AutoIt: Reference for Administrators

by Matthew Mansfield

As Windows administrators, we all have things we need to get done and very little time in which to work with. Our need for automated tasks is immeasurably important to help us with our day-to-day tasks. AutoIt allows you to create scripts and then compile them into a stand-alone executable that can run on systems that do not have an AutoIt interpreter installed.

During the course of this guide we will break down the basics of AutoIt so you can create, compile and implement a script today.
We will walk through key features that AutoIt can offer from controlling the mouse and keyboard to gaining admin access to install updates. This manual assumes you are already familiar with some programming so we won't dwell on "Hello World" too long and we can dive into more of what you're used to. With that in mind we will jump right into examples to show you helpful ways to put together a program.

Contents

Section 1 – Origins of AutoIt

AutoIt began during the end of 1998 primarily to automate keystrokes during software installs. AutoIt Version 1 was released January of 1999 and had limited built in functionality. In August of 1999 AutoIt Version 2 was released which included DLL/COM control and it was the first version that included AutoItX. In May of 2001 the source code for AutoIt was converted from C to C++ which allowed for many additional auto-correcting abilities for the script editor. In 2003 a beta version of AutoIt Version 3 was released and in February of 2004 the AutoIt team released a completed Version 3. One year later Version 3.1.0 broke ground on the first versions of AutoIt which has allowed GUI design. GUI design was only available by manually coding it until February of 2006 when the first build of Koda Form Designer was released. Koda provided programmers to drag and drop forms and its various properties without having to hard code it.

Section 2 – Getting the Editor & Getting Started

Section Objective

In this section we will cover:

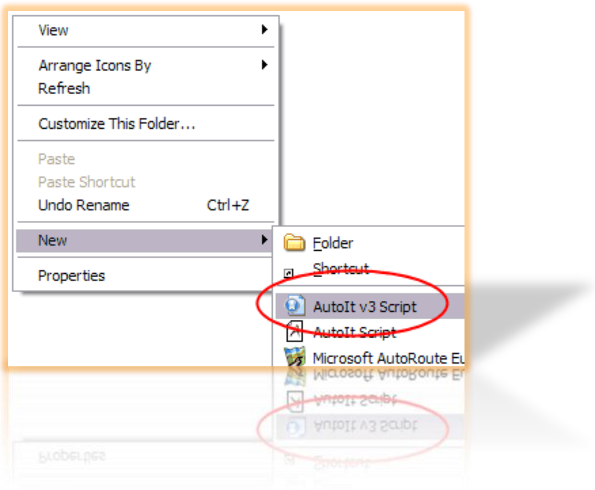
- How to get the AutoIt Script Editor
- Creating a new script
- Proper Commenting
- Programming Hello World

How to get the Autoit script editor

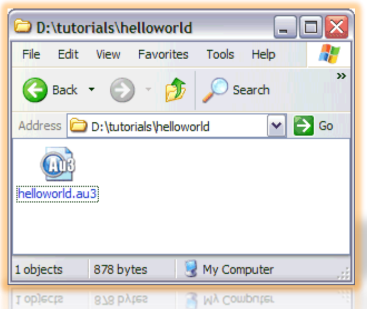
To begin let's make sure you have the latest version of Autoit installed on your computer. As of the time of this publication the latest version is 3.3.8.1 Updated: 29th January, 2012. You can obtain a free copy of Autoit from the download page at autoitscript.com/site/autoit/downloads. This install comes with the script to executable, script editor and AutoItX which allows DLL/COM control.

Creating a new script

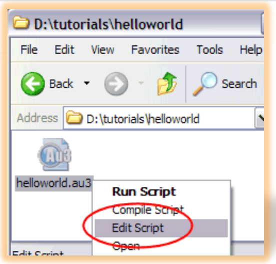
First open a folder where you wish to create the script. Right-click in the folder and select **New > AutoIt v3 Script**.



After your new file is created you may name it something appropriate. For this exercise I will change the name from 'New AutoIt v3 Script' to ‘helloworld’ but you can name yours what you would like. Just make sure you keep the correct file extension. The correct file extension for AutoIt is '.au3'.

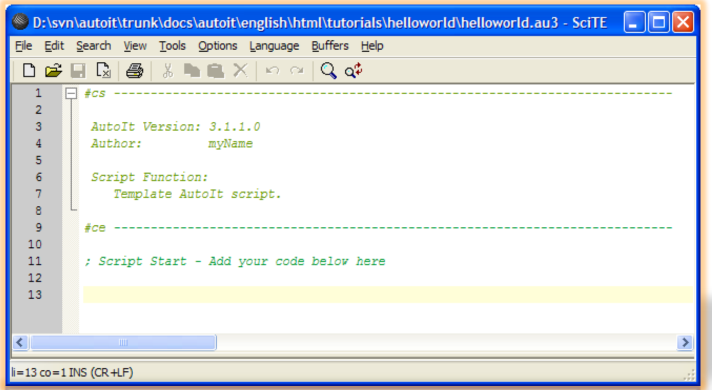


Next, with the script file created we want to edit it. Right-click on helloworld.au3 and select Edit Script.



Proper Commenting

Each time a new script is open you will notice that it will come with some commented out sections at the top of the script. This brings us to commenting and how to add them.


D:\svn\autoit\trunk\docs\autoit\english\html\tutorials\helloworld\helloworld.au3 - SciTE
File Edit Search View Tools Options Language Buffers Help

```
#cs ----------------------------------------------------------------------------

 AutoIt Version: 3.1.1.0
 Author:         myName

 Script Function:
	Template AutoIt script.

#ce ----------------------------------------------------------------------------

; Script Start - Add your code below here

```

```
li=13 co=1 INS (CR+LF)
```

To add a comment in the code that the editor will not pick up you must begin the line with a **semicolon**.

Example 2-A

```
; Your comment goes here.
```

To have a large section commented out you must begin with **#comments-start** and conclude with **#comments-end**.

Example 2-B

```
#comments-start
...
...
#comments-end
```

Programming Hello World

Now that we have our SciTE Editor properly installed and our first file created let’s walk through a quick “Hello World” to get you familiar with how the editor works.

We want to tell AutoIt to display a message box - this is done with the MsgBox function. All functions take parameters and the MsgBox has three which are a flag, title and message.

Example 2-C

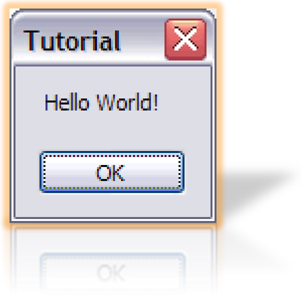
```
MsgBox( [ flag ] [, "title" ] [, "message" ] )
```

The **flag** parameter uses a predetermined number which indicates the way your MsgBox displays. The **title** and **message** parameters take *string* input. Whenever you input a string be sure you use "double" or 'single' quotes. Using the input of **Exampe 2-D** save your project file and close the editor. To get your program to run simply double-click on your file, in my case the *helloworld.au3* file. Another way to run your script is to right-click and select **Run Script**.

Example 2-D

```
MsgBox(0, "Tutorial", "Hello World!")
```

Upon running your script you should see the following:



Hello World!

In our example we were using the **flag** of **0** but to determine which flag you need to use in the future consider the options available to you by reviewing this chart.

decimal flag	Button-related Result	hexadecimal flag
0	OK button	0x0
1	OK and Cancel	0x1
2	Abort, Retry, and Ignore	0x2
3	Yes, No, and Cancel	0x3
4	Yes and No	0x4
5	Retry and Cancel	0x5
6 *valid on Windows*	Cancel, Try Again, Continue	0x6

2000/XP and above		
decimal flag	**Icon-related Result**	**hexadecimal flag**
0	(No icon)	0x0
16	Stop-sign icon	0x10
32	Question-mark icon	0x20
48	Exclamation-point icon	0x30
64	Information-sign icon consisting of an 'i' in a circle	0x40
decimal flag	**Default-related Result**	**hexadecimal flag**
0	First button is default button	0x0
256	Second button is default button	0x100
512	Third button is default button	0x200
decimal flag	**Modality-related Result**	**hexadecimal flag**
0	Application	0x0
4096	System modal (dialog has an icon)	0x1000
8192	Task modal	0x2000
decimal flag	**Miscellaneous-related Result**	**hexadecimal flag**
0	(nothing else special)	0x0
262144	MsgBox has top-most attribute set	0x40000
524288	title and text are right-justified	0x80000

Section 3 – General Scripting

Introduction

In this section we will cover some of the basics of this scripting language so you have some material to reference to while you are building your codes. Having some of these fundamental tools available to you will enable you to begin building your programs

Starting with the code from the top down, we will cover the following in this section:

- Includes
- List of common includes
- Function Reference
- Declaring Variables
- Scope
- Arrays
- Operators
- Datatypes
- Numbers
- Strings

