AutoIt v3: Your Quick Guide

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AutoIt is becoming increasingly popular in the system administration field as a tool for automating administrative tasks. Although this is one of its more popular uses, you can use AutoIt to automate anything in a Windows environment. This powerful scripting language can run any program and manipulate keyboard and mouse input. With its RunAs support, administrators can perform unattended installations and configuration changes using embedded administrative privileges.

This guide teaches you the foundations of the AutoIt v3 language. You will learn about variables and includes, graphical user interfaces, user-defined functions, and conditional and loop statements. You will then apply what you have learned in examples related to the system administration field. The examples in this Short Cut can be used to create anything from a game modification to a logon script that verifies Windows updates.

Contents

Introduction and AutoIt History

AutoIt started in late 1998 as a C-compiled program used to automate keystrokes during software installations. In January 1999, the AutoIt team released AutoIt v1, which included the `Send`, `Run`, `RunWait`, `WinWait`, `WinWaitClose`, `WinWaitActive`, `WinHide`, `WinActivate`, `WinClose`, `WinRestore`, `Sleep` and `SetKeyDelay` functions. AutoIt v2 was released in August that same year and included the first version of AutoItX, which offered DLL/COM control. Over the next two years, massive updates to AutoIt v2 added many new functions to the language. In May 2001, the AutoIt source code was completely rewritten in C++ and development stalled until 2003, when the first beta version of AutoIt v3 was released. Over 100 beta versions later, the AutoIt developers released AutoIt v3 in February of 2004. February of 2005 marked the release of AutoIt v3.1.0, which added the capability of graphical user interface (GUI) creation. This version was the most notable release because it brought AutoIt to the forefront of the scripting world and made it a rival to Visual Basic Scripting, batch files, and other popular scripting languages. AutoIt is free to use and has a strong and helpful community base.

This Short Cut is a guide for AutoIt v3.2.4.9, released on May 25, 2007. Download the latest version of AutoIt here: ***http://www.autoitscript.com/autoit3/downloads.php***

I recommend using the SciTE AutoIt3 Editor for writing scripts. It has an extensive help file and color-codes everything nicely. You can download the latest SciTE AutoIt3 Editor here: ***http://www.autoitscript.com/autoit3/scite/downloads.php***

Variables and Includes

A variable is simply a named placeholder for a string or array of data. You can use a variable as many times as you need within a script and it only requires declaration once. This allows you to manage and manipulate data in a centralized location if desired.

Variables are a necessity if you want to write robust scripts that are fairly simple to modify. For example, defining a filename as a variable allows you to change the filename from a single location instead of changing many static entries. (Using static data entries can lead to problems.) **Example 1** installs two Windows XP Security updates. **Example 2** performs the same operations, but does so using variables. You may not yet understand everything displayed in the examples; they are only meant to show that replacing filenames with variables is one way to simplify your code.

Example 1. Windows Update Automation

```
If @Username <> "Administrator" Then
    RunAsSet("Administrator",@ComputerName,"password")
    install()
    RunAsSet()
Else
    install()
EndIf

Func install()
    RunWait("Windows Update 1.exe /passive /norestart")
    RunWait("Windows Update 2.exe /passive /norestart")
EndFunc
```

Example 2. Windows Update Automation Using Variables

```
Global $admin, $password, $program, $program2

$admin = "Administrator"
$password = "password" ; change password to the password for the
Administrator account
; change the following program names to the actual filenames of 2 Windows updates
$program = "Windows Update 1.exe /passive /norestart"
$program2 = "Windows Update 2.exe /passive /norestart"

If @Username <> "Administrator" Then
    RunAsSet($admin,@ComputerName,$password)
    install()
    RunAsSet()
Else
    install()
EndIf

Func install()
    RunWait($program)
    RunWait($program2)
EndFunc
```

Note how modifying the variables listed in the variable declarations can change the program names. This practice becomes more useful as you develop more complicated scripts.

Variable Types—Dim, Global, and Local

There are three types of variables in AutoIt:

Dim

Declaring a variable using `Dim` gives it the scope of its current location within the script. If the variable is declared outside any functions, its scope is global.

The following is an example of declaring a `Dim` variable in the global scope. It runs *setup.exe* in the directory where the script is located:

```
Dim $variable = @ScriptDir & "\setup.exe"
    Run($variable)
```

The next example shows how declaring a `Dim` variable inside a function allows it only `Local` scope and how the variable is destroyed once the function is complete. The result is a script that errors out when run because `$variable` is not declared globally:

```
function()

    Func function()
        Dim $variable = @ScriptDir & "\setup.exe"
    EndFunc

    Run($variable)
```

You should explicitly declare variables as `Global` or `Local` to avoid problems. If a `Dim` variable is declared inside a function but a `Global` variable already exists, the `Global` variable is overwritten. The following example shows what happens if a `Global` variable exists when the same variable is declared as `Dim` within a function. The result is that *setupbad.exe* runs instead of *setup.exe*; the `Global` `$variable` is modified to *setupbad.exe* because `Dim` was used to declare the variable locally within the function:

```
Global $variable = @ScriptDir & "\setup.exe"

    function()

    Func function()
        Dim $variable = @ScriptDir & "\setupbad.exe"
    EndFunc

    Run($variable)
```

Global

This type of variable can be read from or written to from anywhere in the script. `Global` variables can be used in functions without being destroyed when the functions complete. The following is an example of declaring a `Global` variable:

```
Global $variable = 2
```

Local

A `Local` variable is used in the scope of a function. Once the function is complete, the variable is destroyed. If a `Global` variable of the same name already exists, the function modifies the `Global` variable and it is not destroyed when the function completes. Variables are always checked in the local scope first, then in the global scope. The following example shows the use of a `Local` variable within a function:

```
function()

    Func function()
        Local $variable = @ScriptDir & "\setup.exe"
        Run($variable)
    EndFunc
```

AutoIt Variable Explicit Declaration Is Not Required

AutoIt does not require the explicit declaration of variables. However, as a debugging measure it is wise to explicitly declare all variables used within a script. If you do not explicitly declare variables, it can become very difficult to find a mistyped variable name that may be causing your script to error on execution. You should include the following in your scripts to require the explicit declaration of variables in order to avoid bugs:

```
Opt("MustDeclareVars", 1)
```

With this option enabled, all variables must now be explicitly declared using `Global`, `Local`, or `Dim`.

