

# ETAC Source Files (4-ena)

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## Other Related ETAC Documents

|                                 |                                           |
|---------------------------------|-------------------------------------------|
| ETAC_Preliminaries.pdf          | Preliminaries before using ETAC           |
| ETACOverview.pdf                | An Overview of ETAC                       |
| ETACProgLang(Official).pdf      | The Official ETAC Programming Language    |
| ETACVisualInteractionSystem.pdf | ETAC: Visual Interaction System           |
| RunETAC.chm                     | Run ETAC Scripts Help                     |
| ETACWithCPP.pdf                 | ETAC: Interacting with C++                |
| ETACCompiler.pdf                | The ETAC Compiler                         |
| ETACCompiler.chm                | ETAC Compiler Help                        |
| ETACErrorCodes.pdf              | ETAC Compilation and Run-time Error Codes |
| ETACCodeGenerator.pdf           | ETAC Code Generator                       |
| ETACCodeGen.chm                 | ETAC Code Generator Help                  |
| FunctionsETACScriptLib.pdf      | Functions ETAC Script Library             |
| SplineScriptFnts.pdf            | Spline ETAC Script Library                |
| PathScriptFnts.pdf              | Path ETAC Script Library                  |
| VISShapePathFnts.pdf            | VIS Shape Path Functions                  |
| VISPointSetFnts.pdf             | VIS Point Set Functions                   |

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# Document Conventions

The following symbolic conventions are used in this document.

| <b><u>Symbol</u></b> | <b><u>Meaning</u></b>                                             |
|----------------------|-------------------------------------------------------------------|
| $\langle x \rangle$  | separates $x$ as a unit of information from the surrounding text. |
| ...                  | represents omitted text (as usual).                               |
| <u>text</u>          | underlined green text is a link into the document.                |
| <i>text</i>          | maroon coloured italic text is a link to the text's definition.   |

# ETAC Source Files

This document is for version **4-ena** of the **ETACSource** text script files for the ETAC programming language, installed in the default path ‘ETACDevelopment 4-ena’ by the ‘ETACSource\_4-ena\_Installer.exe’ installer.

(Australian English)

## 1. Introduction

The *ETAC text script* source files for the ETAC™ system (including VIS), and also for the ETAC utilities and demonstration programs, are installed by the ‘ETACSource\_4-ena\_Installer.exe’ installer. The contents of ‘ETACSource\_4-ena\_Installer.exe’ are concordant with the contents of ‘RunETAC\_4-0-6-ena\_Installer.exe’. No C++ files are installed by the installer — the C++ files in which ETAC is written are not for public release. The ETAC system source files are *ETAC text script* files released for debugging and informational purposes; they should not normally be modified. The one exception is the ‘RunETAC.etc’ *loader script* which can be modified by the ETAC programmer, although such modification is unlikely to be required. The ETAC utilities source code, which is not necessary for the functioning of ETAC, would also not normally be modified. In any case, a backup of the modified source files should always be made in case they are overwritten by latter installers. Be aware that all the source files mentioned in this document are subject to copyright (see ‘ETACSource\_Licence.pdf’).

‘SetNewLoc.etc’ (located in the folder ‘General’ of the installation folder) should be executed by the ETAC programmer when the ETAC source file folder is first created (via <ETACSource\_...\_Installer.exe>) after **Run ETAC Files** has been installed (via <RunETAC\_...\_Installer.exe>), and thereafter whenever the said folder is renamed or moved. Note that ‘SetNewLoc.etc’ need not be executed if the ETAC source files are merely to be inspected.

The ETAC source file folder can be uninstalled simply by deleting it. <ETACSource\_...\_Installer.exe> does not insert entries in the system registry.

The ETAC source file installer installs *ETAC text script* files in the following folders: ‘ETACApps’, ‘ETACLibraries’, ‘ETACSystems’, ‘General’, and ‘Include’. The ETAC programmer can add their own files to those folders. The installed contents of those folders is described in the following sections.

### Changes from Previous Publication

The following section indicates the changes made in this publication from the previous publication (1 August 2020).