- Booleans
- Binary
- Pointer
- Datatypes and Ranges
- Numbers
- Regular Expressions

Includes

Includes are files that contain prewritten functions for AutoIt. Think of them as functions written into your script that you can call to perform actions for you. You can utilize these files by adding them to your script with the following:

Example 3-A

```
#include <Array.au3>
```

List of common includes

Include	Description
Array.au3	Functions that assist with array management
AVIConstants.au3	AVI Constants
ButtonConstants.au3	Button Constants
Color.au3	Functions that assist with color management
ComboConstants.au3	ComboBox Constants
Constants.au3	Various AutoIt Constants
Date.au3	Functions that assist with dates and times
DateTimeConstants.au3	DateTime Control Constants
EditConstants.au3	Edit Constants
File.au3	Functions that assist with files and directories
GuiCombo.au3	Functions that assist with ComboBox
GUIConstants.au3	Includes all GUI related constants
GUIConstantsEx.au3	Constants to be used in GUI applications
GUIDefaultConstants.au3	GUI default control styles
GuiEdit.au3	Functions that assist with Edit control
GuiIPAddress.au3	Used to create a GUI IP Address Control
GuiList.au3	Functions that assist with Listbox
GuiListView.au3	Functions that assist with ListView

GuiMonthCal.au3	Functions that assist with MonthCal
GuiSlider.au3	Functions that assist with Slider Control “Trackbar”
GuiStatusBar.au3	Functions that assist with the Statusbar control
GuiTab.au3	Functions that assist with the Tab Control
GuiTreeView.au3	Functions that assist with TreeView
IE.au3	Internet Explorer Automation UDF Library for Auto-It3
Inet.au3	Functions that assist with the Internet
ListBoxConstants.au3	ListBox Constants
ListViewConstants.au3	ListView Constants
Math.au3	Functions that assist with mathematical calculations
Memory.au3	Memory management routines
Misc.au3	Functions that assist with Common Dialogs
Process.au3	Functions that assist with process management
ProgressConstants.au3	Progress Constants
SliderConstants.au3	Slider Constants
Sound.au3	Functions that assist with Sound files
SQLite.au3	Functions that assist access to an SQLite database
SQLite.dll.au3	Inline *SQLite3.dll*
StaticConstants.au3	Static Constants
StatusBarConstants.au3	StatusBar Constants
String.au3	Functions that assist with String manipulation
TabConstants.au3	Tab Constants
TreeViewConstants.au3	TreeView Constants
UpDownConstants.au3	UpDown Constants
Visa.au3	VISA (GPIB & TCP) library
WindowsConstants.au3	Windows Constants

Function Reference

A function is a section of code that can be called from the script to provide a given output. There are two different kinds of functions **built-in functions** and **user functions** *(also referred to as user defined functions or UDF’s)*. Built-in functions are installed when you setup AutoIt during initial install and are available using the **Call** keyword:

Example 3-B

```
#include <Array.au3>

; This calls a function accepting no arguments.
Call("Test1")
```

```
; This calls a function accepting one argument and passes it an argument.
Call("Test2", "Message from Call()!")
```

A user function is one that you create as you are writing your code:

Example 3-C

```
Example1()
Example2()

; example1
Func Example1()
    ; Sample script with three user-defined functions
    ; Notice the use of variables, ByRef, and Return

    Local $foo = 2
    Local $bar = 5
    MsgBox(0, "Today is " & today(), "$foo equals " & $foo)
    swap($foo, $bar)
    MsgBox(0, "After swapping $foo and $bar", "$foo now contains " & $foo)
    MsgBox(0, "Finally", "The larger of 3 and 4 is " & max(3, 4))
EndFunc   ;==>Example1

Func swap(ByRef $a, ByRef $b)  ;swap the contents of two variables
    Local $t
    $t = $a
       $a = $b
       $b = $t
EndFunc   ;==>swap

Func today()  ;Return the current date in mm/dd/yyyy form
    Return (@MON & "/" & @MDAY & "/" & @YEAR)
EndFunc   ;==>today

Func max($x, $y)  ;Return the larger of two numbers
    If $x > $y Then
        Return $x
    Else
        Return $y
    EndIf
EndFunc   ;==>max

;End of sample script 1

; example2
Func Example2()
    ; Sample scriptusing @NumParams macro
    Test_Numparams(1,  2,  3,  4,  5,  6, 7,  8,  9,  10,  11,  12,  13, 14)
EndFunc   ;==>Example2

Func Test_Numparams($v1 = 0, $v2 = 0, $v3 = 0, $v4 = 0, $v5 = 0, $v6 = 0, $v7 = 0, $v8
 = 0, _
$v9 = 0, $v10 = 0, $v11 = 0, $v12 = 0, $v13 = 0, $v14 = 0, $v15 = 0, $v16 = 0, $v17 =
0, _ $v18 = 0, $v19 = 0)
#forceref $v1, $v2, $v3, $v4, $v5, $v6, $v7, $v8, $v9, $v10, $v11, $v12, $v13, $v14,
$v15, $v16, $v17, $v18, $v19
    Local $val
    For $i = 1 To @NumParams
        $val &= Eval("v" & $i)  & " "
    Next
    MsgBox(0, "@NumParams example", "@NumParams=" & @NumParams & @CRLF & @CRLF & $val)
EndFunc    ;==>Test_Numparams

;End of sample script 2
```

Below is a complete list of the functions available in AutoIt. If you are viewing a digital copy, click on a function name to be taken to the appropriate AutoIt page for a detailed description.

Function	Description
Abs	Calculates the absolute value of a number.
ACos	Calculates the arcCosine of a number.
AdlibRegister	Registers an Adlib function.
AdlibUnRegister	Unregisters an adlib function.
Asc	Returns the ASCII code of a character.
AscW	Returns the unicode code of a character.
ASin	Calculates the arcsine of a number.
Assign	Assigns a variable by name with the data.
ATan	Calculates the arctangent of a number.
AutoItSetOption	Changes the operation of various AutoIt functions/parameters.
AutoItWinGetTitle	Retrieves the title of the AutoIt window.
AutoItWinSetTitle	Changes the title of the AutoIt window.
Beep	Plays back a beep to the user.
Binary	Returns the binary representation of an expression.
BinaryLen	Returns the number of bytes in a binary variant.
BinaryMid	Extracts a number of bytes from a binary variant.
BinaryToString	Converts a binary variant into a string.
BitAND	Performs a bitwise AND operation.
BitNOT	Performs a bitwise NOT operation.
BitOR	Performs a bitwise OR operation.
BitRotate	Performs a bit shifting operation, with rotation.
BitShift	Performs a bit shifting operation.
BitXOR	Performs a bitwise exclusive OR (XOR) operation.
BlockInput	Disable/enable the mouse and keyboard.
Break	Enables or disables the users' ability to exit a script from the tray icon menu.
Call	Calls a user-defined function contained in a string parameter.
CDTray	Opens or closes the CD tray.

Ceiling	Returns a number rounded up to the next integer.
Chr	Returns a character corresponding to an ASCII code.
ChrW	Returns a character corresponding to a unicode code.
ClipGet	Retrieves text from the clipboard.
ClipPut	Writes text to the clipboard.
ConsoleRead	Read from the STDIN stream of the AutoIt script process.
ConsoleWrite	Writes data to the STDOUT stream. Some text editors can read this stream as can other programs which may be expecting data on this stream.
ConsoleWriteError	Writes data to the STDERR stream. Some text editors can read this stream as can other programs which may be expecting data on this stream.
ControlClick	Sends a mouse click command to a given control.
ControlCommand	Sends a command to a control.
ControlDisable	Disables or "grays-out" a control.
ControlEnable	Enables a "grayed-out" control.
ControlFocus	Sets input focus to a given control on a window.
ControlGetFocus	Returns the ControlRef# of the control that has keyboard focus within a specified window.
ControlGetHandle	Retrieves the internal handle of a control.
ControlGetPos	Retrieves the position and size of a control relative to its window.
ControlGetText	Retrieves text from a control.
ControlHide	Hides a control.
ControlListView	Sends a command to a ListView32 control.
ControlMove	Moves a control within a window.
ControlSend	Sends a string of characters to a control.
ControlSetText	Sets text of a control.
ControlShow	Shows a control that was hidden.
ControlTreeView	Sends a command to a TreeView32 control.
Cos	Calculates the cosine of a number.
Dec	Returns a numeric representation of a hexadecimal string.
DirCopy	Copies a directory and all sub-directories and files (Similar to xcopy).
DirCreate	Creates a directory/folder.
DirGetSize	Returns the size in bytes of a given directory.
DirMove	Moves a directory and all sub-directories and files.
DirRemove	Deletes a directory/folder.
DllCall	Dynamically calls a function in a DLL.
DllCallAddress	Dynamically calls a function at a specific memory address.
DllCallbackFree	Frees a previously created handle created with DllCallbackRegister.

