print("Linker for $targettoopen: $linkername\n");

# end of script
```

Linking Against Sub-Targets

The COM API exposes a method that lets you specify whether to link against subtargets. To do so, use:

- `LinkAgainstSubTarget`

LinkAgainstSubTarget

The `LinkAgainstSubTarget` method set whether to link against a specified subtarget within a target.

The following script shows how to use `LinkAgainstSubTarget` to set whether to link against a specified subtarget within a target:

```
# Script to set whether to link against a particular subtarget

# Win32::OLE gives access to COM objects,
# including the IDE's COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
```

```
$projecttoopen = @ARGV[0]; # Use the full path
$targettoopen = @ARGV[1]; # Use the target name
$subtargettoopen = @ARGV[2]; # Use the subtarget name
$linkornot = @ARGV[3];  # Use true or false

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the target
# FindTarget(BSTR Name)
$target = $project->FindTarget($targettoopen);

# Get the subtarget and set whether to link against it
# SubTargets()
# Count()
# Item(long index)
# Target()
# Name()
# LinkAgainstSubTarget(
#   ICodeWarriorSubTarget* Target,
#   VARIANT_BOOL val);
$subtargs = $target->SubTargets();
$numsubtargs = $subtargs->Count();

for($i = 0; $i < $numsubtargs; $i++)
{
  if ($subtargs->Item($i)->Target()->Name() eq $subtargettoopen)
  {
    $subtargettouse = $subtargs->Item($i);
    $target->LinkAgainstSubTarget($subtargettouse, $linkornot);
    exit;
  }
}
```

This example script sets whether to link against a single target, but you can modify it to link against a number of subtargets or to read subtarget names from an input file.

Linking Against Sub-Projects

The COM API exposes a method that lets you specify whether to link against subprojecttargets (that is, targets within subprojects). To do so, use:

- `LinkAgainstSubProjectTarget`.

LinkAgainstSubProjectTarget

The `LinkAgainstSubProjectTarget` method sets whether to link against a specified subprojecttarget within a target.

The following script shows how to use `LinkAgainstSubProjectTarget` to set whether to link against a specified subprojecttarget within a target:

```
# Script to set whether to link against a particular subtarget

# Win32::OLE gives access to COM objects,
# including the IDE’s COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0]; # Use the full path
$targettoopen = @ARGV[1]; # Use the target name
$subprojecttoopen = @ARGV[2]; # Use the subprojectname
$subprojecttargettoopen = @ARGV[3]; # Use the subprojecttarget name
$linkornot = @ARGV[4];  # Use true or false

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)
$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the target
# FindTarget(BSTR Name)
$target = $project->FindTarget($targettoopen);

# Get the subproject, get the subprojecttarget,
# and set whether to link against it
# GetSubProjects()
# Count()
# Item(long index)
# Targets()
# Name()
# LinkAgainstSubProjectTarget(
#   ICodeWarriorSubProjectTarget* Target,
#   VARIANT_BOOL val);
$subpjcts = $target->GetSubProjects();
```

```
$numsubpjcts = $subpjcts->Count();

for($i = 0; $i < $numsubpjcts; $i++)
{
  if ($subpjcts->Item($i)->Name() eq $subprojecttoopen)
  {
    $subpjcttouse = $subpjcts->Item($i);
    $subpjctargets = $subpjcttouse->Targets();
    $numsubpjcttargets = $subpjcttargets->Count();
    for($j = 0; $j < $numsubpjcttargets; $j++)
    {
      if ($subpjcttgts->Item($j)->Name() eq $subprjttargettoopen)
      {
        $target->LinkAgainstSubProjectTarget(subpjcttargets-
>Item($j));
        exit; # stop at the first match
      }
    }
  }
}
```

This example script sets whether to link against a single subproject within a target, but you can modify it to link against a number of sub projects within a target or to read subproject target names from an input file.

Generating Debugger Output

Using the COM API to debug, actually tells the IDE to build the target and create the debugging output. You can then capture the output for display or saving.

Debugging a Target

`CodeWarriorTarget` offers a single method for debugging a target:

- `Debug`

Debug

`Debug` starts a debugging session for a target.

To use the `Debug` method, you must first use the `SetupDebugging` method, as shown in the sample script.

The following script shows how to use `Debug`:

```
# Script to debug a target and print the resulting messages

# Win32::OLE gives access to COM objects,
# including the IDE's COM objects
use Win32::OLE;

# Create an instance of CodeWarrior
$CW = Win32::OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0]; # Use the full path
$targettodebug = @ARGV[1]; # Use the target name

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)

$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the target
# FindTarget(BSTR Name)
$target = $project->FindTarget($targettodebug);

# Enable debugging for this target
# SetupDebugging(VARIANT_BOOL inTurnOn)
$target->SetupDebugging(true);

# Start debugging
# Debug()
$messages = $target->Debug();

# Print the messages
# Errors()
# ErrorCount()
# Warnings()
# WarningCount()
# Informations()
# InformationCount()
# Definitions()
# DefinitionCount()
# Item(long index)
# ErrorNumber()
# MessageText()
$errors = $messages->Errors();
```

