

# Quincy



for Pawn

February 2008

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“Quincy” was the name of the cat of Al Stevens’ daughter; Al Stevens is the author of quincy.

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Eerste Industriestraat 19–21, 1401VL Bussum, The Netherlands (Pays Bas); tele-  
phone: (+31)-(0)35 6939 261  
e-mail: [info@compuphase.com](mailto:info@compuphase.com), WWW: <http://www.compuphase.com>

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## Introduction

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“Quincy” is an integrated development environment (IDE) that integrates a programmer’s editor, compiler, and debugger into one Microsoft Windows application. This version of Quincy is adapted to the PAWN scripting language.

Al Stevens wrote Quincy as a teaching tool distributed on CD-ROM with books that he wrote about C and C<sup>++</sup>. Al Stevens has since retired from the programming and book authoring business, but his work lives on. The original versions of the Quincy IDE are still available at <http://www.alstevens.com/quincy.html>.

This document assumes that you already know how to run Windows and its applications. Much of the information presented here has its roots in the manual that Al Stevens wrote for Quincy.

### What Does the Name Quincy Mean?

Quincy is named after that cat of Al Stevens’ daughter Wendy. As a child in the 1970s, Wendy was a fan of the TV shows, *The Odd Couple* and *Quincy*, both of which starred Jack Klugman, who played Oscar Madison and a medical examiner named Quincy in those shows. When Wendy brought home a tiny white kitten with blue eyes, she didn’t know its sex. Choosing from Jack, Oscar, and Quincy, she decided that Quincy was the most gender-unspecific.

Quincy lived many years and was a beloved pet to Wendy as a child, Mr. and Mrs. Stevens when Wendy went to college, and then to Wendy and her family after Wendy married and had children of her own.

Oh, yeah, Quincy was a female.

## Starting and stopping Quincy

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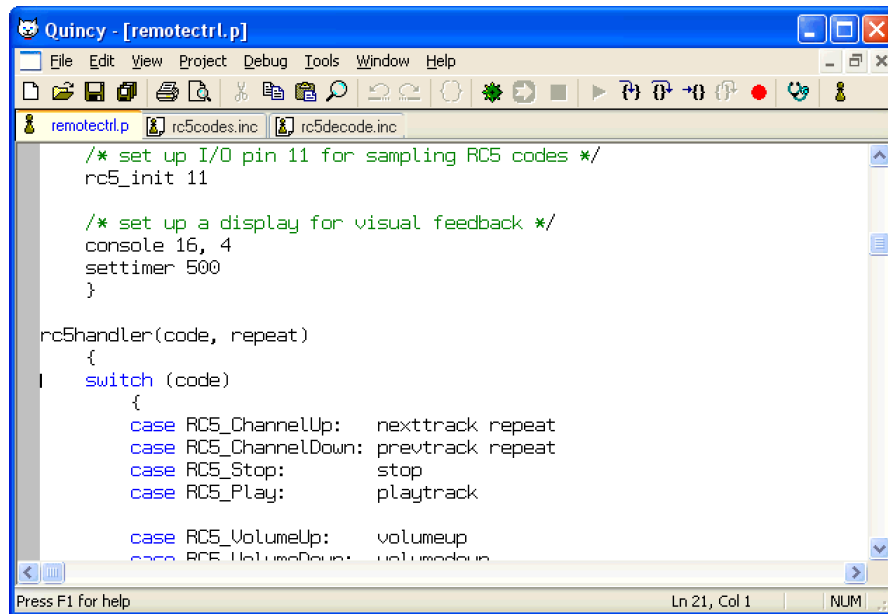
There are two ways to start Quincy:

1. Open the Quincy submenu on the Start/Programs menu.
2. Click the Quincy command.

Or:

1. Double-click the Quincy icon that the Setup program optionally added to your desktop.

Quincy always loads the source code files from your most recent Quincy session. The following screen shot shows the Quincy application window with a source code file loaded and ready to go. (The very first time you start Quincy, there will be no source code document loaded.)



## Exiting Quincy

To exit from Quincy, use one of the following:

1. choose the Exit command on the File menu,
2. or click the × button in the upper right corner of the application title bar,
3. or press **Alt+F4**

If any documents have been changed and not saved, a dialog box asks if you want to save them before exiting. The dialog box asks the question once for each modified document.