DllCallbackGetPtr	Returns the pointer to a callback function that can be passed to the Win32 API.
DllCallbackRegister	Creates a user-defined DLL Callback function.
DllClose	Closes a previously opened DLL.
DllOpen	Opens a DLL file for use in DllCall.
DllStructCreate	Creates a C/C++ style structure to be used in DllCall.
DllStructGetData	Returns the data of an element of the struct.
DllStructGetPtr	Returns the pointer to the struct or an element in the struct.
DllStructGetSize	Returns the size of the struct in bytes.
DllStructSetData	Sets the data in of an element in the struct.
DriveGetDrive	Returns an array containing the enumerated drives.
DriveGetFileSystem	Returns File System Type of a drive.
DriveGetLabel	Returns Volume Label of a drive, if it has one.
DriveGetSerial	Returns Serial Number of a drive.
DriveGetType	Returns drive type.
DriveMapAdd	Maps a network drive.
DriveMapDel	Disconnects a network drive.
DriveMapGet	Retrieves the details of a mapped drive.
DriveSetLabel	Sets the Volume Label of a drive.
DriveSpaceFree	Returns the free disk space of a path in Megabytes.
DriveSpaceTotal	Returns the total disk space of a path in Megabytes.
DriveStatus	Returns the status of the drive as a string.
EnvGet	Retrieves an environment variable.
EnvSet	Writes an environment variable.
EnvUpdate	Refreshes the OS environment.
Eval	Return the value of the variable defined by an string.
Execute	Execute an expression.
Exp	Calculates ***e*** to the power of a number.
FileChangeDir	Changes the current working directory.
FileClose	Closes a previously opened text file.
FileCopy	Copies one or more files.
FileCreateNTFSLink	Creates an NTFS hardlink to a file or a directory
FileCreateShortcut	Creates a shortcut (.lnk) to a file.
FileDelete	Delete one or more files.
FileExists	Checks if a file or directory exists.
FileFindFirstFile	Returns a search "handle" according to file search string.
FileFindNextFile	Returns a filename according to a previous call to FileFindFirstFile.

FileFlush	Flushes the file's buffer to disk.
FileGetAttrib	Returns a code string representing a file's attributes.
FileGetEncoding	Determines the text encoding used in a file.
FileGetLongName	Returns the long path+name of the path+name passed.
FileGetPos	Retrieves the current file position.
FileGetShortcut	Retrieves details about a shortcut.
FileGetShortName	Returns the 8.3 short path+name of the path+name passed.
FileGetSize	Returns the size of a file in bytes.
FileGetTime	Returns the time and date information for a file.
FileGetVersion	Returns the "File" version information.
FileInstall	Include and install a file with the compiled script.
FileMove	Moves one or more files
FileOpen	Opens a text file for reading or writing.
FileOpenDialog	Initiates a Open File Dialog.
FileRead	Read in a number of characters from a previously opened text file.
FileReadLine	Read in a line of text from a previously opened text file.
FileRecycle	Sends a file or directory to the recycle bin.
FileRecycleEmpty	Empties the recycle bin.
FileSaveDialog	Initiates a Save File Dialog.
FileSelectFolder	Initiates a Browse For Folder dialog.
FileSetAttrib	Sets the attributes of one or more files.
FileSetPos	Sets the current file position.
FileSetTime	Sets the timestamp of one of more files.
FileWrite	Append a text/data to the end of a previously opened file.
FileWriteLine	Append a line of text to the end of a previously opened text file.
Floor	Returns a number rounded down to the closest integer.
FtpSetProxy	Sets the internet proxy to use for ftp access.
GUICreate	Create a GUI window.
GUICtrlCreateAvi	Creates an AVI video control for the GUI.
GUICtrlCreateButton	Creates a Button control for the GUI.
GUICtrlCreateCheckbox	Creates a Checkbox control for the GUI.
GUICtrlCreateCombo	Creates a ComboBox control for the GUI.
GUICtrlCreateContextMenu	Creates a context menu for a control or entire GUI window.
GUICtrlCreateDate	Creates a date control for the GUI.
GUICtrlCreateDummy	Creates a Dummy control for the GUI.
GUICtrlCreateEdit	Creates an Edit control for the GUI.

GUICtrlCreateGraphic	Creates a Graphic control for the GUI.
GUICtrlCreateGroup	Creates a Group control for the GUI.
GUICtrlCreateIcon	Creates an Icon control for the GUI.
GUICtrlCreateInput	Creates an Input control for the GUI.
GUICtrlCreateLabel	Creates a static Label control for the GUI.
GUICtrlCreateList	Creates a List control for the GUI.
GUICtrlCreateListView	Creates a ListView control for the GUI.
GUICtrlCreateListViewItem	Creates a ListView item.
GUICtrlCreateMenu	Creates a Menu control for the GUI.
GUICtrlCreateMenuItem	Creates a MenuItem control for the GUI.
GUICtrlCreateMonthCal	Creates a month calendar control for the GUI.
GUICtrlCreateObj	Creates an ActiveX control in the GUI.
GUICtrlCreatePic	Creates a Picture control for the GUI.
GUICtrlCreateProgress	Creates a Progress control for the GUI.
GUICtrlCreateRadio	Creates a Radio button control for the GUI.
GUICtrlCreateSlider	Creates a Slider control for the GUI.
GUICtrlCreateTab	Creates a Tab control for the GUI.
GUICtrlCreateTabItem	Creates a TabItem control for the GUI.
GUICtrlCreateTreeView	Creates a TreeView control for the GUI.
GUICtrlCreateTreeViewItem	Creates a TreeViewItem control for the GUI.
GUICtrlCreateUpdown	Creates an UpDown control for the GUI.
GUICtrlDelete	Deletes a control.
GUICtrlGetHandle	Returns the handle for a control and some special (item) handles (Menu, ContextMenu, TreeViewItem).
GUICtrlGetState	Gets the current state of a control
GUICtrlRead	Read state or data of a control.
GUICtrlRecvMsg	Send a message to a control and retrieve information in lParam.
GUICtrlRegisterListViewSort	Register a user defined function for an internal listview sorting callback function.
GUICtrlSendMsg	Send a message to a control.
GUICtrlSendToDummy	Sends a message to a Dummy control.
GUICtrlSetBkColor	Sets the background color of a control.
GUICtrlSetColor	Sets the text color of a control.
GUICtrlSetCursor	Sets the mouse cursor icon for a particular control.
GUICtrlSetData	Modifies the data for a control.
GUICtrlSetDefBkColor	Sets the default background color of all the controls of the GUI window.
GUICtrlSetDefColor	Sets the default text color of all the controls of the GUI window.

GUICtrlSetFont	Sets the font for a control.
GUICtrlSetGraphic	Modifies the data for a control.
GUICtrlSetImage	Sets the bitmap or icon image to use for a control.
GUICtrlSetLimit	Limits the number of characters/pixels for a control.
GUICtrlSetOnEvent	Defines a user-defined function to be called when a control is clicked.
GUICtrlSetPos	Changes the position of a control within the GUI window.
GUICtrlSetResizing	Defines the resizing method used by a control.
GUICtrlSetState	Changes the state of a control.
GUICtrlSetStyle	Changes the style of a control.
GUICtrlSetTip	Sets the tip text associated with a control.
GUIDelete	Deletes a GUI window and all controls that it contains.
GUIGetCursorInfo	Gets the mouse cursor position relative to GUI window.
GUIGetMsg	Polls the GUI to see if any events have occurred.
GUIGetStyle	Retrieves the styles of a GUI window.
GUIRegisterMsg	Register a user defined function for a known Windows Message ID (WM_MSG).
GUISetAccelerators	Sets the accelerator table to be used in a GUI window.
GUISetBkColor	Sets the background color of the GUI window.
GUISetCoord	Sets absolute coordinates for the next control.
GUISetCursor	Sets the mouse cursor icon for a GUI window.
GUISetFont	Sets the default font for a GUI window.
GUISetHelp	Sets an executable file that will be run when F1 is pressed.
GUISetIcon	Sets the icon used in a GUI window.
GUISetOnEvent	Defines a user function to be called when a system button is clicked.
GUISetState	Changes the state of a GUI window.
GUISetStyle	Changes the styles of a GUI window.
GUIStartGroup	Defines that any subsequent controls that are created will be "grouped" together.
GUISwitch	Switches the current window used for GUI functions.
Hex	Returns a string representation of an integer or of a binary type converted to hexadecimal.
HotKeySet	Sets a hotkey that calls a user function.
HttpSetProxy	Sets the internet proxy to use for http access.
HttpSetUserAgent	Sets the user-agent string sent with InetGet() and InetRead() requests.
HWnd	Converts an expression into an HWND handle.
InetClose	Closes a handle returned from InetGet().
InetGet	Downloads a file from the internet using the HTTP, HTTPS or FTP protocol.
InetGetInfo	Returns detailed data for a handle returned from InetGet().