Constants

A constant is a variable that never changes. It remains a static value for the entire script execution. You cannot change the value of a constant, nor can you convert an existing variable into a constant. Placing Const after Dim, Global or Local makes the variable a constant. You can also declare a constant variable without explicit declaration. The following example illustrates how to declare a constant variable in each scenario:

```
Const $example = 0
Dim Const $example1 = 1
Global Const $example2 = 2
Local Const $example3 = 3
```

Arrays

An array is a matrix of data in which all the elements are of the same data type and size. For example, an array of two numbers—“5” and “3”—is declared as follows:

```
$num[0] = "5"
$num[1] = "3"
```

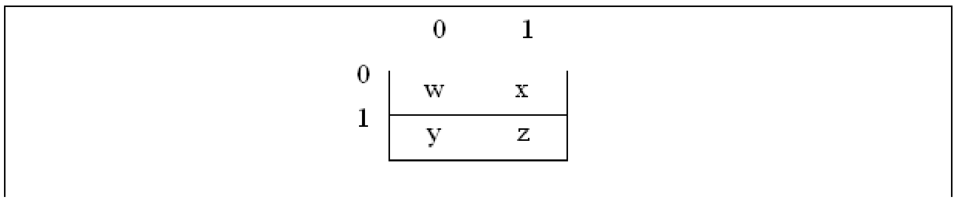


Figure 1. Visual representation of Example 3. Two-Dimensional Array

Arrays can also be multidimensional, with up to 64 dimensions. **Example 3** shows a two-dimensional array.

Example 3. Two-Dimensional Array

```
$letter[0][0] = "w"
$letter[0][1] = "x"
$letter[1][0] = "y"
$letter[1][1] = "z"
```

A visual representation of **Example 3** would be a 2×2 matrix as displayed in **Figure 1**.

Note

Variants—Arrays with Differing Data Types

An array using different data types is known as a variant and can contain anything from a number to a Boolean value. Variants are not restricted in AutoIt; however, they are not recommended. Using differing data types in an array—especially arrays within an array—can dramatically decrease the execution speed of your scripts.

Finding the Correct Include

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:

```
#include <filename.au3>
```

Table 1 lists the standard includes that accompany the AutoIt v3 installation.

Table 1. AutoIt v3 Standard 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

Include	**Description**
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

FileInstall—Including Files in AutoIt Scripts

The `FileInstall()` function allows the inclusion of any file—such as an executable or image file—in the compiled script executable. This is similar to `#include`, but it dramatically increases the size of your compiled executable in most cases. This is the syntax of the `FileInstall()` function:

```
FileInstall("sourcefile","destination" [,flag])
```

The flags for `FileInstall()` are optional. A flag of 0 tells the function not to overwrite existing files. Use a flag of 1 if you would like to overwrite any existing files the script may encounter. The source file cannot be a variable; it must be a string, and it cannot contain wildcards.

Example 4 is an installation you can perform with the `FileInstall()` function that extracts all installation files to the temp directory. When compiled, the entire installation is a single executable.

Example 4. Using the FileInstall() Function

```
#NoTrayIcon
Opt("MustDeclareVars", 1)
```

```
FileInstall("C:\Documents and Settings\Administrator\Desktop\Program\" & _
"Setup.exe", @TempDir & "\Setup.exe", 1)
FileInstall("C:\Documents and Settings\Administrator\Desktop\Program\" & _
"Setup.exe", @TempDir & "\setup.ico", 1)
FileInstall("C:\Documents and Settings\Administrator\Desktop\Program\" & _
"Setup.exe", @TempDir & "\setup.ini", 1)
FileInstall("C:\Documents and Settings\Administrator\Desktop\Program\" & _
"Setup.exe", @TempDir & "\program.dll", 1)
FileInstall("C:\Documents and Settings\Administrator\Desktop\Program\" & _
"Setup.exe", @TempDir & "\readme.txt", 1)

Run(@TempDir & "\Setup.exe")
WinWait("Installation Wizard", "Welcome to the")
If Not WinActive("Installation Wizard", "Welcome to the") Then _
WinActivate("Installation Wizard", "Welcome to the")
WinWaitActive("Installation Wizard", "Welcome to the")
ControlClick("Installation Wizard", "", "Next")
WinWait("Installation Wizard", "Installation Complete")
If Not WinActive("Installation Wizard", "Installation Complete") Then _
WinActivate("Installation Wizard", "Installation Complete")
WinWaitActive("Installation Wizard", "Installation Complete")
ControlClick("Installation Wizard", "", "Finish")
```

In this example, `FileInstall()` copies five files to the temp directory, then the `Run()` command runs *Setup.exe*. The program then waits for the installation wizard to appear using `WinWait()` and makes it active using `WinActivate()` before clicking Next with `ControlClick()` and then Finish with `ControlClick()` to complete the installation.

Line Continuation

An underscore (_) signals that the current line of code continues onto the next line. This practice keeps code clean and alleviates line wrapping and/or lines running off the side of the screen when writing or editing scripts.

If the line being separated is a string, it must be closed and linked to a new string on the following line, as shown in this example:

Incorrect:

```
"string _
continuation of string"
```

Correct:

```
"string" & _
"continuation of string"
```

Graphical User Interfaces (GUIs)

One of the newest features of AutoIt is its ability to create graphical user interfaces. This feature adds an extraordinary amount of possibilities to the already useful AutoIt language. Some of the most common uses of a GUI are installation menus, input forms, and progress bars.

I am beginning this section with an example so you can see the layout of GUI creation and get familiar with the functions used to create GUIs. ***Example 5*** *displays a two-button GUI with instructions and an image. It can be modified and used for anything you can use a two-button chooser for: an installer for two different programs, a chooser for two different types of users, etc. You can easily increase the size of the GUI and create more buttons. You will learn what each GUI function does and how to configure each of them later on in* ***Example 8***.

Example 5. Graphical User Interface—Ai Smart Homes

```
; Includes the GuiConstants (required for GUI function usage)
#include <GuiConstants.au3>

; Hides tray icon
#NoTrayIcon

; Change to OnEvent mode
Opt('GUIOnEventMode', 1)

; GUI Creation
GuiCreate("Ai Smart Homes - Saint Louis, Missouri", 400, 300)
GuiSetIcon("icon.ico")

; Runs the GUIExit() function if the GUI is closed
GUISetOnEvent($GUI_EVENT_CLOSE, 'GUIExit')

; Logo / Pic
GuiCtrlCreatePic("logo.jpg",120,5,156,160)

; Instructions
GUICtrlCreateLabel("Please Choose an Option Below:", 50, 180, 300, 15, $SS_CENTER)
GUICtrlSetColor(-1,0xFF0000) ; Makes instructions Red

; Button1
GUICtrlCreateButton("Visit Our Website", 100, 210, 200, 30)
GUICtrlSetOnEvent(-1, 'website') ; Runs website() when pressed

; Button2
GUICtrlCreateButton("Send an Email", 100, 250, 200, 30)
GUICtrlSetOnEvent(-1, 'email') ; Runs email() when pressed
```