#### **New Items**

[2.3\\_DrawingPlaneToy](#) ▪ [2.6.1\\_CalcDemo](#) ▪ [2.6.2\\_FlowchartDemo](#) ▪ [2.9\\_KeycodeToy](#) ▪ [2.11\\_MatrixObjToy](#) ▪ [2.12\\_MseBtnEventToy](#) ▪ [2.16\\_ShapePathToy](#) ▪ [2.17\\_VIEWTOY](#) ▪ [2.18\\_VISTutor](#) ▪ [3.2\\_The Path Functions Folder](#) ▪ [3.3\\_The Spline Functions Folder](#) ▪ [4.1\\_The VisualInteractionSystem Folder](#)

#### **Enhanced Items**

[2.14\\_RunETAC](#) ▪ [3.1\\_The Functions Folder](#) ▪ [5\\_The General Folder](#) ▪ [6\\_The Include Folder](#)

## 2. The ETACApps Folder

This folder contains the source files for all the ETAC utilities, ETAC demonstration programs, and also the *loader script*. If the **ETAC Compiler** program is installed (via <ETACCompiler\_...\_Installer.exe>), those utilities can be compiled into *ETAC binary files*, although such compilation is not necessary. The <...R.ecarg> files (“R” stands for “Release”) in each subfolder is used by the **ETAC Compiler** program to

compile the source files into the ‘Release’ folder. The ETAC programmer can add their own ETAC projects to this folder. A summary of the installed contents of this folder follows.

## 2.1 CheckETACFile

This program does a thorough syntax check on a selected *ETAC text script* file. Note that this program requires the **ETAC Compiler** program. See the document ‘ETACCompiler.pdf’ for more details.

## 2.2 DialogBoxMaker

Produces a dialog box resource data file (\*.res) and an *ETAC text script* file (\*.etac) from a user-designed text-based visual layout of a dialog box and its controls. Both files are used in an *ETAC text script* file for displaying a dialog box. See the document ‘DBMHelp.pdf’ in the ‘Help’ folder for more details.

## 2.3 DrawingPlaneToy

The Drawing Plane Toy program is a VIS (Visual Interaction System) program allowing the user to experiment with features of a VIS drawing plane. The program creates a drawing VIEW (Visual Interactive ETAC Window) and a monitor VIEW that displays the various VIS frames of the drawing VIEW. The user can manipulate the displayed frames. See the document ‘DPTHelp.pdf’ in the ‘Help’ folder for more details.

## 2.4 DlgResViewer

Shows the basic contents of the dialog box specifications existing in a resource file (\*.res), displaying the dialog boxes and named control events triggered by the user. See the document ‘DRVHelp.pdf’ in the ‘Help’ folder for more details.

## 2.5 ETACCodeGenerator

This is a substantial ETAC program. This program uses programmable template text files containing special descriptive codes and text to generate and maintain text files. The **ETAC Code Generator** is ideally suited to generate and maintain source code for computer programs, but is completely universal. It is therefore able to generate any text file from text template files.

The **ETAC Code Generator** is released in two implementations. Officially, the **ETAC Code Generator** is released as a compiled *ETAC binary file* named ‘ETACCodeGen.btac’, along with the ETAC source files. The **ETAC Code Generator** is also released as a self-contained executable program named ‘ETACCodeGen.exe’, which does not require the **Run ETAC Scripts** package.

See the document *ETAC Code Generator* (‘ETACCodeGenerator.pdf’) for full details of the **ETAC Code Generator**.

## 2.6 The ETACDemos Folder

Contains two demonstration programs described below.

### 2.6.1 CalcDemo

This is a basic calculator program featuring the proper operator precedence (multiplication and division before addition and subtraction) and allows the entry of nested parentheses. It also has two storages.

### 2.6.2 FlowchartDemo

This program creates and saves flowchart diagrams. Any part of a diagram can be saved to the clipboard in an enhanced metafile format to be pasted into other applications. Additionally, selected parts of a diagram can be exported in the following file formats: bmp, emf, gif, jpg, png, and tif. Only a subset of the traditional flowchart symbols can be created. The text associated with most symbols is in RTF (Rich Text Format). See the document ‘FDHelp.pdf’ in the ‘Help’ folder for more details.

## 2.7 InstallProjectFiles

Copies or moves files from source to destination with or without backup. All transfers are specified in a text file (the “installation file”). *ETAC code* can be specified to be activated before and after the transfer of each file. The default installation file, ‘InstallProjectFiles.txt’, contains the specifications to transfer the desired files. The installation file exists in the Data folder. See the document ‘IPFHelp.pdf’ in the ‘Help’ folder for more details.

This program is intended to release the <\*.btac> and other files to the **Run ETAC Files** installation folder by default. Note, however, that the said files do not need to be changed, and so this program would not normally be used for the said purpose. There may be rare cases where the designer of ETAC may issue instructions which require the use of this program.

Alternatively, the ETAC programmer can use this program with their own installation file to release their own ETAC programs.

## 2.8 InteractiveETAC

An implementation of a simple interactive ETAC interpreter which accepts and runs ETAC statements from the console window. This program is mainly for illustration purposes, but can be adapted to suit the user if desired.