InetGetSize	Returns the size (in bytes) of a file located on the internet.
InetRead	Downloads a file from the internet using the HTTP, HTTPS or FTP protocol.
IniDelete	Deletes a value from a standard format .ini file.
IniRead	Reads a value from a standard format .ini file.
IniReadSection	Reads all key/value pairs from a section in a standard format .ini file.
IniReadSectionNames	Reads all sections in a standard format .ini file.
IniRenameSection	Renames a section in a standard format .ini file.
IniWrite	Writes a value to a standard format .ini file.
IniWriteSection	Writes a section to a standard format .ini file.
InputBox	Displays an input box to ask the user to enter a string.
Int	Returns the integer (whole number) representation of an expression.
IsAdmin	Checks if the current user has full administrator privileges.
IsArray	Checks if a variable is an array type.
IsBinary	Checks if a variable or expression is a binary type.
IsBool	Checks if a variable's base type is boolean.
IsDeclared	Check if a variable has been declared.
IsDllStruct	Checks if a variable is a DllStruct type.
IsFloat	Checks if a variable or expression is a float-type.
IsHWnd	Checks if a variable's base type is a pointer and window handle.
IsInt	Checks if a variable or expression is an integer type.
IsKeyword	Checks if a variable is a keyword (for example, Default).
IsNumber	Checks if a variable's base type is numeric.
IsObj	Checks if a variable or expression is an object type.
IsPtr	Checks if a variable's base type is a pointer.
IsString	Checks if a variable is a string type.
Log	Calculates the natural logarithm of a number.
MemGetStats	Retrieves memory related information.
Mod	Performs the modulus operation.
MouseClick	Perform a mouse click operation.
MouseClickDrag	Perform a mouse click and drag operation.
MouseDown	Perform a mouse down event at the current mouse position.
MouseGetCursor	Returns the cursor ID Number for the current Mouse Cursor.
MouseGetPos	Retrieves the current position of the mouse cursor.
MouseMove	Moves the mouse pointer.
MouseUp	Perform a mouse up event at the current mouse position.
MouseWheel	Moves the mouse wheel up or down. NT/2000/XP ONLY.

MsgBox	Displays a simple message box with optional timeout.
Number	Returns the numeric representation of an expression.
ObjCreate	Creates a reference to a COM object from the given classname.
ObjCreateInterface	Creates a reference to an object from the given classname/object pointer, interface identifier and description string.
ObjEvent	Handles incoming events from the given Object.
ObjGet	Retrieves a reference to a COM object from an existing process or filename.
ObjName	Returns the name or interface description of an Object
OnAutoItExitRegister	Registers a function to be called when AutoIt exits.
OnAutoItExitUnRegister	UnRegisters a function that was called when AutoIt exits.
Ping	Pings a host and returns the roundtrip-time.
PixelChecksum	Generates a checksum for a region of pixels.
PixelGetColor	Returns a pixel color according to x,y pixel coordinates.
PixelSearch	Searches a rectangle of pixels for the pixel color provided.
PluginClose	Close a plugin file
PluginOpen	Open a plugin file.
ProcessClose	Terminates a named process.
ProcessExists	Checks to see if a specified process exists.
ProcessGetStats	Returns an array about Memory or IO infos of a running process.
ProcessList	Returns an array listing the currently running processes (names and PIDs).
ProcessSetPriority	Changes the priority of a process
ProcessWait	Pauses script execution until a given process exists.
ProcessWaitClose	Pauses script execution until a given process does not exist.
ProgressOff	Turns Progress window off.
ProgressOn	Creates a customizable progress bar window.
ProgressSet	Sets the position and/or text of a previously created Progress bar window.
Ptr	Converts an expression into a pointer variant.
Random	Generates a pseudo-random float-type number.
RegDelete	Deletes a key or value from the registry.
RegEnumKey	Reads the name of a subkey according to its instance.
RegEnumVal	Reads the name of a value according to its instance.
RegRead	Reads a value from the registry.
RegWrite	Creates a key or value in the registry.
Round	Returns a number rounded to a specified number of decimal places.
Run	Runs an external program.
RunAs	Runs an external program under the context of a different user.

RunAsWait	Runs an external program under the context of a different user and pauses script execution until the program finishes.
RunWait	Runs an external program and pauses script execution until the program finishes.
Send	Sends simulated keystrokes to the active window.
SendKeepActive	Attempts to keep a specified window active during Send().
SetError	Manually set the value of the @error macro.
SetExtended	Manually set the value of the @extended macro.
ShellExecute	Runs an external program using the ShellExecute API.
ShellExecuteWait	Runs an external program using the ShellExecute API and pauses script execution until it finishes.
Shutdown	Shuts down the system.
Sin	Calculates the sine of a number.
Sleep	Pause script execution.
SoundPlay	Play a sound file.
SoundSetWaveVolume	Sets the system wave volume by percent.
SplashImageOn	Creates a customizable image popup window.
SplashOff	Turns SplashText or SplashImage off.
SplashTextOn	Creates a customizable text popup window.
Sqrt	Calculates the square-root of a number.
SRandom	Set Seed for random number generation.
StatusbarGetText	Retrieves the text from a standard status bar control.
StderrRead	Reads from the STDERR stream of a previously run child process.
StdinWrite	Writes a number of characters to the STDIN stream of a previously run child process.
StdioClose	Closes all resources associated with a process previously run with STDIO redirection.
StdoutRead	Reads from the STDOUT stream of a previously run child process.
String	Returns the string representation of an expression.
StringAddCR	Takes a string and prefixes all linefeed characters (Chr(10)) with a carriage return character (Chr(13)).
StringCompare	Compares two strings with options.
StringFormat	Returns a formatted string (similar to the C sprintf() function).
StringFromASCIIArray	Converts an array of ASCII codes to a string.
StringInStr	Checks if a string contains a given substring.
StringIsAlNum	Checks if a string contains only alphanumeric characters.
StringIsAlpha	Checks if a string contains only alphabetic characters.
StringIsASCII	Checks if a string contains only ASCII characters in the range 0x00 - 0x7f (0 - 127).
StringIsDigit	Checks if a string contains only digit (0-9) characters.
StringIsFloat	Checks if a string is a floating point number.

StringIsInt	Checks if a string is an integer.
StringIsLower	Checks if a string contains only lowercase characters.
StringIsSpace	Checks if a string contains only whitespace characters.
StringIsUpper	Checks if a string contains only uppercase characters.
StringIsXDigit	Checks if a string contains only hexadecimal digit (0-9, A-F) characters.
StringLeft	Returns a number of characters from the left-hand side of a string.
StringLen	Returns the number of characters in a string.
StringLower	Converts a string to lowercase.
StringMid	Extracts a number of characters from a string.
StringRegExp	Check if a string fits a given regular expression pattern.
StringRegExpReplace	Replace text in a string based on regular expressions.
StringReplace	Replaces substrings in a string.
StringRight	Returns a number of characters from the right-hand side of a string.
StringSplit	Splits up a string into substrings depending on the given delimiters.
StringStripCR	Removes all carriage return values (Chr(13)) from a string.
StringStripWS	Strips the white space in a string.
StringToASCIIArray	Converts a string to an array containing the ASCII code of each character.
StringToBinary	Converts a string into binary data.
StringTrimLeft	Trims a number of characters from the left hand side of a string.
StringTrimRight	Trims a number of characters from the right hand side of a string.
StringUpper	Converts a string to uppercase.
Tan	Calculates the tangent of a number.
TCPAccept	Permits an incoming connection attempt on a socket.
TCPCloseSocket	Closes a TCP socket.
TCPConnect	Create a socket connected to an existing server.
TCPListen	Creates a socket listening for an incoming connection.
TCPNameToIP	Converts an Internet name to IP address.
TCPRecv	Receives data from a connected socket.
TCPSend	Sends data on a connected socket.
TCPShutdown, UDPShutdown	Stops TCP/UDP services.
TCPStartup, UDPStartup	Starts TCP or UDP services.
TimerDiff	Returns the difference in time from a previous call to TimerInit().
TimerInit	Returns a handle that can be passed to TimerDiff() to calculate the difference in milliseconds.
ToolTip	Creates a tooltip anywhere on the screen.