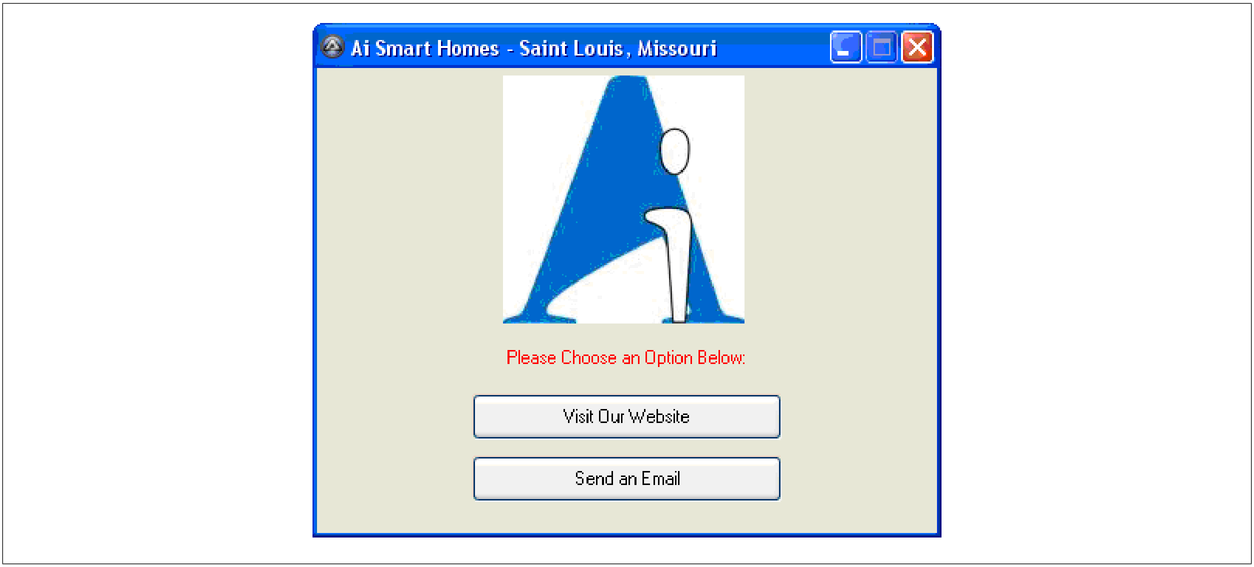

Ai Smart Homes - Saint Louis, Missouri
Please Choose an Option Below:
Visit Our Website
Send an Email

Figure 2. Output of Example 5. Graphical User Interface—Ai Smart Homes

```
Func website()
    ; Hides the GUI while the function is running
    GUISetState(@SW_HIDE)
    Run("C:\Program Files\Internet Explorer\iexplore.exe www.aismarthomes.com")
    Exit
EndFunc

Func email()
    ; Hides the GUI while the function is running
    GUISetState(@SW_HIDE)
    Run("mailto:contact@aismarthomes.com")
    Exit
EndFunc

; Shows the GUI after the function completes
GUISetState(@SW_SHOW)

; Idles the script in an infinite loop - this MUST be included when using
OnEvent mode
While 1
    Sleep(500)
WEnd

; This function makes the script exit when the GUI is closed
Func GUIExit()
    Exit
EndFunc
```

Figure 2 displays the GUI created by **Example 5**. Assuming *logo.jpg* is in the same directory as the **.au3* script file when it is compiled, a logo is displayed on the GUI as shown.

Note

Comments in a Script

Comments in an AutoIt script can be denoted in two ways:

1. *Semicolon*. The semicolon denotes the beginning of a comment on a single line. Anything following a semicolon on a single line is commented. If your comment runs onto the next line, you must begin that line with another semicolon or the script reads that line as code and most likely errors upon execution.
2. *#comments-start and #comments-end (also denoted as #cs and #ce)*. These commands comment an entire section of text within a script on multiple lines. Anything after `#comments-start` or `#cs` is commented until `#comments-end` or `#ce` is used to close the comment.

GUI Event Modes

How do you make something happen when a button is clicked on your GUI? There are two different event modes you can use to cause a reaction in your script when a button is pressed:

1. *MessageLoop (default)*. This is the default mode; it causes the GUI only to respond to events if the `GuiGetMsg()` function is called. It is wise to call this function many times per second in a loop; otherwise, you will have a slow or unresponsive GUI. The following loop continuously calls the `GuiGetMsg()` function until one of the two buttons are pressed or the user attempts to close the GUI:

```
While 1
        $guimsg = GuiGetMsg()
        Select
            Case $guimsg = $GUI_EVENT_CLOSE
                Exit ; closes the GUI
            Case $guimsg = $button1
                button1(); runs button1 function
            Case $guimsg = $button2
                button2(); runs button2 function
        EndSelect
    WEnd
```

   Notice that the loop is infinite (noted by `While 1`; you will learn more about this in the Conditional and Loop Statements section later in the Short Cut). The `$guimsg` variable will be continuously updated by the `GuiGetMsg()` function until one of the three cases is satisfied. Choosing Button1 or Button2 causes a respective function to run. Closing the GUI causes the program to exit. **Example 6** incorporates the `GuiGetMsg()` loop into a fully functional script.

Example 6. The GuiGetMsg() Method

```
; Includes the GuiConstants (required for GUI function usage)
#include <GuiConstants.au3>

; GUI Creation
GuiCreate("Menu", 400, 150)

; Button1
$button1 = GUICtrlCreateButton("Button1", 100, 20, 200, 30)

; Button2
$button2 = GUICtrlCreateButton("Button2", 100, 70, 200, 30)

; Shows the GUI after creation
GUISetState(@SW_SHOW)

Func Function1()
    ; Hides the GUI while the function is running
    GUISetState(@SW_HIDE)
    ; ================
    ; The script you would like to perform for Button1 goes here
    ; ================
EndFunc

Func Function2()
    ; Hides the GUI while the function is running
    GUISetState(@SW_HIDE)
    ; ================
    ; The script you would like to perform for Button2 goes here
    ; ================
EndFunc

While 1
    $guimsg = GuiGetMsg()
    Select
        Case $guimsg = $GUI_EVENT_CLOSE
            Exit ; closes the GUI
        Case $guimsg = $button1
            function1(); runs Button1 function
        Case $guimsg = $button2
            function2(); runs Button2 function
    EndSelect
       WEnd
```

2. *OnEvent*. Denoted by `AutoItSetOption('GUIOnEventMode', 1)`, `OnEvent` mode basically pauses the script when something is chosen on the GUI and runs a function. Once the function is completed, the main script resumes. **Example 7** shows how to properly use `OnEvent` mode in a script similar to **Example 6**.