## Setting Options

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There are several options for how a PAWN program is to be “built” from source code into an executable form. You set these options prior to compiling and running the program. Quincy remembers the option settings from session to session.

If you are using Quincy with the tutorial examples as described in the section “Example Programs”, the tutorial command files set the options that each example uses. You can override these options during the session, but the tutorial command files are not affected when you do. The next time you open the tutorial, its programmed options are restored.

To set Quincy’s options choose the **Tools** menu option and then the **Options...** sub-menu. Quincy opens the options dialog, a tabbed dialog with tabs for **Build** options, **Run** options, **Editor** options and **Miscellaneous** options.

### Build Options

These are the options that control how Quincy builds a program, including how the PAWN compiler processes the source code, what kind of code is generated, and where the compiler looks for header files and libraries.

To review and change the Build options, select the **Build** tab of the **Options** dialog as shown above.

- ◇ Check the **Add debugging information** if you want to use the IDE to debug the program.
- ◇ When writing large scripts that must fit in little memory, check the option **Overlay code generation**. Overlay code is *incompatible* with the Just-In-Time compiler (JIT).
- ◇ Adjust the optimization level when using a Just-In-Time compiler (JIT) or when you wish to verify the code generation. For standard use, full optimization is advised, because it creates the most compact and quickest code.
- ◇ If a host application or environment requires this, you may need to set the **Standard executable filename** option.
- ◇ For a summary on how much memory the script uses, set the option **Report memory usage**.



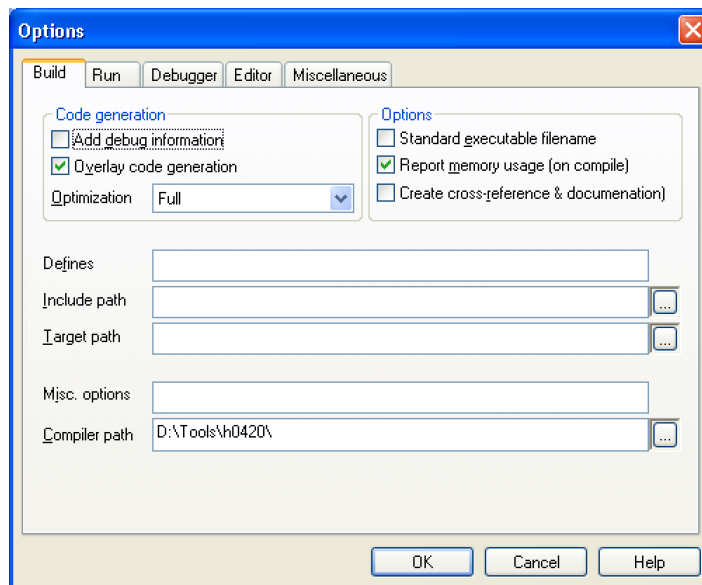


FIGURE 1: *Build options dialog*

- ◇ The option **Create cross-reference & documentation** creates a detailed report and mixes this with the documentation that it finds in the source code of the script. This report is in an XML file, which can be viewed in a web browser.
- ◇ Enter any preprocessor macros that the program needs in the **Define** field. Whatever you type here will be treated as if you put it at the front of the source code as the arguments to a `#define` preprocessor directive with this exception: to define a global symbol with a value, use an equals sign (=) as shown here:

```
ScriptVersion=2.5
```

The example just shown compiles as if the source code file included this statement:

```
#define ScriptVersion 2.5
```

If you need more than one macro, separate them in the “Define” field with a space character as shown here:

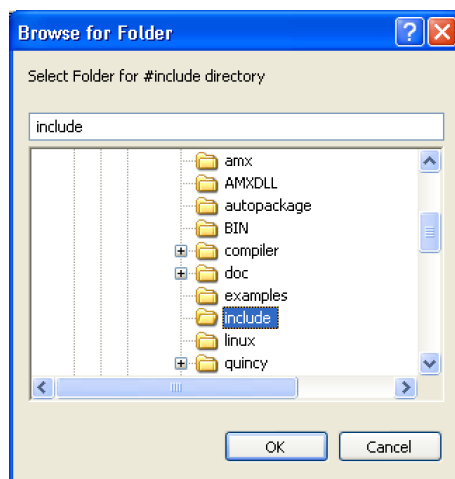
```
ScriptVersion=2.5 QueueSize=50
```

- ◇ Enter paths to folders where the PAWN compiler can search for header files specified with the `#include <file.inc>` directive. Separate the paths with semicolons. You can use relative paths or fully qualified paths. The compiler

searches the paths in the order you enter them here. If the header file is not in one of these paths, then it searches the compiler's standard directories for include files.