TrayCreateItem	Creates a menuitem control for the tray.
TrayCreateMenu	Creates a menu control for the tray menu.
TrayGetMsg	Polls the tray to see if any events have occurred.
TrayItemDelete	Deletes a menu/item control from the tray menu.
TrayItemGetHandle	Returns the handle for a tray menu(item).
TrayItemGetState	Gets the current state of a control.
TrayItemGetText	Gets the itemtext of a tray menu/item control.
TrayItemSetOnEvent	Defines a user-defined function to be called when a tray item is clicked.
TrayItemSetState	Sets the state of a tray menu/item control.
TrayItemSetText	Sets the itemtext of a tray menu/item control.
TraySetClick	Sets the clickmode of the tray icon - what mouseclicks will display the tray menu.
TraySetIcon	Loads/Sets a specified tray icon.
TraySetOnEvent	Defines a user function to be called when a special tray action happens.
TraySetPauseIcon	Loads/Sets a specified tray pause icon.
TraySetState	Sets the state of the tray icon.
TraySetToolTip	(Re)Sets the tooltip text for the tray icon.
TrayTip	Displays a balloon tip from the AutoIt Icon.
UBound	Returns the size of array dimensions.
UDPBind	Create a socket bound to an incoming connection.
UDPCloseSocket	Close a UDP socket.
UDPOpen	Open a socket connected to an existing server .
UDPRecv	Receives data from an opened socket
UDPSend	Sends data on an opened socket
VarGetType	Returns the internal type representation of a variant.
WinActivate	Activates (gives focus to) a window.
WinActive	Checks to see if a specified window exists and is currently active.
WinClose	Closes a window.
WinExists	Checks to see if a specified window exists.
WinFlash	Flashes a window in the taskbar.
WinGetCaretPos	Returns the coordinates of the caret in the foreground window
WinGetClassList	Retrieves the classes from a window.
WinGetClientSize	Retrieves the size of a given window's client area.
WinGetHandle	Retrieves the internal handle of a window.
WinGetPos	Retrieves the position and size of a given window.
WinGetProcess	Retrieves the Process ID (PID) associated with a window.
WinGetState	Retrieves the state of a given window.

WinGetText	Retrieves the text from a window.
WinGetTitle	Retrieves the full title from a window.
WinKill	Forces a window to close.
WinList	Retrieves a list of windows.
WinMenuSelectItem	Invokes a menu item of a window.
WinMinimizeAll	Minimizes all windows.
WinMinimizeAllUndo	Undoes a previous WinMinimizeAll function.
WinMove	Moves and/or resizes a window.
WinSetOnTop	Change a window's "Always On Top" attribute.
WinSetState	Shows, hides, minimizes, maximizes, or restores a window.
WinSetTitle	Changes the title of a window.
WinSetTrans	Sets the transparency of a window. (Windows 2000/XP or later)
WinWait	Pauses execution of the script until the requested window exists.
WinWaitActive	Pauses execution of the script until the requested window is active.
WinWaitClose	Pauses execution of the script until the requested window does not exist.
WinWaitNotActive	Pauses execution of the script until the requested window is not active.

Declaring Variables

Every variable must contain a unique name and the name must start with the **$** character and must only contain letters, numbers and the _ character. To declare a variable you can do so using **Dim**, **Local**, **Global** and **Const** keywords (*see example 3c)*. You can create a variable by assigning a value (`$_PI = 3.14159`); however, if `AutoItSetOption("MustDeclareVars", 1)` is active in the code your variables must be declared prior to use. As a rule of thumb, think of your code running top down for example declare the variable before you use it in all cases and it will help you in the long run. The **Enum** keyword is another variable that can declare and initialize constants.

Scope

A variable's scope is controlled by when and how you declare the variable. If you declare a variable at the start of your script and outside any functions it exists in the **Global** scope and can be read or changed from anywhere in the script.

If you declare a variable *inside* a function it is in **Local** scope and can only be used *within that same function*. Variables created inside functions are automatically destroyed when the function ends.

By default when variables are declared using **Dim** or assigned in a function they have **Local** scope **unless** there is a global variable of the same name (in which case the global variable is reused). This can be altered by using the Local and Global keywords to declare variables and **force** the scope you want.

Example 3-D

```
; Declaring Variables
Dim $var1
Dim $var_example2

; Declaring multiple variables at once
Dim $var1, $var_example2

; Declaring Local and Global variables
Local $MonthlyReportSchedule
Local $x, $y = 23, $z
Global $_PI = 3.14159, $RADIUS, $E = 2.71828
Local $_AccountsReceivable = 5

; Declaring constant variables
Const $x1 = 11, $y1 = 23, $z1 = 55
Global Const $PI = 3.14159, $E = 2.71828
Local Const $daysWorking = 5

; Must declare variables
Opt('MustDeclareVars', 1)

; Declaring constants using Enum
Enum $const1 = 1, $const2, $const3    ; 1, 2, 3
Enum STEP 2 $incr0, $incr2, $incr4    ; 0, 2, 4
Enum STEP *2 $mult1,$mult2, $mult4   ; 1, 2, 4
```

If you declare a variable with the same name as a parameter, using Local inside a user function, an error will occur. Global can be used to assign to global variables inside a function, but if a local variable (or parameter) has the same name as a global variable, the local variable will be the only one used. It is recommended that local and global variables have distinct names.

Arrays

An **Array** is a variable containing series of data elements of the same type and size. Each element in this variable can be accessed by an index number. Each array begins with the index of zero and then counts up from there (`[0]`, `[1]`, `[2]`, `[3]`, etc). To access a specific value in an Array, you only have to know the index number *(see Example 3-E, Part 3)*. Arrays can also be multi-dimensional, when you use multiple series of index numbers. You can use up to 64 dimensions in an Array. The total number of entries cannot exceed 2^24 (16,777,216). Before you can start using Arrays in your script, you must define their bounds using the **Dim** keyword.

Example 3-E

```
; Part 1 - Declaring arrays
Dim $weeklyWorkSchedule[$_daysWorking]
Global $chessBoard[8][8]
Local $mouseCoordinates[2], $windowStats[4]

; Part 2 - Setting up a series of characters for "T", "E", "S", "T" and the number 5
$Array[0]="T"
```

```
$Array[1]="E"
$Array[2]="S"
$Array[3]="T"
$Array[4]="5"

; Part 3 - Using the Array above, assign the letter "S" to $MyChar
$MyChar=$Array[2]

; Part 4 - Example of multi-dimensional array
$Array[0][0]="North-West"
$Array[1][0]="South-West"
$Array[0][1]="North-East"
$Array[1][1]="South-East"
```

Tip

An array which utilizes different datatypes is called a variant array. Currently, AutoIt will not catch it if you create a variant array but it is not advisable. This becomes especially prevalent when arrays are tiered as it will affect the speed of your code.

Usually, an Array contains only **one** datatype of the same type. But technically speaking, a **Variant** in AutoIt can contain anything from a number to a **Boolean** value. So an AutoIt-Array could also contain different types, even other Arrays:

Example 3-F

```
$Array[0] = 1
$Array[1] = true
$Array[2] = "Text"
$Array[3] = $NextArray
```

AutoIt does allow for an array to be copied. For example, `$array1 = $array2` would allow `$array1` to possess the same dimensions as `$array2` without having to declare a **Dim** previously.

Note

As mentioned previously in declaring variables, if ***AutoItSetOption***("MustDeclareVars", 1) is previously instantiated then the variable, or $array1 in this case, must be declared first; however, it does not require sizing. If the variable was already assigned a value it would be erase before transferring values.

Because AutoIt works top to bottom *(outside in see **Example 3-G**)*, sometimes it is necessary to reset a variable *(or array)* as your code runs. In order to clear a stored value assigned to a variable you can assign a single value to it such as `$array1 = 0`. This enables the variable to be set to a single value of 0. To erase all values of an array and reset the dimensions simply declare the variable name again. However, if you declare the same variable within the same scope it will not change the value.

Example 3-G

Outside

In

Top

Bottom

```
; Declaring Global presides over the whole program
Global $Top_Declaration = 1
        ; Think of a Const as unchangeable
        Const $Const_Throughout = 1
                ; To be used during a portion of code
                Local $Only_Working_Locally
                        ; Instantiating variable
                        Dim $Variable_1 = 12
                                ; Re-instantiating which would
                                ; clear the previous value and
                                ; assign the new value
                                Dim $Variable_1 = 6
```

Operators

A number is a measurement of distance and programs often have varying distances to quantify. Autoit uses **operators** which allow us to calculate these shifting vectors. The following chart displays the different operators available.