Example 7. The GUIOnEventMode Method

```
; Includes the GuiConstants (required for GUI function usage)
#include <GuiConstants.au3>

; Changes to OnEvent mode
Opt('GUIOnEventMode', 1)

; GUI Creation
GuiCreate("Menu", 400, 150)

; Runs the GUIExit() function if the GUI is closed
GUISetOnEvent($GUI_EVENT_CLOSE, 'GUIExit')

; Button1
GUICtrlCreateButton("Button1", 100, 20, 200, 30)
GUICtrlSetOnEvent(-1, 'Function1') ; run Function1 when pressed

; Button2
GUICtrlCreateButton("Button2", 100, 70, 200, 30)
GUICtrlSetOnEvent(-1, 'Function2') ; run Function2 when pressed

Func Function1()
    ; Hides the GUI while the function is running
    GUISetState(@SW_HIDE)
    ; ================
    ; The script you would like to perform for Button1 goes here
    ; ================
EndFunc

Func Function2()
    ; Hides the GUI while the function is running
    GUISetState(@SW_HIDE)
    ; ================
    ; The script you would like to perform for Button2 goes here
    ; ================
EndFunc

; Shows the GUI after the function completes
GUISetState(@SW_SHOW)

; Idles the script in an infinite loop - this MUST be included when using
; OnEvent mode
```

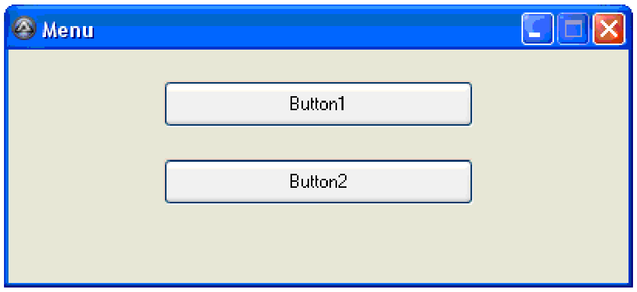


Figure 3. Output from Example 6. The GuiGetMsg() Method and Example 7. The GUIOnEventMode Method

```
While 1
    Sleep(500)
WEnd

; This function makes the script exit when the GUI is closed
Func GUIExit()
    Exit
EndFunc
```

Notice the `While 1` loop again, just like in `MessageLoop` mode. This time, instead of refreshing a variable with the `GuiGetMsg()` function continuously, `OnEvent` mode refreshes the `Sleep(500)` command (which is a 500 ms timeout) until an event occurs. If Button1 or Button2 are pressed, their corresponding functions will run. If the GUI is closed, the script will exit.

Both **Example 6** and **Example 7** create the GUI shown in **Figure 3**. Both scripts perform the same actions, but each uses a different event mode.

When creating a GUI, it is important to decide which type of event mode to use. Both methods work in any case, but `MessageLoop` tends to be more suited for a script where the GUI is the main focus. In a script where the GUI is not the main or only focus, `OnEvent` mode tends to be the better solution. In the end, both methods perform the same set of tasks; they just go about them in different ways. Choosing between `OnEvent` and `MessageLoop` mode is, in most cases, a personal preference.

GUI Controls

Table 2 lists the controls available in AutoIt, their descriptions, and their associated functions.

Table 2. AutoIt GUI Controls

Control	**Description**	**Function**
AVI Video Clip	Inserts an AVI video clip	`GuiCtrlCreateAvi()`
Button	creates a button	`GuiCtrlCreateButton()`
Checkbox	creates a checkbox	`GuiCtrlCreateCheckbox()`
Combo Box	Creates a combo box	`GuiCtrlCreateComboBox()`
Context Menu	Creates a context (right-click) menu for a control of the entire GUI	`GuiCtrlCreateContextMenu()`
Date	Creates a date control	`GuiCtrlCreateDate()`
Dummy	Creates a dummy control	`GuiCtrlCreateDummy()`
Edit	Creates an edit control	`GuiCtrlCreateEdit()`
Group	Creates a group control	`GuiCtrlCreateGroup()`
Icon	Creates an icon	`GuiCtrlCreateIcon()`
Input	Creates an input box	`GuiCtrlCreateInput()`
Label	Creates a static text control	`GuiCtrlCreateLabel()`
List	Creates a list control	`GuiCtrlCreateList()`
List View	Creates a list	`GuiCtrlCreateListView()`
List View Item	Creates a list item	`GuiCtrlCreateListViewItem()`
Menu	Creates a menu	`GuiCtrlCreateMenu()`
Menu Item	Creates an item for a menu or context menu	`GuiCtrlCreateMenuItem()`
Object—ActiveX	Creates an ActiveX control	`GuiCtrlCreateObj()`
Picture	Inserts a picture	`GuiCtrlCreatePic()`
Progress Bar	Inserts a progress bar	`GuiCtrlCreateProgress()`
Radio Button	Inserts a radio button	`GuiCtrlCreateRadio()`
Slider	Inserts a slider	`GuiCtrlCreateSlider()`
Tab	Creates a tab control	`GuiCtrlCreateTab()`
Tab Item	Creates a tab in a tab control	`GuiCtrlCreateTabItem()`
Tree View	Creates a tree view control	`GuiCtrlCreateTreeView()`

Control	Description	Function
Tree View Item	Creates a tree view item	`GuiCtrlCreateTreeViewItem()`
Up / Down	Creates an up/down list control	`GuiCtrlCreateUpdown()`

Example 8 contains examples of every AutoIt GUI control. Each item within the example is labeled with a comment above it. To learn more about the different options of each control, look them up in the AutoIt help file.

Example 8. Complete GUI Controls

```
#include <GuiConstants.au3>

; GUI Creation
GuiCreate("GUI Control Examples", 500, 420)
GuiSetIcon(@WindowsDir & "\explorer.exe", 0)

; Menu Creation
$filemenu = GUICtrlCreateMenu("File")
GUICtrlCreateMenuitem("Example File Menu Item",$filemenu)

; Context Menu
$contextmenu = GUICtrlCreateContextMenu()

; Context Menu Item
GUICtrlCreateMenuitem("Example1",$contextmenu)
GUICtrlCreateMenuitem("",$contextmenu) ; separator
GUICtrlCreateMenuitem("Example2",$contextmenu)

; Tab Creation
GUICtrlCreateTab(0,0,500,400)

; Tab 1 Creation
; ===================
GUICtrlCreateTabItem("AVI,Button,Checkbox,ComboBox")

; AVI
GUICtrlCreateAvi(@WindowsDir & "\clock.avi",-1,10,30,321,321,$ACS_AUTOPLAY)
GUICtrlCreateLabel("AVI Example",140,355,60,15)

; Button
GUICtrlCreateButton("Button Example",350,30,120,30)

; Checkbox
GUICtrlCreateCheckbox("Checkbox Example",350,70,120,30)

; Combo Box
GUICtrlCreateCombo("ComboBox Example",350,110,120,30)
```

```
; Tab 2 Creation
; ===================
GUICtrlCreateTabItem("Group,Date,Dummy,Edit,Icon,Input,List,ListView")

; Start Group
GUICtrlCreateGroup("Group Example",20,40,460,60)

; Date
GUICtrlCreateDate("",30,60,200,25)

; Dummy
$dummybutton = GUICtrlCreateButton("Dummy Example",270,60,200,25)
$dummy = GUICtrlCreateDummy()

; Close Group
GUICtrlCreateGroup("",-99,-99,1,1)

; Edit
GUICtrlCreateEdit("Edit Example",30,120,440,60)

; Icon
GUICtrlCreateIcon(@WindowsDir & "\Cursors\drum.ani",-1,30,200,32,32)
GUICtrlCreateLabel("Icon Example",70,210,80,20)

; Input
GUICtrlCreateInput("Input Example",160,205,300,20)

; List
GUICtrlCreateList("List Example",30,240,440,80)

; List View
$listview = GUICtrlCreateListView("List View Example",30,330,440,60)

; List View Item
GUICtrlCreateListViewItem("List View Item Example",$listview)

; Tab 3 Creation
; ===================
GUICtrlCreateTabItem("ActiveX Object")

; ActiveX Object
GUICtrlCreateLabel("ActiveX Object Example",10,30,140,20)
$ie = ObjCreate("Shell.Explorer.2")
$GUIActiveX = GUICtrlCreateObj($ie,10,50,480,340)
$ie.navigate("http://www.aismarthomes.com")

; Tab 4 Creation
; ===================
GUICtrlCreateTabItem("Picture,Progress,Radio,Slider,TreeView,Updown")
```

```
; Picture
GUICtrlCreatePic(@WindowsDir & "\Blue Lace 16.bmp",10,30,40,40)
GUICtrlCreateLabel("Picture Example",55,45,80,20)

; Progress Bar
GUICtrlCreateLabel("Progress Example",400,70,90,20)
$progress = GUICtrlCreateProgress(10,90,480,25)
GUICtrlSetData($progress,33)

; Radio
GUICtrlCreateRadio("Radio Example",10,140,90,20)

; Slider
GUICtrlCreateLabel("Slider Example",290,170,100,20)
GUICtrlCreateSlider(180,130,280,30)

; Tree View
GUICtrlCreateLabel("Tree View Example",10,200,120,20)
$treeview = GUICtrlCreateTreeView(10,220,480,60)

; Tree View Item
$treetoplevel = GUICtrlCreateTreeViewItem("Tree View Example",$treeview)
GUICtrlCreateTreeViewItem("Subitem1",$treetoplevel)
GUICtrlCreateTreeViewItem("Subitem2",$treetoplevel)

; Up/Down
GUICtrlCreateLabel("Example Updown",10,300,100,20)
$updowninput = GUICtrlCreateInput("0",10,320,480,60)
GUICtrlCreateUpdown($updowninput)

; Close Tabs
GUICtrlCreateTabItem("")

; Display GUI
GuiSetState(@SW_SHOW)

; Continuous Loop to check for GUI Events
While 1
    $guimsg = GUIGetMsg()
    Select
        Case $guimsg = $dummybutton
            GUICtrlSendToDummy($dummy)
        Case $guimsg = $dummy
            MsgBox(0,"Dummy Example","You have clicked the dummy button.")
        Case $guimsg = $GUI_EVENT_CLOSE
            Exit
    EndSelect
Wend
```