- ◇ Set the path where the target file has to be generated, if you wish this path to be different from the location of the source file(s).
- ◇ Enter any additional command line arguments that Quincy should pass to the PAWN compiler program. For example, adding `-c1252` causes Quincy to interpret the source code in the codepage 1252 (Latin-1).
- ◇ Enter the path where the PAWN compiler is installed. If you leave this field blank, Quincy looks for the compiler in the “/bin” subdirectory under the directory where the PAWN toolkit is installed.

For the **Include path**, **Target path** and **Compiler path** fields you can click the browse button (“...”) at the right of these fields to open the **Browse for Folder** dialog shown here. Browse to the folder you want to add to the list in the Option dialog's Build tab, and click OK.



## Run Options

Select the Run tab on the Options dialog as shown here.

- ◇ Some scripts may use options that you specify on a command line. These options can also be passed to the script through Quincy.

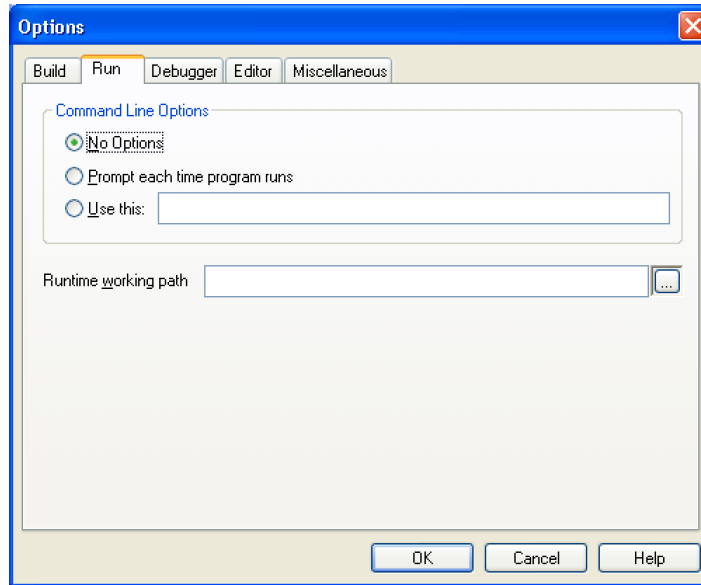


FIGURE 2: *Run options dialog*

- Choose **No Options** if the program does not process command line parameters
  - Click **Prompt Each Time...** if you want Quincy to prompt for command line parameters every time you run the program
  - Click **Use this** and enter the command line options in the accompanying text box control to always pass the same command line parameters to the program when Quincy runs it.
- ◇ Enter the path to the runtime working directory. Quincy will set that directory as the default one before running the program. The program will read and write data files with ambiguous path specifications relative to this path. Leave the path blank to have the program use the directory of its source code files as the runtime working directory.

## Debugger Options

Select the **Debug** tab on the **Options** dialog as shown here.

When you wish to use the debugger, also make sure that you build the script with “debugging information”, see the section **Build options**.