Assignment operators

Operator	Description	Example	Explanation
=	Assignment	`$Var = 6`	Assigns **6** to `$Var`
+=	Addition assignment	`$Var += 1`	Adds **1** to `$Var`
-=	Subtraction assignment	`$Var += 1`	Removes **1** from `$Var`
*=	Multiplication assignment	`$Var *= 1`	Multiplies **1** with `$Var`
/=	Division assignment	`$Var /= 5`	Divides `$Var` by **5**
&=	Concatenation assignment	`$Var = "B"` `$Var&=4`	`$Var` equals `B4`

Mathematical operators

Operator	Description	Example	Explanation
+	Adds two numbers	a + b	a + b = c
-	Subtracts two numbers	c – b	c – b = a
*	Multiplies two numbers	a * b	a * b = c
/	Divides two numbers	c / b	c / b = a
&	Concatenates / joins two strings	`"test "&"one"`	Equals `test one`
^	Power	`2^4 = 16`	Raises a number to the power
=	Value test	`If $var = 5 Then`	Tests two values and returns true if `$var` equals **5**

==	Equality test	`If “test”==“test” Then`	Tests two strings and returns true if string1 equals string2
<>	Inverse equality test	`If “test”<>“test” Then`	Tests if two values are not equal and returns true if string1 does not equals string2
>	Greater than test	`If $var > $var Then`	Tests if value1 is greater than value2. Lexicographic comparison regardless of whether contents of the string are numeric
>=	Greater than or equal to test	`If $var >= $var Then`	Tests if value1 is greater than or equal to value2. Lexicographic comparison regardless of whether contents of the string are numeric
<	Less than test	`If $var < $var Then`	Tests if value1 is less than value2. Lexicographic comparison regardless of whether contents of the string are numeric
<=	Less than or equal to test	`If $var <= $var Then`	Tests if value1 is less than or equal to value2. Lexicographic comparison regardless of whether contents of the string are numeric
Logical operators			
Operator	**Description**	**Example**	**Explanation**
AND	Logical AND operation	`If $var = 5 AND $var2 > 6 Then`	True if `$var` equals `5` and `$var2` is greater than `6`
OR	Logical OR operation	`If $var = 5 Or $var2 > 6 Then`	True if `$var` equals `5` or `$var2` is greater than `6`
NOT	Logical NOT operation	`If NOT @error Then`	Returns a false. The purpose is to test if condition is true or false.

Tip

The **comparison operators** are case insensitive unless you are using the double equals signs “==”. Regardless of format, both sides are converted to strings and then the comparison is conducted. To check if strings are ***not*** equal use:

```
Not("string1" == "string2")
```

AutoIt uses **operator precedence** to determine which operator comes first. When two operators of the same precedence are used the expression is evaluated from left to right. The order in which these operators are prioritized from highest to lowest are as follows:

1. NOT
2. ^
3. * /

4. + -
5. &
6. < > <= >= = <> ==
7. AND OR

Example 3-H

```
Consider:
                                    8 + 2 * 10 = 28
* has a higher precedence than + the following would be how AutoIt would solve the
above equation:
                                    8 + 2 * 10 = 20
                                    8 + 20     = 28
However, use of brackets allows sections to be solved first. For instance:
                                   (8 + 2) * 10 = 10
                                   10      * 10 = 100
```

Datatypes

AutoIt has only one datatype and it's called a **variant**. This variant works like a chameleon character because it changes based on the context. If you are using the ampersand to concatenate variants then they will be treated as strings; however, if you are dividing two numbers then they will be treated as numbers.

Example 3-I

```
Combining numbers:
      A.) 10 + 10 = The number 20
      B.) 10 + "10" = The number 20
      C.) "10" + "10" = The number 20

Combining strings:
      D.) 10 & 10 = The string 1010

Combining strings:
      E.) 10 * "asdf" = The number 0
      If a string is being used as a number it calls to the number() function. Also, the
      variant cannot contain a non-valid number or it will always equal 0

String as Boolean:
      F.)    NOT "" = The Boolean true
      If an empty string is used as a Boolean it will be equal to False
```

Datatypes – Numbers

Example	Explanation
`-1, 3.575, 2`	Numbers can be standard decimals.
`1.5e3 for 1500`	Scientific notation is acceptable as well.
`0x as in 0x409 or 0x4fff`	Hexadecimal notation can represent whole numbers. Only 32-bit numbers are valid.

Datatypes – Strings

Example	Explanation
"string"	Enclosing the text in double-quotes is acceptable format
"He said, ""yes"" to that."	For a string to contain a double-quote you must surround it with two double-quotes
'He said, ''yes'' to that.'	For a string to contain a single-quote you must surround it with two single-quotes
'Double "inside" of it.'	Enclosing the whole string with single-quotes while using the double-quotes inside looks like this **Double 'inside' of it.**

Datatypes – Booleans

Computers operate using Boolean logic *(also called binary logic)* because its values can only be **true** or **false** (1 or 0). If any value in an expression has a false value then the result will be false.

Value A	Value B	Result
True	True	True
True	False	False
False	True	False
False	False	False

Using logical operators is a wonderful way to apply binary logic and also a good way to assess a condition. For instance, testing to see if a user has administrative privileges or whether a certain file has been installed prior to running a section of code.

DID YOU KNOW?

George Boole (1815 – 1864) was an English mathematician and was the author of The Laws of Thought. He focused in the fields of differential equations and algebraic logic and is popularly known as the inventor of Boolean logic. It was this logic that became the basis for the modern digital computer.

Datatypes – Binary

The binary type can have any byte value assigned to it. Binary values are converted as hexadecimal notation when stored in a string variable; for instance, 'xyz' would be stored as '0x78797a'.

Datatypes – Pointer

The pointer value types store the physical memory address. These values will be 32bits or 64bits depending on which version of AutoIt is installed. When stored as a string pointer values are stored in hexadecimal format.

Datatypes – Datatypes and Ranges

The following table shows the internal variant datatypes and their ranges.

Data Sub-type	Range and Notes
Int32	A 32bit signed integer number.
Int64	A 64bit signed integer number
Double	A double-precision floating point number.
String	Can contain strings of up to 2147483647 characters.
Binary	Binary data, can contain up to 2147483647 bytes.
Pointer	A memory address pointer. 32bit or 64bit depending on the version of AutoIt used.

Datatypes – Numbers

Numbers can be standard decimal numbers like **2**, **4.566**, and **-7**.
Scientific notation is also supported; therefore, you could write **1.5e3** instead of **1500**.
Integers (whole numbers) can also be represented in hexadecimal notation by preceding the integer with **0x** as in **0x409** or **0x4fff** (when using hex notation only 32-bit numbers are valid).

Example 3-H

```
Local $w = Number(1 + 2 + 10) ;returns 13
Local $x = Number("3.14") ;returns 3.14
Local $y = Number("24/7") ;returns 24
Local $z = Number("tmp3") ;returns 0
```

Regular Expressions

RegexBuddy

AutoIt does support regular expressions and sometimes using regular expressions can be a bit challenging. For this reason I recommend a helpful program called RegexBuddy. RegexBuddy allows you to type your code into a textbox and it tests each portion of your code and provides plain English explains. This is an invaluable tool for every administrator who plans to parse any bit of code. A copy of the Regex program can be obtained from regexbuddy.com for a nominal fee.

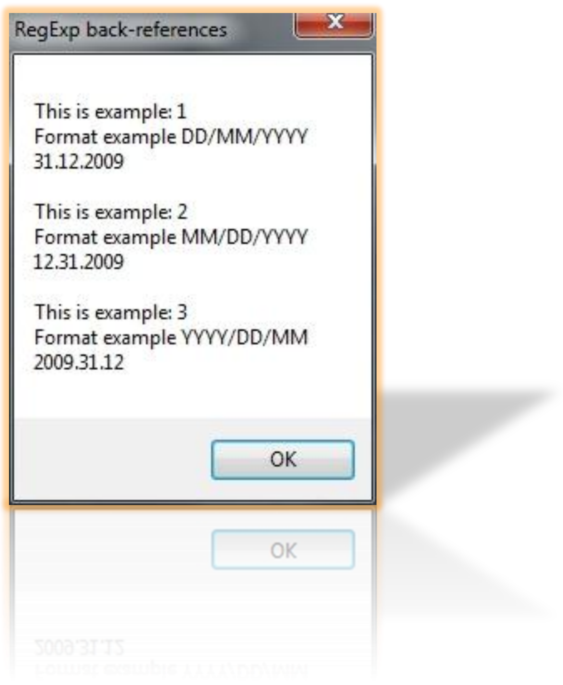
To check if a string fits a given regular expression pattern use StringRegExp()

Example 3-I

```
StringRegExp ( "test", "pattern" [, flag [, offset]] )
```

The **test** parameter is the string, **pattern** is the regular expression to compare, **flag** *(optional)* is a number used to indicate how the function behaves *(default is 0)* and

offset *(optional)* is the string position to start the match *(default is 1)*. Below is a GUI that displays dates in different formats and then I will show you how you can do this yourself.



```
This is example: 1
Format example DD/MM/YYYY
31.12.2009

This is example: 2
Format example MM/DD/YYYY
12.31.2009

This is example: 3
Format example YYYY/DD/MM
2009.31.12
```

Example 3-K

```
;Option 1, using offset
Local $nOffset = 1

; change date format from mm/dd/yyyy to dd.mm.yyyy
$out = StringRegExpReplace('12/31/2009', '(\d{2})/(\d{2})/(\d{4})', '$2.$1.$3')
$out1 = StringRegExpReplace('12/31/2009', '(\d{2})/(\d{2})/(\d{4})', '$1.$2.$3')
$out2 = StringRegExpReplace('12/31/2009', '(\d{2})/(\d{2})/(\d{4})', '$3.$2.$1')
MsgBox(0, "RegExp Date Example", _
"This is example: 1" & @CRLF & _
"Format example DD/MM/YYYY" & @CRLF & _
$out & @CRLF & @CRLF & _
"This is example: 2" & @CRLF & _
"Format example MM/DD/YYYY" & @CRLF & _
$out1 & @CRLF & @CRLF & _
"This is example: 3" & @CRLF & _
"Format example YYYY/DD/MM" & @CRLF & _
$out2)
```

Section 4 – Automating Tasks

Introduction

Everyone’s jobs are easier when we can create things to do our work for us faster. This section will help you to create a few fun applications to do just that.