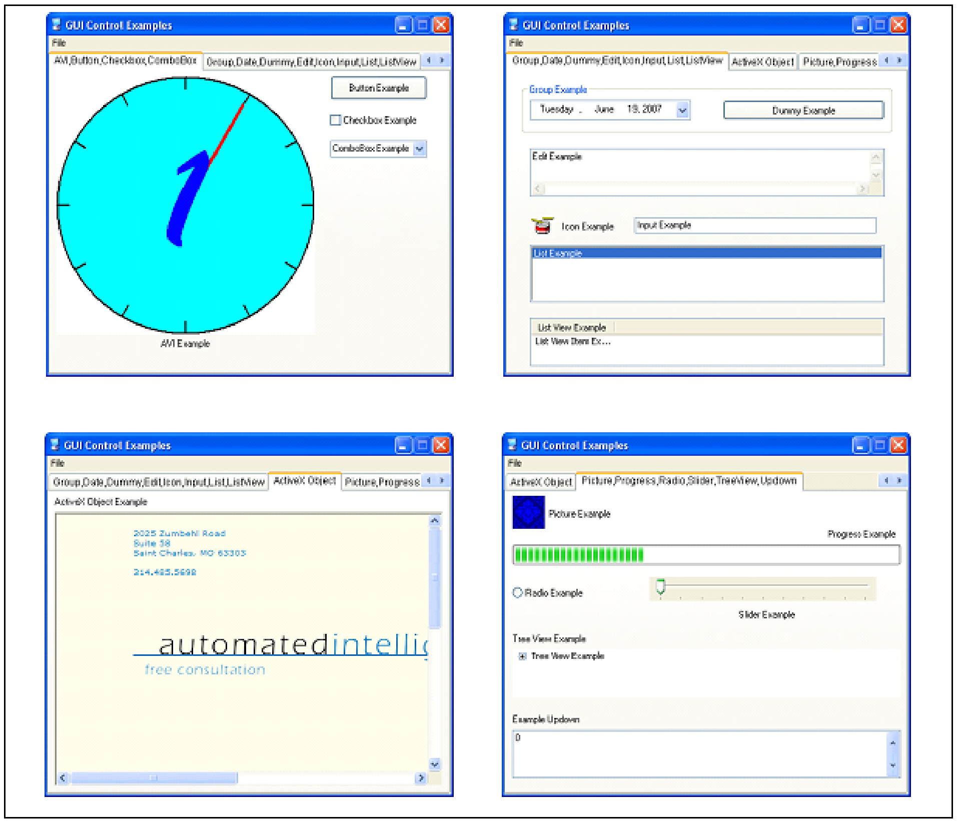


Figure 4. Complete GUI Controls Output

When run, **Example 8** outputs the four tabs shown in **Figure 4**.

Manipulating Data in GUIs

While creating a GUI, you must assign a variable to any controls that are used as data in a function. For example, when creating a combo box, assigning a variable to it allows its value to be checked during a `GuiCtrlRead()` function. **Example 9** shows how to perform an action based on the value of a combo box.

Example 9. GuiCtrlRead()

```
#include <GuiConstants.au3>

; GUI Creation
GuiCreate("Combo Example",200,80)
; Combo Box Creation
$combobox = GuiCtrlCreateCombo("Notepad",10,10,120,20)
GuiCtrlSetData(-1,"Paint|Command Prompt")

; Button Creation
$button = GuiCtrlCreateButton("Go",10,40,60,20)
```

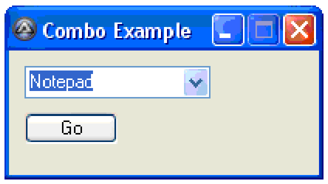


Figure 5. Output of Example 9. GuiCtrlRead()

```
GUISetState(@SW_SHOW)

; Continuous Loop to check for GUI Events
While 1
    $guimsg = GUIGetMsg()
    Select
        Case $guimsg = $button
            MsgBox(0,"","You chose " & GUICtrlRead($combobox) & ".")
            Select
                Case GUICtrlRead($combobox) = "Notepad"
                    Run("notepad.exe")
                    Exit
                Case GUICtrlRead($combobox) = "Paint"
                    Run("mspaint.exe")
                    Exit
                Case GUICtrlRead($combobox) = "Command Prompt"
                    Run("cmd.exe")
                    Exit
                EndSelect
        Case $guimsg = $GUI_EVENT_CLOSE
            Exit
    EndSelect
Wend
```

Notice the `Select...Case` that performs actions based on the `GUICtrlRead($combobox)` function. It is nested within the initial `Select...Case` statement that performs actions based on the `GUIGetMsg()` function. **Example 9** outputs the combo box shown in **Figure 5**.