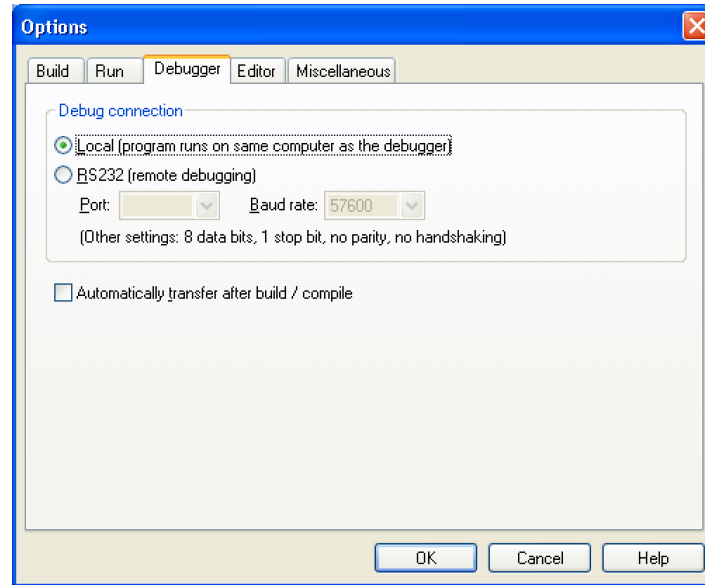


FIGURE 3: *Debugger options dialog*

- ◇ In most cases, the script that you wish to debug runs on the same system as the one that you are compiling on. This is known as “local debugging”. Quincy also supports “remote debugging”, where the script runs on one system and Quincy’s debugger on another system.
- ◇ The two systems must be connected with a serial cable. You must also select which port to use and what baud rate the serial transfer uses.
- ◇ When using remote debugging, Quincy can optionally use the same serial line to transfer the script to the remote system. The option **Automatically transfer after build/compile** lets Quincy transfer the script immediately after a successful compile. If this option is unchecked, you can still transfer the script over the serial line explicitly.

## Editor Options

Select the **Editor** tab on the Options dialog as shown here.

As you change the editor’s settings, the simulated source code display in the Editor tabbed dialog reflects your changes.

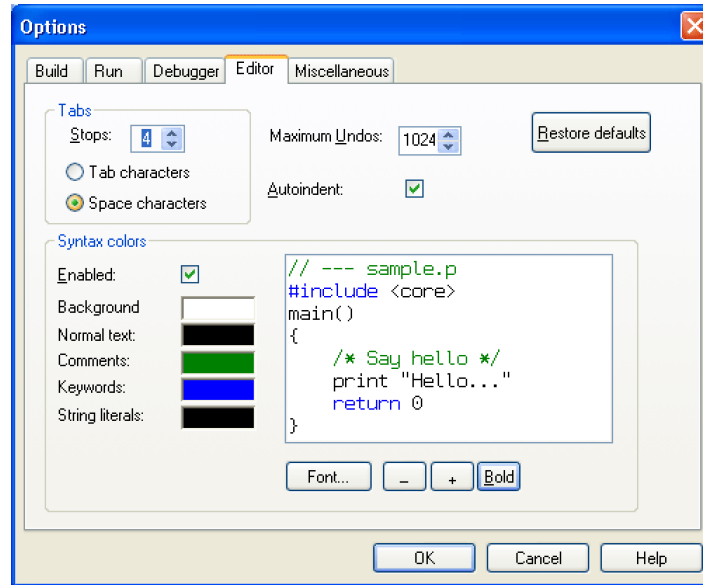
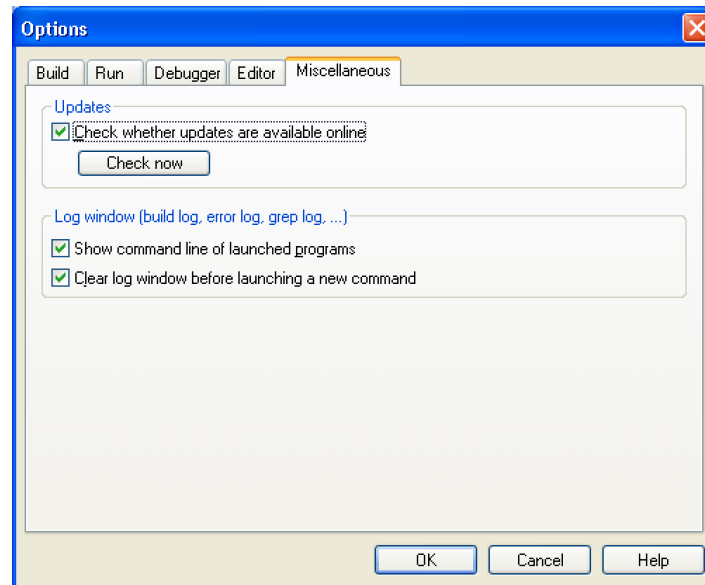


FIGURE 4: *Editor options dialog*

- ◇ Select the number of character positions for each tab stop by changing the scroll button control.
- ◇ Select whether the editor inserts space characters or tab characters into the text when you press the **Tab** key or use the autoindent feature.
- ◇ Select the maximum number of edit action undos that Quincy stores.
- ◇ Enable or disable the autoindent feature by clicking the **Autoindent** check box control. With autoindent disabled, Quincy always returns the insertion cursor to the left margin when you press **Enter**.
- ◇ Enable or disable syntax color highlighting.
- ◇ With syntax color highlighting:
  - Click one of the color bars next to the text feature you want to highlight with color. This action opens the Color dialog shown here.
  - Click the color you want to use for the text feature selected.
  - Click **OK**.
  - To revert to Quincy's default color scheme, click **Restore Defaults**.