The console window may not display some characters correctly. If such is the case, the font properties of the console window may need to be altered to a TrueType or OpenType font via the pop-up menu (click the menu mouse button on the title bar).

Some new commands have been added; type “-cmds” in the console window to display the list of commands.

## 2.9 KeycodeToy

Presents detailed information on keyboard key activity.

## 2.10 KeywordArgsToy

A program for entering and testing keyword-argument formats which can be used in *ETAC text script*. See **Appendix A: Keyword-arguments Specifications** in the document ‘ETACProgLang(Official).pdf’. for more details on keyword-argument formats.

## 2.11 MatrixObjToy

The Matrix Object Toy program displays a VIS matrix object with predefined container objects. The user can specify the dimensions and the layout of the matrix object. See various heading containing “Matrix Object” in the document ‘ETACVisualInteractionSystem.pdf’.

## 2.12 MseBtnEventToy

This program shows three shapes: square, triangle, and circle. When mouse button events occur, the chosen and selected shape names are displayed in a console window. The **SHIFT** and **CTRL** keys can be used with the mouse buttons.

## 2.13 ParseStringToy

A program for entering and testing string pattern matching formats which can be used in *ETAC text script*. See **parse\_str** in the document ‘ETACProgLang(Official).pdf’ for more details on string pattern formats.

## 2.14 RunETAC

This folder contains the source code for the *loader script*. Running ‘RunETAC.etac’ by itself has no effect because the file is used by ‘RunETAC.exe’ and ‘AppETAC.dll’ to set up the ETAC environment for executing *ETAC code* files. If the file ‘RunETAC.etac’ is modified and compiled, the resultant ‘RunETAC.btac’ should replace the existing one in the ‘System’ subfolder of the ‘RunETAC’ folder where **Run ETAC Scripts** is installed.

The folder also contains the source code (‘visETAC.etac’) for loading VIS. The file ‘RunETAC.etac’ executes ‘visETAC.etac’ unless the NO\_VIS option is specified on the ‘RunETAC.exe’ command line.

## 2.15 RunTACFiles

A program that presents a file dialog box for the user to select an *ETAC code* file to run. Note that ‘\*.TAC’ and ‘\*.ptac’ files are typically used for inclusions in *ETAC text script*, and therefore may not function correctly if run standalone. If the file ‘RunTACFiles.etac’ is modified and compiled, the resultant ‘RunTACFiles.btac’ should replace the existing one in the ‘System’ subfolder of the ‘RunETAC’ folder where **Run ETAC Scripts** is installed.

## 2.16 ShapePathToy

The Shape Path Toy program displays the shapes defined in the VIS shape path library with user-specified parameters and arguments. There are 42 shape path functions (SPF) in the library, divided into three categories: shape creation functions, shape modification functions, and shape transformation functions. See the document ‘SPTHelp.pdf’ in the ‘Help’ folder for more details.

## 2.17 VIEWToy

The VIEW Toy program allows a user to create a VIEW (Visual Interactive ETAC Window) with any desired styles (including extended styles) and other features. The user can set the VIEW’s title, position, size, scale, and flags to enable zoom and image dragging. The VIEW can also be dynamically presented in various states (maximised, iconised, etc). See the document ‘VTHelp.pdf’ in the ‘Help’ folder for more details.

## 2.18 VISTutor

This is a tutorial package presenting most of the features of the new Visual Interaction System (VIS), and consists of 14 tutorials plus a summary reference of the VIS functions and commands. Each tutorial has at least one lesson. Most tutorials within the package include executable demonstration programs written in the new VIS ETAC system. The tutorial package itself is written in ETAC using VIS.

## 3. The ETACLibraries Folder

This folder contains ETAC script library code, some of which is **not yet released**. However, some ETAC utilities do use the script library code in the form of ‘\*.ptac’ files. The ETAC programmer should not himself use the library code in this folder until the library code is formally released with documentation (the library code could change without notice before it is formally released). When the library code is released at a later time, the ‘\*.ptac’ files will be replaced with ‘\*.etac’ files containing the *ETAC text script* of the library code. A summary of the installed contents of this folder follows.

### 3.1 The Functions Folder

This folder contains the source code of the **Functions ETAC Script Library** (the “Functions Library”) in the file ‘etacFunctions.etac’. The functions in the Functions Library are not defined for any particular purpose, and are for general use. See the document ‘FunctionsETACScriptLib.pdf’ for more details.

### 3.2 The Path Functions Folder

This folder contains the source code of the **Path ETAC Script Library** (the “Path Library”) in the file ‘etacPathFunctions.etac’. The functions in the Path Library involve the relationships among paths (as a sequence of points), rectangles, and points. See the document ‘PathScriptFnts.pdf’ for more details.