User Functions

Functions can be called at any time throughout a script any number of times. AutoIt comes with predefined functions that perform many different tasks. There are also many user-defined functions created by the AutoIt community. These functions were written by AutoIt users and increase the functionality of AutoIt. You must use the `#include` command when using these user-defined functions in a script. You can also create your own functions.

Creating Functions—Func, Return, EndFunc

The syntax of a User-Defined Function is as follows:

```
Func functioname ( [Const] [ByRef] $param1, ..., [Const] [ByRef]
$paramN,_
$optionalpar1 = value, ...)
  ...
  [Return [value]]
EndFunc
```

The following subsections explain the different components of a function.

Const and ByRef

Both `Const` and `ByRef` can apply to a single parameter and the order in which they are written makes no difference. Please keep the following in mind when using `Const` and `ByRef`:

- `Const` is optional, and only a variable declared as `Const` can be passed to a `Const` parameter in a function.
- `ByRef` is also optional, and it requires that the input of its parameter is a variable. When you use this option, any changes are reflected to the original variable. By default, a copy of the variable is used inside the function.

Parameters

If a parameter is not set with a default value, then it must be declared when calling the function. A parameter with a default value is known as an *optional parameter*. For instance, the following function uses variables with default values and can be called using those default values as `function()`. When the function is run, a message box pops up stating that the value of `$z` is 5:

```
Func function($x = 2, $y = 3)
    $x + $y = $z
    MsgBox(0,"$z's value",$z)
EndFunc
```

The variables can still be declared differently, but defaults are used if the variables are not explicitly expressed when calling the function. When the function is changed as follows, variables must be declared when calling the function. An example of correctly calling this function is `function(5,3)` and the resulting message box would display a value of 8. If either `$x` or `$y` is not declared, the function does not run properly:

```
Func function($x, $y)
    $x + $y = $z
\    MsgBox(0,"$z's value",$z)
EndFunc
```

Return

Use `Return` to exit the function. The default return value in a user-defined function is 0, but the return value can be specified. The following example displays a message box with the current user's username:

```
MsgBox(0,"Currently logged on user",user())

Func user()
    $user = @UserName
    Return $user
EndFunc
```

User-Defined Functions

There are many user-defined function (UDF) libraries available on the AutoIt forums. You can find a list of current AutoIt UDF collections here: ***http://www.autoitscript.com/forum/index.php?showtopic=45167***. The following list describes some of these UDF libraries:

Auto3Lib

Developed by Paul Campbell (username PaulIA), this UDF library includes over 1,200 functions, including Animation controls, DateTime controls, Header controls, IPAddress controls, Listbox controls, ListView controls, Menus, Month Calendar controls, ProgressBar controls, StatusBar controls, Tab controls, ToolbarWindow controls, ToolTip controls, Tree View controls, and many more.

SysTray_UDF

Developed by user Tuape, this UDF library allows you to read info from system tray icons and remove them.

Microsoft Word Automation Library

Developed by Bob Anthony (username big_daddy), this UDF library allows you to create and manipulate Microsoft Word documents.

ExcelCOM_UDF

Developed by user Locodarwin, this UDF library allows you to create and manipulate Microsoft Excel workbooks.

I have created a sample UDF to find a specific image on-screen based on its `PixelChecksum()` value. The `_findchecksum` UDF is written below. You must save this code as *findchecksum_UDF.au3* and place it in C:\Program Files\AutoIt3\Include (or the Include folder wherever your AutoIt3 installation resides if it is not located in C:\Program Files) or the directory in which you will later save **Example 10** in order to create and run it. The `_findchecksum()` function returns 0 if the checksum is not found or returns an array containing x and y coordinates ([0] being x and [1] being y) if the checksum is found.

The `_findpixelchecksum` UDF is well suited for automating tasks where images must be clicked or moved. A very popular field for this type of automation is video game modification. There are many online role-playing games for which people program scripts like this in order to automate crafting, experience "grinding," and other sorts of repetitive tasks.

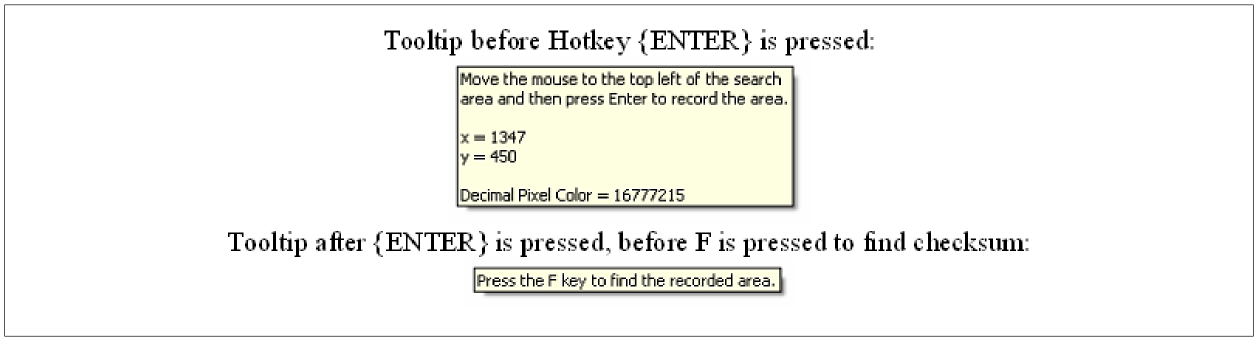
```
; ===================================================================================
; _findchecksum UDF v1 - June 24, 2007
; Written by Andy Flesner
; Designed and Tested for Windows XP Service Pack 2
; http://autoit.flesner.com
; ===================================================================================
#cs
Syntax is as follows: _findchecksum($checksum, $width, $height, $pcolor, $x = 0, _
$y = 0, $d_width = @DesktopWidth, $d_height = @DesktopHeight)

$checksum - the checksum to search for
$width - the width of the checksum area
$height - the height of the checksum area
$pcolor - the pixel color of the top left pixel of the checksum object
$x - the starting x coordinate
$y - the starting y coordinate
$D_Width - Width of the total search area, default is desktop resolution width
$D_Height - Height of the total search area, default is desktop resolution height

The function returns the x and y coordinates of the upper left corner where
the checksum is found as an array. For Example:

       $coordinates = _findchecksum($checksum, $width, $height, $pcolor)

The x coordinate would be $coordinates[0] and the y coordinate would be
$coordinates[1].

If the coordinates are not found, the function returns a value of 0.
#ce
; ===================================================================================

Func _findchecksum($checksum, $width, $height, $pcolor, $x= 0, $y = 0, _
$d_width = @DesktopWidth, $d_height = @DesktopHeight)
    $current_y = $d_height - 1
    While 1

$xy = PixelSearch($x, $y, $d_width- 1, $current_y, $pcolor)
If @error AND $current_y = ($d_height - 1) Then
  Return 0
```

```
ElseIf @error Then
$x = 0
$y = $current_y + 1
$current_y = ($d_height - 1)
ElseIf $checksum = PixelCheckSum($xy[0], $xy[1],$xy[0] + $width, _
$xy[1] + $height) Then
Return $xy
Else
$x = $xy[0] + 1
$y = $xy[1]
$current_y = $y
EndIf
    WEnd
EndFunc
```

Example 10 selects an area, finds its checksum, and then finds that checksum on the screen when a hotkey is pressed.