FIGURE 5: *Miscellaneous options dialog*

- ◇ Change the font style with the Font... button, the font size size by clicking the + and the - buttons, and click the Bold button to toggle the font between normal width and boldface.

## Miscellaneous Options

Select the Miscellaneous tab on the Options dialog as shown here.

- ◇ Quincy can verify whether updates are available. If the option **Check whether updates are available online** is set, Quincy will access the Internet approximately once a week to look for updates. You can also ask Quincy to verify immediately, with the button **Check now**.
- ◇ In the “build log” that appears when compiling a program or transferring a program, the name of the program (and its options) that Quincy launches to do the actual work may optionally be included. To display this information, set the option **Show command line of launched programs**. To suppress this information, clear this option.

- ◇ The build log may keep the results of multiple compilation/transfer sessions in an ever growing log, or it may show only the results of the most recent build action, depending on the state of the option Clear window log before launching a new command.

## Recording your option settings

- ◇ When you have made all the options changes you want to make, click OK on the Options dialog.
- ◇ Or, to nullify any changes you might have made, Click Cancel on the Options dialog.

If you are working with “workspace files” any options that you changed are stored in the workspace as well.

## Creating a program

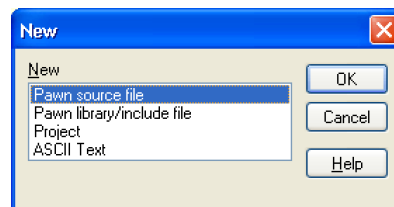
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You write a new program by building a source code file, setting options for the program, saving the program to disk, and then compiling the program. First you must create a new file.

### Creating a source code file

To create a source code file from scratch, choose the **New** command on the **File** menu (alternatively, click the “New” tool button or type **Ctrl+N**).

Quincy opens the “New file...” dialog shown here.



Then select the kind of source code file you are building. A PAWN source file will be saved with the `.p` file extension and will be compiled by the PAWN compiler. An include file (or source code module) will be saved with the `.inc` extension, signifying a header file you include in your PAWN source code files.

After you click **OK**, Quincy creates an empty text file with the name `Textn`, where `n` is the next available number for Quincy to assign to a text file. You will probably want to change the name to something more meaningful when you save the file. This file has not been saved to disk yet. You cannot compile the program until you have saved the source code file.

Now you can use the text editing commands discussed in section **Editing source code** to write your program.

If you scroll the list in the New dialog, you will see that Quincy supports editing one more kind of files: ASCII files. ASCII text files are plain text files. Quincy will save them with the extension `.txt`.

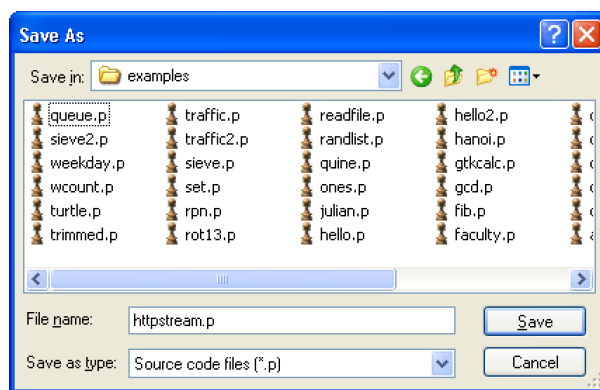


## Saving a source code file

Before you can compile and test your program, you must save it to disk. Before you can compile a program that includes a header file in a source code file, you must save the header file to disk.

To save the source code file, choose the **Save** command on the File menu (alternatively, click the “Save” tool button, or type **Ctrl+S**).

If the file was already saved earlier, Quincy writes the current version over the old one. If the source code file is a new one that you have not yet saved, Quincy opens the “Save As . . .” dialog box shown here.