### 3.3 The Spline Functions Folder

This folder contains the source code of the **Spline ETAC Script Library** (the “Spline Library”) in the file ‘etacSplineFunctions.etac’. The functions in the Spline Library involve the relationships among Bezier paths, B-spline paths, and sample points. See the document ‘SplineScriptFnts.pdf’ for more details.

## 4. The ETACSystems Folder

Currently contains only the source files for VIS (Visual Interactive System).

### 4.1 The VisualInteractionSystem Folder

This folder contains all the source files for VIS.

VIS is a 2-D graphics system that processes user interactions with computer software, allowing a computer programmer to create event-driven windowed graphical application programs in the ETAC programming language. See the document ‘ETACVisualInteractionSystem.pdf’ for more details.

By default, the VIS files are loaded by the *loader script*.

## 5. The General Folder

This folder contains ‘CompileTACGlobal.ecarg’ and ‘CompileVISGlobal.ecarg’ which are the argument files used by the **ETAC Compiler** program for producing ‘TACGlobal.PTAC’ and ‘VISGlobal.PTAC’, respectively. The folder also contains ‘SetNewLoc.etc’ which is used whenever the ETAC source file folder is renamed or moved (which should not happen too often).

‘CompileTACGlobal.ecarg’ is used by the **ETAC Compiler** program to combine ‘TACSystemDefs.TAC’ and ‘TACGeneralIncl.TAC’ to produce ‘TACGlobal.PTAC’ into the inclusion folder (Include). After compilation, ‘TACGlobal.PTAC’ would need to be copied to the RunETAC\Include installation folder of **Run ETAC Scripts**. Note that the said compilation need never be performed unless instructed to by the designer of ETAC.

‘CompileVISGlobal.ecarg’ is used by the **ETAC Compiler** program to combine various ‘\*.TAC’ files to produce ‘VISGlobal.PTAC’ into the inclusion folder (Include). After compilation, ‘VISGlobal.PTAC’ would need to be copied to the RunETAC\Include installation folder of **Run ETAC Scripts**. Note that the said compilation need never be performed unless instructed to by the designer of ETAC.

‘SetNewLoc.etc’ updates the installation file ‘InstallProjectFiles.txt’ with the paths of the installation folders of **Run ETAC Files** and of the ETAC source files. The installation file is then automatically copied to the <...\RunETAC\Scripts\InstallProjectFiles\Data> folder (if it exists) where **Run ETAC Files** is installed. In addition, ‘SetNewLoc.etc’ also updates the paths of the inclusion directories in the file ‘InclDirList.txt’ (existing in the folder <...\RunETAC\Data>) where **Run ETAC Files** is installed. **Note** that ‘SetNewLoc.etc’ may need to be run from an administration account to update the **Run ETAC Files** files.

## 6. The Include Folder

This folder contains ‘TACSystemDefs.TAC’ and ‘TACGeneralIncl.TAC’ which are both incorporated into ‘TACGlobal.PTAC’. ‘GISUsrDefs.TAC’, ‘VISUsrDefs.TAC’, ‘TACWindowStyles.TAC’, ‘VISErrCodes.TAC’, ‘VISDefs.TAC’, and ‘VISTypes.TAC’ are incorporated into ‘VISGlobal.PTAC’. The folder also contains ‘ETACDefs.etc’ and ‘ETACLibDefs.ptac’ which are both incorporated into the *loader script* ‘RunETAC.btac’. ‘GISUsrCmds.ptac’ and ‘VISUsrCmds.ptac’ are incorporated into the *loader script* via ‘visETAC.etc’. ‘ETACDefs.etc’ exists mainly for debugging and informational purposes and should not be modified.

# Glossary

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## E

### ETAC binary file

A file containing a binary form of *ETAC text script*. An *ETAC binary file* typically has an extension of btac.

### ETAC code

Any code executable by the ETAC interpreter. A file containing *ETAC code* typically has an extension of etac, tac, ptac, or btac.

### ETAC text script

ETAC program code that is in human readable and writable text form. A file containing *ETAC text script* typically has an extension of etac (or tac if the file contains only TAC text script).

Note that the term “ETAC text script” is used in the same sense as the word “code”, as in “ETAC text script code”.

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## L

### loader script

This is an automatically loaded *ETAC code* file typically used to set up the ETAC environment before the specified *ETAC code* files are executed. The file name for the default *loader script* is RunETAC.btac or RunETAC.etac. The default location of the *loader script* is in the System directory under the installed RunETAC directory.

If an ETAC program is using VIS, the *loader script* also executes visETAC.etac, and if that does not exist, it executes visETAC.btac (or visETAC-D.btac for the debug version) existing in the same directory as the *loader script*.