Example 10. findchecksum() User-Defined Function

```
#include <findchecksum_UDF.au3>

Global $checksum, $coord,$pcolor

;Specify checksum width
Global $width = 30
;Specify checksum height
Global $height = 30

HotKeySet("{ENTER}","checksum_record")

Global $instructions1 = "Move the mouse to the top left of the search" & @LF & _
"area and then press Enter to record the area."
Global $instructions2 = "Press the F key to find the recorded area."

While $checksum =
""
    $coord = MouseGetPos()
$pcolor = PixelGetColor($coord[0],$coord[1])
ToolTip($instructions1 & @LF & @LF & "x = " & $coord[0] & @LF & "y = " & _
$coord[1] & @LF & @LF & "Decimal Pixel Color = " & $pcolor,$coord[0] - 250, _
$coord[1] - 100)
Sleep(100)
WEnd

HotKeySet("f","checksum_find")

While 1
    ToolTip($instructions2)
    Sleep(100)
```


Tooltip before Hotkey {ENTER} is pressed:

Move the mouse to the top left of the search area and then press Enter to record the area.

x = 1347
y = 450

Decimal Pixel Color = 16777215

Tooltip after {ENTER} is pressed, before F is pressed to find checksum:

Press the F key to find the recorded area.

Figure 6. Example 10 findchecksum() User-Defined Function Tooltips

```
WEnd

Func checksum_record()
    $checksum = PixelChecksum($coord[0], $coord[1], $coord[0] + $width, _
    $coord[1] + $height)
    HotKeySet("{ENTER}")
EndFunc

Func checksum_find()
  ToolTip("")
  $found = _findchecksum($checksum, $width, $height,$pcolor)
 If$found = 0 Then
MsgBox(4096,"Error","Checksum not found.")
Exit
Else
MouseMove($found[0] + ($width / 2), $found[1] + ($height / 2), 1000
)
ToolTip("Found it!")
Sleep(5000)
ToolTip("")
MsgBox(0,"Checksum Found", "Checksum found with center at x=" &_
$found[0] + ($width / 2) & " y=" & $found[1] + ($height / 2)
& ".")
Exit
    EndIf
EndFunc
```

Run, or compile and run, **Example 10**. Then move your mouse cursor to an area on the screen that you would like the program to find, and press Enter. Then move your cursor to a different point on the screen. By pressing the F key, you prove the concept of the program and the cursor moves to the center of the checksum that you told it to store in memory (by pressing Enter earlier). See **Figure 6** for an illustration.

Conditional and Loop Statements

Conditional and loop statements simplify source code and make complex tasks possible.

Instead of repeating the same code over and over, you can simply perform a loop statement to repeat the code until a condition is met. While an expression is true, your statement will continuously loop.

Conditional statements allow you to perform tasks based on the truth of a given expression. If the given expression is true, the statement runs.

Conditional Statements

A conditional statement performs actions based on whether certain conditions are met. There are three types of conditional statements in AutoIt:

1. *If...Then...Else*. `If` statements simply perform actions if an expression is true; otherwise, they perform actions listed after `Else`.In the following example, the message box only pops up if `$number`equals 2; if not, the script exits:

   ```
   Global $number = 2
        If $number = 2 Then
           MsgBox(0, "Message", "The value of $number is " & $number & ".")
       Else
           Exit
       EndIf
   ```

   `If` statements can also be nested. This means that an `If` statement can contain multiple `If` statements within itself, as shown in the following example:

   ```
   Global $number = 2
           If @OSVersion = "WIN_XP" Then
           If @Username = "Administrator" Then
               If $number = "2" Then
                   MsgBox(0, "Message", "The value of $number is " & $number & ".")
               Else
                   Exit
               EndIf
           Else
               MsgBox(4096, "Error", "You must be logged on as Administrator.")
           EndIf
       Else
           MsgBox(4096, "Error", "You must be running Windows XP.")
       EndIf
   ```

   `ElseIf` is used to add another expression to evaluate. Usually, a `Select...Case` or `Switch...Case` statement is more effective for evaluating multiple expressions. The following example displays an `If` statement that uses `ElseIf`:

```
If @OSVersion = "WIN_VISTA" Then
        MsgBox(0, "OS Version", "You are running Windows Vista.")
    ElseIf @OSVersion = "WIN_2003" Then
        MsgBox(0, "OS Version", "You are running Windows 2003.")
    ElseIf @OSVersion = "WIN_XP" Then
        MsgBox(0, "OS Version", "You are running Windows XP.")
    ElseIf @OSVersion = "WIN_2000" Then
        MsgBox(0, "OS Version", "You are running Windows 2000.")
    Else
    EndIf
```

Boolean (`AND, OR, NOT`) and logical (`<,<=, >, >=, <>, =, ==`) operators can be used in `If`statements. Here is an example that uses both Boolean and logical operators:

```
Global $num1 = InputBox("Number 1","Number 1: ","")
    Global $num2 = InputBox("Number 2","Number 2: ","")
        If @OSVersion = "WIN_XP" AND @OSServicePack = "Service Pack 2" Then
        If $num1 + $num2 > 10 Then
            MsgBox(0,"Greater than 10","The sum of Number 1 and Number 2 is " & _
            "greater than 10.")
        ElseIf $num1 + $num2 < 10 Then
            MsgBox(0,"Less than 10","The sum of Number 1 and Number 2 is less " & _
            "than 10.")
        Else
            MsgBox(0,"Must be 10","If not less than or greater than 10, the
sum " & _
            "of Number 1 and Number 2 must be equal to 10.")
        EndIf
    Else
        MsgBox(4096,"Error","You must be running Windows XP SP2.")
    EndIf
```

If the version of Windows on the user's machine is not XP Service Pack 2, the user sees a pop up telling him he must be running Windows XP SP2. If the user *is* running XP SP2, the script performs an `If` statement on the `$num1 + $num2` expression. If the expression is greater or less than 10, the user sees a message box stating this. If neither of the expressions is true, the sum must be 10, and the user is prompted with a message stating this fact.

2. *Select...Case*. In the case of an `If` statement,an expression is evaluated as true or false. If the expression is true, the statement associated with the expression is executed. A `Select...Case` statement is similar, but instead of evaluating an expression as true or false,it evaluates multiple expressions at once. An example of a `Select...Case` statement follows:

```
Select
        Case @OSVersion = "WIN_VISTA"
            MsgBox(0, "OS Version", "You are running Windows Vista.")
        Case @OSVersion = "WIN_2003"
            MsgBox(0, "OS Version", "You are running Windows 2003.")
        Case @OSVersion = "WIN_XP"
            MsgBox(0, "OS Version", "You are running Windows XP.")
        Case @OSVersion = "WIN_2000"
            MsgBox(0, "OS Version", "You are running Windows 2000.")
    EndSelect
```

A message box tells the user whether the version of Windows running is Vista, 2003, XP, or 2000.