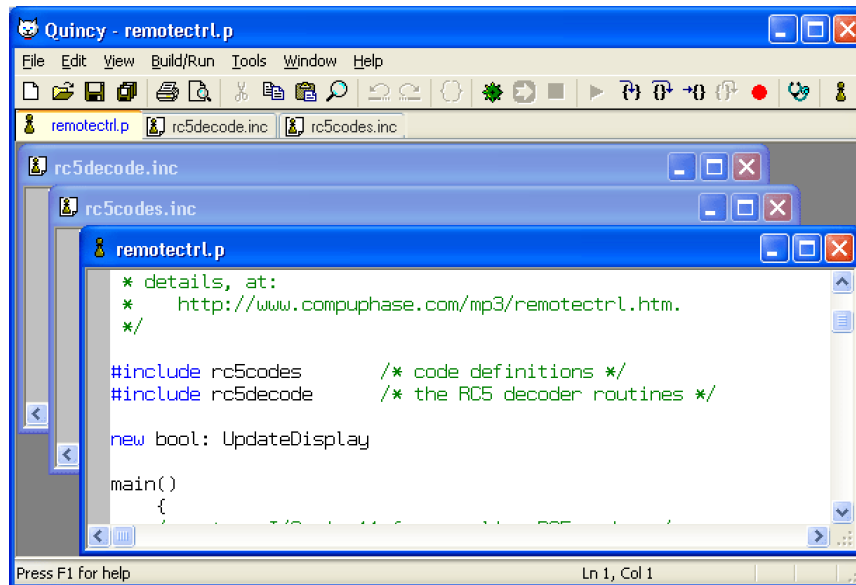


In this dialog:

1. Enter the source code file name in the File Name field. You can omit the extension. Quincy uses the extension selected in the “Save As Type” dropdown listbox.
2. Ensure that the “Save As” dialog box is positioned at the Windows folder where you want to save the source code file. If not, use the dialog box to navigate to the correct folder.
3. Click the **Save** button.

To save all the source code files loaded into the Quincy IDE, choose the **Save All** command on the File menu (or use the “Save All” tool button).

**NOTE:** Remember when you save header files to put them in the same folder as source code files that include them with the `#include "file.inc"` notation. If you save the header files in a different folder, the source code files that include them must use the `#include <file.inc>` notation, and Quincy’s options must be set to tell Quincy where to find such header files as explained in “Setting Options”

FIGURE 6: *Multiple documents open at the same time*

## Using Save As

You can save an existing file that was saved earlier and give it a different name by choosing the **Save As** command on the **File** menu to open the “Save As ...” dialog box. See the section “Saving a source code file” for details on the “Save As” dialog. The original file is not changed by this procedure.

## Working with multiple source code & include files

Quincy is a Windows Multiple Document Interface (MDI) application, which means that you can open and work with more than one source code file at a time as shown here.

If your program involves more than one file—that is, a combination one or more PAWN file plus one or more include files—it may be useful to store that set of files as a “workspace” file. To save a workspace file, use the option **Save workspace...** from the **File** menu. Quincy will pop up a “Save As” dialog, just like when saving a new file for the first time.

The workspace includes all files that are currently opened in the Quincy editor, plus the “build options”. If you save a workspace, the current options are saved to that workspace file as well. If you load a workspace, the options are loaded from that workspace.