Example 1 – INSTALLING A PROGRAM WITHOUT ADMIN PRIVLEDGES

Example 4-A

```
$PROGRAMNAME = "Admin Client"
FileInstall(".\program.msi", @TempDir & "\program.msi", 1)
If IsAdmin() Then
	$ADMINPRIVILEGES = True
Else
	$ADMINPRIVILEGES = False
EndIf
If $ADMINPRIVILEGES Then
	$RETURNVALUE = MsgBox(33, "Company Installer", "Installing " _
& $PROGRAMNAME & " as Administrator." & @LF & "Are You Sure?" _
& @LF & "Click 'OK' to continue or 'Cancel' to exit.")
	If $RETURNVALUE = 2 Then
		Exit
	EndIf
Else
	GUICreate("Company Computer Type", 470, 100)
	Opt("GUICoordMode", 2)
	GUICtrlCreateLabel("What type of computer is this?", 10, 30)
	$BUTTON1 = GUICtrlCreateButton("Laptop", -1, 20, 150)
	$BUTTON2 = GUICtrlCreateButton("Company PC or Laptop", 0, -1)
	$BUTTON3 = GUICtrlCreateButton("Mobile PC or Laptop", 0, -1)
	GUISetState()
	While 1
		$GUIGETMSG = GUIGetMsg()
		Select
			Case $GUIGETMSG = $BUTTON1
				$TYPE = "Laptop"
				$ADMINPW = "AdminPWhere"
				ExitLoop
			Case $GUIGETMSG = $BUTTON2
				$TYPE = "StandardPC"
				$ADMINPW = "AdminPWhere_2"
				ExitLoop
				ExitLoop
			Case $GUIGETMSG = $BUTTON3
				$TYPE = "MobilePC"
				$ADMINPW = "AdminPWhere_3"
				ExitLoop
		EndSelect
	WEnd
	If $TYPE = "StandardPC" Then
		$INSTALLINGAS = " will be Installed on this Company PC or Laptop."
	Else
		If $TYPE = "AcTICPC" Then
			$INSTALLINGAS = " will be Installed on this Mobile PC or Laptop."
		Else
			$INSTALLINGAS = " will be Installed on this Company Laptop."
		EndIf
	EndIf
	$RETURNVALUE = MsgBox(33, "Company Installer", $PROGRAMNAME _
& $INSTALLINGAS & @LF & "Are You Sure?" & @LF & _
"Click OK to continue or Cancel to exit.")
	If $RETURNVALUE = 2 Then
		Exit
	EndIf
EndIf
SplashTextOn("Company Installer", "Installing " & $PROGRAMNAME, 300, 50, 10, 10, 16)
If $ADMINPRIVILEGES Then
	$RC = Run(@ComSpec & " /c Start %temp%\program.msi")
Else
	$RC = RunAs("administrator", @ComputerName, $ADMINPW, 4, @ComSpec _
& " /c Start %temp%\program.msi")
EndIf
Sleep(3000)
BlockInput(1)
WinWaitActive("Admin Presentation Server Client Setup", _
"Welcome to Admin Presentation Server ")
Sleep(3000)
ControlClick("Admin Presentation Server Client Setup", "", "[ID:337]")
WinWaitActive("Admin Presentation Server Client Setup", _
"Click Finish to exit Setup.")
ControlClick("Admin Presentation Server Client Setup", "", _
"[ID:315]")
Sleep(3000)
BlockInput(0)
FileDelete(@TempDir & "\program.msi")
```

Section 5 – GUI Reference

Introduction

AutoIt has the ability to create simple Graphical User Interfaces (GUIs) that consist of windows and controls.
We will cover:

- GUI Concepts
- GUI Controls
- GUI Basic Functions
- GUI Event Modes
- Message-loop Mode (default)
- OnEvent Mode

GUI Concepts

A GUI consists of one or more windows and each window contains one or more controls. GUIs are "event driven" which means you react to events - like a button that is clicked. You spend most of your time idling and waiting for an event to happen - this is a little different to a normal script where you are in control of what happens and when! Think of it as waiting by the door for the postman - you sit there until a letter pops through the postbox and then you look at the letters and decide what to do with them - this is exactly how GUIs work - you wait for the postman to come to you.
Of course, you may choose to do other tasks while the GUI is active - for example you might use the GUI functions to create an elaborate progress box that you update while your script performs complex actions.

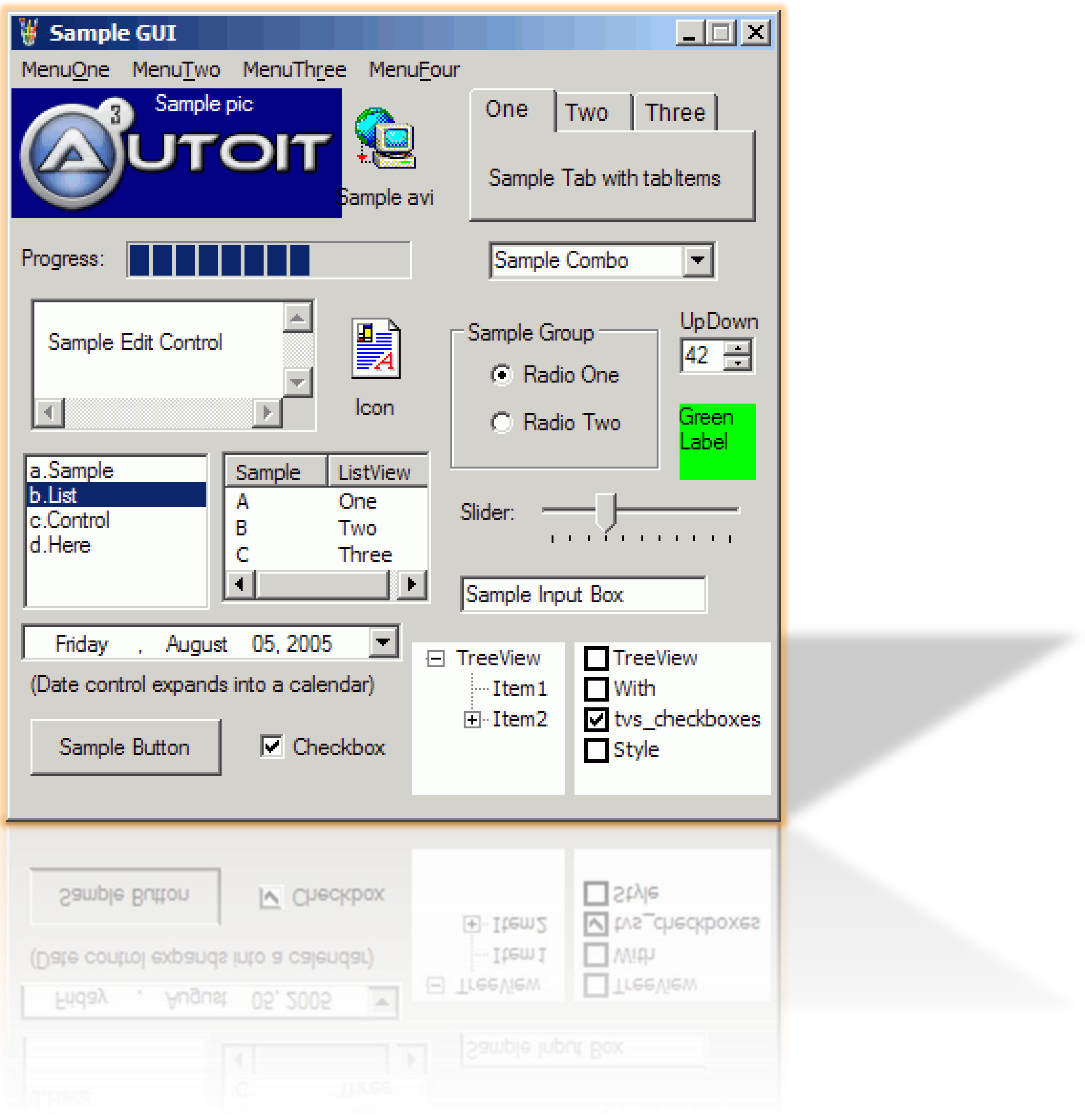
GUI Controls

All users will be familiar with controls - anything you click on or interact with in a window is a type of control. The types of controls that can be created with AutoIt are listed below - you will have used most of them in other Windows programs.