```
$numerrors = $messages->ErrorCount();
$warnings = $messages->Warnings();
$numwarnings = $messages->WarningCount();
$informations = $messages->Informations();
$numinformations = $messages->InformationCount();
$definitions = $messages->Definitions();
$numdefinitions = $messages->DefinitionCount();

print ("Number of Errors: $numerrors\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numerrors; $i++)
{
  $errortoprint = $errors->Item($i);
  $errornum = $errortoprint->ErrorNumber();
  $stringtoprint = $errortoprint->MessageText();
  print("$errornum: $stringtoprint\n");
}

print ("\nNumber of Warnings: $numwarnings\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numwarnings; $i++)
{
  $warningtoprint = $warnings->Item($i);
  $Warningnum = $warningtoprint->ErrorNumber();
  $stringtoprint = $warningtoprint->MessageText();
  print("$warningnum: $stringtoprint\n");
}

print ("\nNumber of Informations: $numinformations\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numinformations; $i++)
{
  $informationtoprint = $informations->Item($i);
  $informationnum = $informationtoprint->ErrorNumber();
  $stringtoprint = $informationtoprint->MessageText();
  print("$informationnum: $stringtoprint\n");
}

print ("\nNumber of Definitions: $numdefinitions\n");
print ("----------------------------------\n");
for ($i = 0; $i < $numdefinitions; $i++)
{
  $definitiontoprint = $definitions->Item($i);
  $definitionnum = $definitiontoprint->ErrorNumber();
  $stringtoprint = $definitiontoprint->MessageText();
  print("$definitionnum: $stringtoprint\n");
}
```

```
# end of script
```

This example script generates debugging information for a single target, but you could modify it to work for multiple targets or to read targets from an input file. You could also write the resulting output to text files.

Displaying IDE Messages

The COM API lets you log CodeWarrior IDE messages on your screen.

Logging IDE Output

`CodeWarriorBuildMessages` and CodeWarriorMessages offers the following methods for logging IDE messages:

- Errors
- ErrorCount
- MessageText

The following script shows how to use the above mentioned methods:

```
# compile and get list of messages (CodeWarriorBuildMessages)
   my $messages = $target->BuildAndWaitToComplete();

   # if messages undefined, maybe the build hung
   if ( !defined($messages) )
   {
       print LOG ("Messages undefined! perhaps the IDE hung.\n");
       exit(1);
   }

   # report any errors
   if ($messages->ErrorCount > 0)
  {

       print LOG ("---------------------------------------------\n");
       print LOG ($messages->ErrorCount . " errors on build:\n");

       # print out the version of CodeWarrior actually used
       $toolpath = $CW->FullName();
       print LOG ("buildtool is $toolpath\n");

       # CodeWarriorMessageCollection $errors
       my $errors = $messages->Errors();
```

```
        for (my $i = 0; $i < $errors->Count(); $i++)
        {
           # CodeWarriorMessage
           my $m = $errors->Item($i);
           print LOG ( "\n" );
          print LOG (substr($m->FileSpec->FullPath, $dirLen+1) . "\n");
           if ( defined($m->projectFile) )
           { print LOG (substr($m->projectFile->Name, $dirLen+1) .
           "\n"); }
           else { print LOG ("message project file not defined!\n"); }
           if (defined($m->Target))
           { print LOG ($m->Target()->Name() . "\n"); }
           else { print LOG ("message target not defined!\n"); }
           print LOG ( "\n" . $m->MessageText() . "\n" );
        }

        print LOG ("----------------------------------------------\n");
    }
```

Using Version Control System

The COM API lets you check files into and out of a version control system. To use the version control methods, you must have set the various version control settings in the IDE, either for the current project or globally.

Using Version Control

`CodeWarriorProject` offers a single method for accessing a version control system:

- `VersionControl`

VersionControl

The following script shows how to use `VersionControl`:

```
# Script to perform VCS operations on files
# of a specified type within a project

# Win32OLE gives access to COM objects,
# including the IDE¼s COM objects
```

```
use Win32OLE;

# Create an instance of CodeWarrior
$CW = Win32OLE->new("CodeWarrior.CodeWarriorApp");

# Get the command line arguments
$projecttoopen = @ARGV[0]; # Use the full path
$filename = @ARGV[1]; # Use the file name or wildcards
                      # (such as "*.c")
$inorout = @ARGV[2]; # Use "checkin" or "checkout"

# Open the project
# OpenProject(BSTR filePath,
#   VARIANT_BOOL fMakeVisible,
#   ECodeWarriorConvertOption convertOption,
#   ECodeWarriorRevertPanelOption revertOption)

$project = $CW->OpenProject($projecttoopen, true, 0, 0);

# Get the filecollection object
# FindFileByName(BSTR fileName)
$filecoll = $project->FindFileByName($filename);

# Get the number of files
# Count()
$numfiles = $filecoll->Count();

# Get the version control client
# VersionControl()
$vcc = $project->VersionControl();

# Connect to the version control database
# Connect()
# IsConnected()
if (!$vcc->IsConnected())
{
  $vcc->Connect();
}

# Perform the VCS operation
if ($inorout eq "checkin")
{
  for($i = 0; $i < $numfiles; $i++)
  {
    $filetocheck = $filecoll->Item($i);
    $state = $filetocheck->VCSState()->CKIDState();
    $thisfilename = $filetocheck->Name();
    if($state == 0)
    {
      print("

    }
    elsif ($state == 1)
    {
      print("

    }
    elsif ($state == 2)
    {
      print("

    }
    elsif ($state == 3)
    {
      print("

      $filetocheck->Checkin();
    }
    elsif ($state == 4)
    {
      print("

    }
  }
}
else
{
  for($i = 0; $i < $numfiles; $i++)
  {
    $filetocheck = $filecoll->Item($i);
    $state = $filetocheck->VCSState()->CKIDState();
    $thisfilename = $filetocheck->Name();
    if($state == 0)
    {
      print("

    }
    elsif ($state == 1)
    {
      print("

    }
    elsif ($state == 2)
    {
      print("
      $filetocheck->Checkout();
    }
    elsif ($state == 3)
    {
      print("

    }
    elsif ($state == 4)
    {
      print("

      $filetocheck->Checkout();
    }
  }
}

# Disconnect from the version control database
# Disconnect()
# IsConnected()
if ($vcc->IsConnected())
{
  $vcc->Disconnect();
}

# end of script
```

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