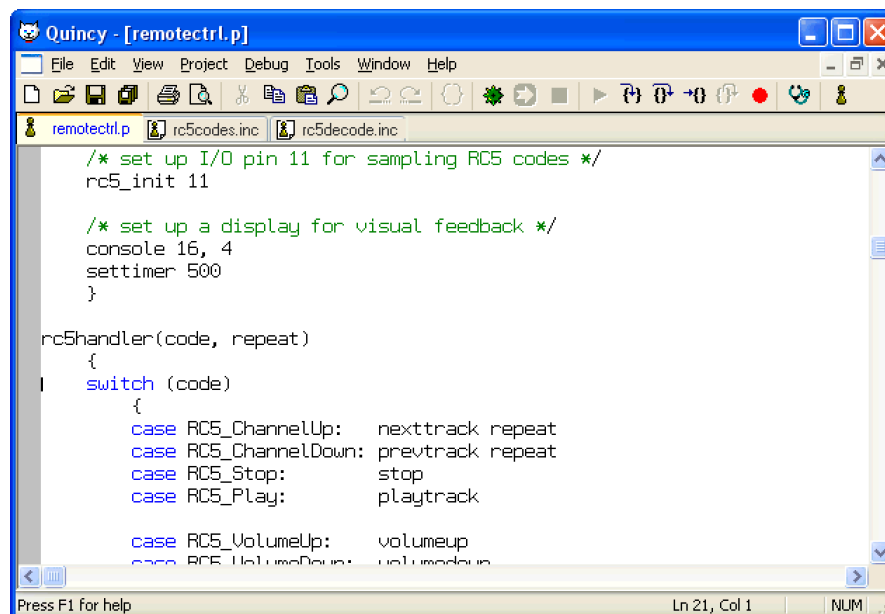
## Editor interface

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Quincy's editor is a typical text editor similar to those found in most software development environments. If you know how to enter text into Notepad, you will know how to use Quincy. There are editor options you can set to change how Quincy displays text as you enter it. You can change the colors of the text display, how tabs are expanded, and whether the editor autoindents as you type.

### Entering Text

Enter text by typing it. Quincy does not support word wrapping; the editor window scrolls horizontally if you type past the right margin. If you have syntax highlighting selected in the editor options, the text changes color as the editor parses those text elements (comments, key words, and string literals) that should be highlighted as shown here.



## The Insertion Cursor

Observe the vertical black bar in the first column position on the line that starts with the word “switch” in the illustration above (this is the 10<sup>th</sup> line of text from the top). This black vertical bar is the text insertion cursor. Although this illustration is static, when Quincy is running, the insertion cursor blinks so you can find it when you need to. When you type, the characters you type go where the cursor is positioned, and the cursor moves to the next position.

You can move the insertion cursor several ways:

1. Use the Home, End, Page Up, Page Down, and arrow keys.
2. Use those keys with the Ctrl key depressed.
3. Click in the editor window with the mouse.

The small pane in Quincy’s status bar (at the lower right of the window) displays the current line and column position of the insertion cursor. In this example, the cursor is at line 21 and column 1.

It is possible for the insertion cursor to be out of sight. If you scroll the document window horizontally or vertically with the scroll bars and the mouse, you can put the insertion cursor off screen. But it is still there. If you start typing when the insertion cursor is out of sight, Quincy changes the text’s scrolling position so that the line where the insertion cursor is positioned is in view.

Quincy’s editor does not have Insert/Overwrite modes of text entry like other editors do. Quincy is always in Insert mode, which is how editing source code is typically done.

## Breakpoints as bookmarks

Quincy does not have an option to set bookmarks in the text for quickly jumping back and forth to specific locations. However, breakpoints may be used for this purpose while editing, because Quincy *does* have key combinations to jump to the next/previous breakpoint location.

To toggle a breakpoint on a line, type the F9 key. The line does not need to have code on it; you can set a breakpoint in the middle of a comment. To jump to the breakpoint above the current cursor location, use Ctrl-PageUp and to jump to the breakpoint below the current cursor location, use Ctrl-PageDown

FIGURE 7: *The Quincy toolbar*

## The toolbar

Many functions of the Quincy are available through the toolbar. Figure 7 gives an overview of the various buttons of the toolbar and their functions.

## Code snippets

To reduce the amount of typing, you can create code snippets for typical sequences of characters. To create a code snippet, select the option **Tools** from the menu and then **Options...** In the options dialog, select the tab **Snippets**.

For each snippet, type in a shorthand and then the replacement text. The goal is, of course, that the shorthand is short and easy to type, as well as easy to memorize.

Once you entered the code snippets, you can start using them in the editor. To expand a snippet, type the shorthand and then press the **Tab** key. For example, if you have entered the snippet as in figure 8, typing `ife` followed by a **Tab** would expand to:

```
if ()
{
}
else
{
}
```