• Label	A plain piece of text.
• Button	A simple button.
• Input	A single line control that you can enter text into.
• Edit	A multi-line control that you can enter text into.
• Checkbox	A box that can be "checked" or "unchecked".
• Radio	A set of circular buttons - only one can be active at once.
• Combo	A list with a dropdown box.
• List	A list.
• Date	A date picker.
• Pic	A picture.
• Icon	An icon.
• Progress	A progress bar.
• Tab	A group of controls that are contained in tabs.
• UpDown	A control that can be added to input controls.
• Avi	Display an AVI format clip.
• Menu	A menu across the top of the window.
• ContextMenu	A menu that appears when you right click inside the window.
• TreeView	A control similar to the windows file-explorer.
• Slider	A control similar to the windows sound volume control.
• ListView	A control displaying columns information.

• ListViewItem	A control displaying item in a listview control.
• Graphic	A control displaying graphics drawn with GUICtrlSetGraphic.
• Dummy	A dummy user control.

Here is an example of a single window GUI that contains many of the controls available. As you can see it is possible to create very detailed GUIs!



Controls are created with the GUICtrlCreate... set of functions. When a control is created a **Control ID** is returned. The most important things to note about a control ID is that:

- The control ID is a positive number (that is, a number greater than 0)
- Each control ID is unique - even when there are multiple windows
- The control ID is actually the same value as the Control ID that the AutoIt Window Info Tool shows.

GUI Basic Functions

These are the main functions that you will need to create a GUI. They are just the basics though, there are many more when you are ready to create some really advanced GUIs.

Function	Explanation
GUICreate	Create a window.
GUICtrlCreate...	Create various controls in a window.
GUISetState	Display or hide the window.
GUIGetMsg	Poll the GUI to see if an event has happened (MessageLoop mode only)
GUICtrlRead	Read the data in a control.
GUICtrlSetData	Set/change the data in a control.
GUICtrlUpdate...	Change various options for a control (color, style, etc.)

You will need to #include <GUIConstantsEx.au3> for basic GUI related constants. There are other filescontaining constants related to the various controls you can create on the GUI.

First let's create a window, call it "Hello World" and make it 200 by 100 pixels in size. When a new window is created it is hidden - so we must "show" it.

Example 5-A

```
#include <GUIConstantsEx.au3>

GUICreate("GUI Test", 250, 250)
GUISetState(@SW_SHOW)
Sleep(2000)
```

If your run the above script you will see a window open and close after 2 seconds. Not very interesting...let's add some text and an OK button. The text will be added at position 30, 10 and the button at 70, 50 and the button will be 60 pixels wide.

Example 5-B

```
#include <GUIConstantsEx.au3>

GUICreate("GUI Test", 200, 90)
GUICtrlCreateLabel("GUI Test Message", 25, 10)
GUICtrlCreateButton("OK", 70, 50, 60)
GUISetState(@SW_SHOW)
Sleep(2000)
```

That's pretty good, but how do we make the GUI react to us clicking the button? Well, this is where we must make a decision as to how we will process events - via a **MessageLoop** or via **OnEvent** functions.

GUI Event Modes

As mentioned above there are two basic GUI modes:**MessageLoop** mode and **OnEvent** mode. The modes are simply two different ways of reacting to GUI events. The mode you choose will depend on *personal preference*, and to some extent the type of GUI you wish to create. Both modes are equally capable of creating any GUI you wish but sometimes one mode is more suited to a task than the other.
The default mode is the MessageLoop mode. To switch to OnEvent mode use Opt("GUIOnEventMode", 1).

Message-loop Mode (default)

In the Message-loop mode your script will spend the majority of its time in a tight loop. This loop will simply poll the GUI using the GUIGetMsg function. When an event has occurred the return value of the GUIGetMsg function will show the details (a button is clicked, the GUI has been closed, etc.).
In this mode you will only receive events while you are actively polling the GUIGetMsg function so you must ensure that you call it many times a second otherwise your GUI will be unresponsive.
This mode is best for GUIs where the GUI is "king" and all you care about is waiting for user events.
See this page for a more detailed explanation of theMessageLoop mode.

OnEvent Mode

In the OnEvent mode instead of constantly polling the GUI to find out if anything has happened you make the GUI temporarily pause your script and call a pre-defined function to handle the event. For example, if the user clicks Button1 the GUI halts your main script and calls a previously defined user function that deals with Button1. When the function call is completed the main script is resumed. This mode is similar to the Visual Basic forms method.

This mode is best for GUIs where the GUI is of secondary importance and your script has other tasks to perform in addition to looking after the GUI.
See this page for a more detailed explanation of theOnEvent mode.

Section 6 – Koda Form Designer

Section Objective

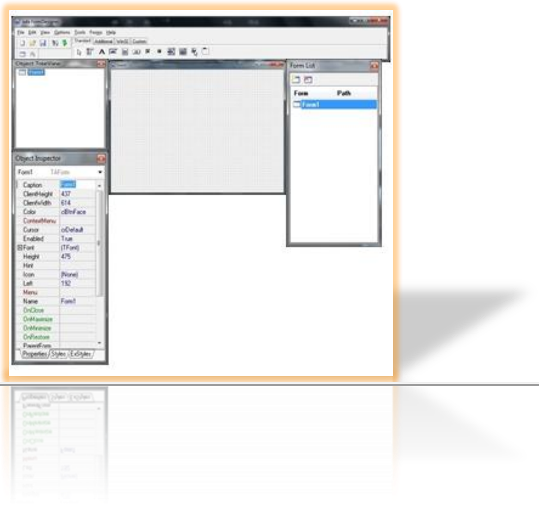
In this section we will cover:

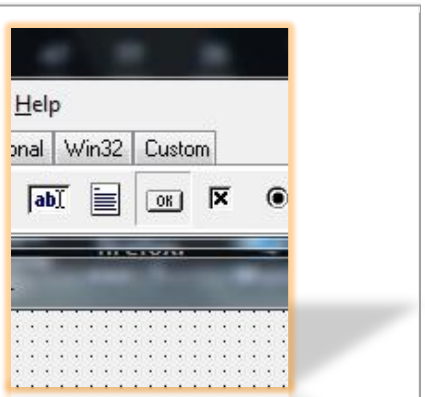
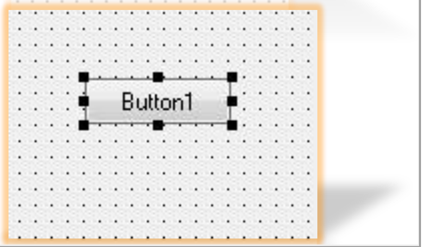
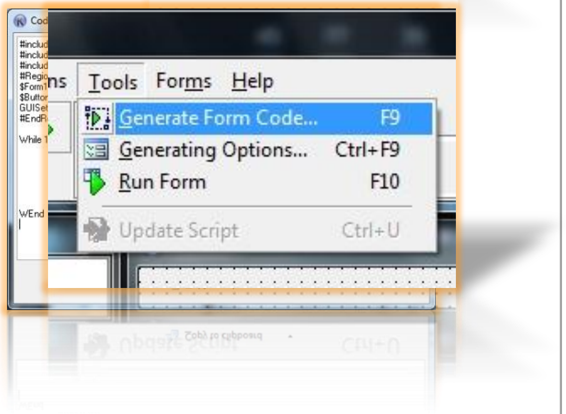
- How to get Koda Form Designer
- Creating a Form
- Adding features to the form
- Generating the code
- Why use Koda?

How to get Koda Form Designer

There are a couple options available to you in creating a graphical user interface (or GUI pronounced "gooey"). Using the editor you can hammer out your code manually but if you wanted to think smarter not harder a better way would be to use Koda Form Designer (often just referred to as "Koda") to assist in your design process. To download Koda go to koda.darkhost Koda will save you time and effort in creating GUIs.

Example 6-A

Objective	How to
Creating a form	When you open Koda it generates a form automatically for you. 

Adding features to the form	Above the form is the menu bar with various options there for you to select. To add a button, for instance, you would simply click on the button option from the menu above.  Next, click on your form where you would like the button to appear once your program runs. 
Generating the code	On the top menu bar go to **Tools>Generate Form Code**. This will open a window which will contain the code for the form you've designed.  Tools Forms Help Generate Form Code... F9 Generating Options... Ctrl+F9 Run Form F10 Update Script Ctrl+U In this window you can manually select the code or you can click on the "Copy to clipboard" button below and then you can paste it into your SciTE Editor.

Why use Koda?

As you code things manually you have to run the script to confirm that your code is placing things on your form properly. Koda is a fast and simple way to generate code that would otherwise take up your time in scripting. After you use Koda a few times you realize just how much time it saves you. Finally, Koda is absolutely free to download and use.