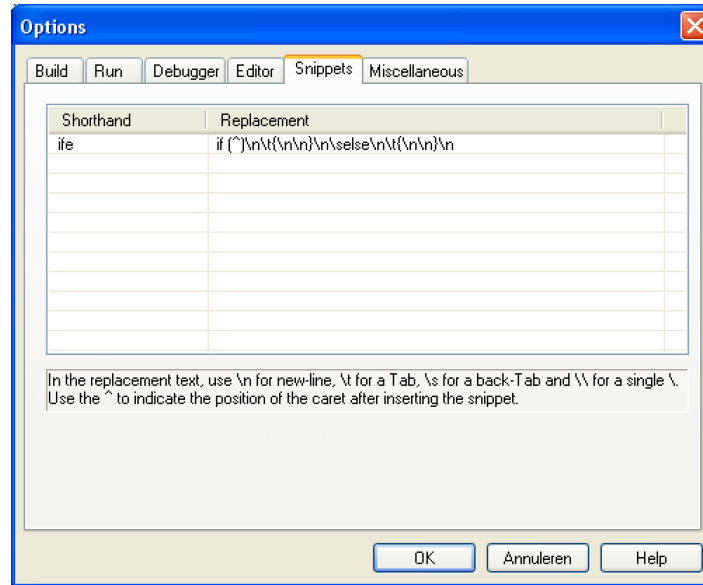


FIGURE 8: *Snippets dialog*

## Keyboard shortcuts

Quincy provides the standard support for cursor positioning with the keyboard (arrow keys, PageUp, PageDown) and the mouse. Marking selections in the text and clipboard operations also follow the standard interface as used in all Microsoft Windows text editors and word processors.

### Editor keys

<b>Tab</b>	If a block of text is selected, the <b>Tab</b> indents the block. When no block is selected, the <b>Tab</b> key expands a code snippet.
<b>F3</b>	Repeat the last search action.
<b>F9</b>	Toggle breakpoint at the active line (set or remove the breakpoint).
<b>Alt-M</b>	Macro playback: play a macro previously recorded.

<b>Alt-R</b>	Record macro: record all keyboard and mouse actions for later playback.
<b>Alt-S</b>	Stop recording: stop recording the macro.
<b>Alt-Backspace</b>	Undo (equivalent to Ctrl-Z).
<b>Ctrl-A</b>	Select all: select all text in the current (source) file.
<b>Ctrl-C</b>	Copy: copy the marked text to the clipboard.
<b>Ctrl-F</b>	Find: initiate a text search (in the active file).
<b>Ctrl-H</b>	Find & replace: initiate a text “search and replace” operation (in the active file).
<b>Ctrl-V</b>	Paste: insert the contents of the clipboard at the position of the text cursor.
<b>Ctrl-X</b>	Cut: copy the marked text to the clipboard, then delete it in the editor.
<b>Ctrl-Y</b>	Redo: undo the most recent undo action.
<b>Ctrl-Z</b>	Undo: undo the most recent edit action.
<b>Ctrl-Insert</b>	Copy (equivalent to Ctrl-C).
<b>Ctrl-PageDown</b>	Jump to the next breakpoint in the code editor.
<b>Ctrl-PageUp</b>	Jump to the previous breakpoint in the code editor.
<b>Ctrl-{</b>	Match brace: if the text cursor is at an opening or closing brace, this key combination jumps to the matching brace.
<b>Shift-Delete</b>	Cut (equivalent to Ctrl-X).

## Debugger keys

<b>F8</b>	Step into: execute the current instruction and stop at the next instruction; step <i>into</i> functions (if any).
<b>F9</b>	Toggle breakpoint at the active line (set or remove the breakpoint).
<b>F10</b>	Step over: execute the current instruction and stop at the next instruction; step <i>over</i> functions (if any).



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<b>Ctrl-E</b>	Examine: view the value of a variable, and optionally modify it.
<b>Ctrl-W</b>	Watch: open a window to watch one or more variables.
<b>Ctrl-F10</b>	Step to cursor: execute all instructions until arriving at the text cursor position.

## Miscellaneous keys

<b>F1</b>	Help: display general help or help on a marked keyword (if any).
<b>F4</b>	Tutorial: open the dialog with the examples.
<b>F5</b>	Run the current script. If the script's source file is more recent than the compiled script, Quincy will first ask you whether you wish to re-build the script.
<b>F7</b>	Build the current script. This key is only available if the source file that is active at the time is a script file. Include files or text files cannot be "built".
<b>F12</b>	Save as...: save the active file under a new name.
<b>Ctrl-B</b>	Close the "build panel" with the error log of the most recent compile action.
<b>Ctrl-N</b>	New file: create a new text file or source file.
<b>Ctrl-O</b>	Open file: open an existing source file.
<b>Ctrl-P</b>	Print file: print the active file.
<b>Ctrl-S</b>	Save the active file.
<b>Ctrl-F7</b>	Transfer: transfer the compiled program to an external computer or device, over a network or serial cable.
<b>Ctrl-Tab</b>	Cycle through the source files that are currently open.



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