As with `If` statements, `Select...Case` statements can be nested and allow the use of Boolean and logical operators. Instead of `Else` (as in `If` statements), these statements use `Case Else`, which performs the same task. `Case Else` runs if no other case succeeds as true. The following is an example of a nested `Select...Case` statement that uses Boolean and logical operators:

```
    Global $num1 = InputBox("Number 1","Number 1: ","")
        Global $num2 = InputBox("Number 2","Number 2: ","")

        Select
            Case @OSVersion = "WIN_XP" AND @OSServicePack = "Service Pack 2"
                Select
                    Case $num1 + $num2 > 10
                        MsgBox(0,"Greater than 10","The sum of Number 1 and Number
    2 " & _
                        "is greater than 10.")
                    Case $num1 + $num2 < 10
                        MsgBox(0,"Less than 10","The sum of Number 1 and Number
    2 is " & _
                        "less than 10.")
                    Case $num1 + $num2 = 10
                        MsgBox(0,"Equals 10","The sum of Number 1 and Number 2 is " & _
                        "equal to 10.")
                EndSelect
            Case Else
                MsgBox(4096,"Error","You must be running Windows XP SP2.")
        EndSelect
```

3. *Switch...Case*. `Switch...Case` statements are very similar to `Select...Case` statements; the difference is the layout of the expressions to be evaluated. In a `Switch...Case` statement, the data to be evaluated is declared with `Switch`. The script then evaluates each case, just like a `Select...Case` statement, to see which is true. (If none are true, the statement within `Case Else` is executed.) One advantage of using `Switch...Case` is the `To` parameter, which allows the expression to be true if the value is between a range. `Switch...Case` statements can also be nested. The following is an example of a nested `Switch...Case` statement using the `To` parameter:

```
Global $num1 = InputBox("Number 1","Number 1: ","")
    Global $num2 = InputBox("Number 2","Number 2: ","")

    Switch @OSVersion
        Case "WIN_XP"
            Switch @OSServicePack
                Case "Service Pack 2"
                    Switch $num1 + $num2
                        Case 0 To 9
                            MsgBox(0,"Less than 10","The sum of Number 1 and " & _
                            "Number 2 is less than 10.")
                        Case 10
                            MsgBox(0,"Equals 10","The sum of Number 1 and
Number " & _
                            "2 is equal to 10.")
                        Case Else
                            MsgBox(0,"Greater than 10","The sum of Number
1 and " & _
                            "Number 2 is greater than 10.")
                    EndSwitch
                Case Else
                    MsgBox(4096,"Error","You must be running Windows XP
Service " & _
                    "Pack 2.")
            EndSwitch
        Case Else
            MsgBox(4096,"Error","You must be running Windows XP.")
EndSwitch
```

Loop Statements

Loop statements are just statements that repeat themselves a number of times. There are four types of loop statement available in AutoIt v3:

1. *For...Next*. The syntax for a `For...Next` loop statement is as follows:

   ```
   For <variable> = <start> To <stop> [Step <stepval>]
       Statements
       ...
   Next
   ```

   A specified variable, which is automatically defined locally even if `MustDeclareVars` is enabled, is stepped to the stop number by `<stepval>` (default of 1). The loop is complete once the value of the variable exceeds the `<stop>` value. `<stop>` and `<stepval>` can be variables, but they are only read when the loop starts for the first time. `For...Next` statements can be nested. The following is an example of a `For...Next` statement in which the script displays a 10-second countdown, then pops up a message box that says, “Boom!”:

```
For $variable = 10 To 1 Step -1
        SplashTextOn("Countdown",$variable,65,20)
        Sleep(1000)
    Next
    SplashOff()
    MsgBox(0,"", "Boom!")
```

2. *For...In...Next*. This type of loop statement is used to evaluate an array of data or a `COM` object. This is the `For...In...Next`syntax:

```
For <variable> In <expression>
    Statements
    ...
Next
```

If the expression is an object collection with no elements, the script skips the loop and the variable contains an empty string of data. If the expression is neither an object nor an array, the script ends with an error unless a custom error handler is used. `For...In...Next` statements can also be nested. Here is an example of using `For...In...Next` to evaluate an array of data:

```
Global $array[4]

    $array[0]="w"
    $array[1]="x"
    $array[2]="y"
    $array[3]="z"

    For $element IN $array
        MsgBox(0,"Current $array item",$element)
    Next
```

3. *Do...Until*. This type of loop performs its statements until an expression is true. This is the `Do...Until` syntax:

```
Do
        Statements
        ...
    Until <expression>
```

The expression is tested after performing the statements, so the loop runs at least once. `Do...Until` statements can also be nested. The following is an example that uses `Do...Until`to perform a 10-second countdown and then pop up a message:

```
$variable = 10

    Do
        SplashTextOn("Countdown",$variable,65,20)
        Sleep(1000)
        $variable = $variable - 1
    Until $variable = 0

    SplashOff()
    MsgBox(0,"","Boom!")
```

4. *While...WEnd*. While the expression is true, this loop continues executing down to the `WEnd` statement. Unlike a `Do...Until`statement, a `While` loop's expression is evaluated at the beginning of the loop. This means that if the expression is not true at the beginning of the loop, it does not run. The `While...WEnd` syntax is as follows:

   ```
   While <expression>
           Statements
           ...
       Wend
   ```

   A continuous loop can be created using `While...WEnd`if the expression is set to 1. This tells AutoIt to run the loop `While 1=1`. Continuous loops can be used to force the script to wait for some type of input (a hotkey being pressed, for instance).

   The following is an example of a `While...WEnd`statement:

   ```
   $variable = 10

       While $variable > 0
           SplashTextOn("Countdown",$variable,65,20)
           Sleep(1000)
           $variable = $variable - 1
       WEnd

       SplashOff()
       MsgBox(0,"","Boom!")
   ```

   While `$variable` is greater than zero, the loop continuously counts down from 10 to 1 each second. After the loop is complete, a message box appears saying, "Boom!"

With...EndWith

This type of statement doesn't really fit in as a conditional or loop statement. The AutoIt help file categorizes `With...EndWith` statements as loop statements, but their only use is to simplify object reference code. The syntax for a `With...EndWith` statement is as follows:

```
With <expression>
        Statements
        ...
    EndWith
```

The expression must be an object type. **Example 11** and **Example 12** show object reference code that is simplified using the `With...EndWith` statement:

Example 11. Long Method Without Using With...EndWith

```
#cs
The following script is written without using With...EndWith
#ce

$object = ObjCreate("InternetExplorer.Application.1")

$object.Visible = 1
$object.Height = 768
$object.Width = 1024
$object.Navigate("http://www.aismarthomes.com/")
```

Example 12. Simplified Code Using With...EndWith

```
#cs
The following displays how With...EndWith statements simplify Object code
#ce

$object = ObjCreate("InternetExplorer.Application.1")

With $object
    .Visible = 1
    .Height = 768
    .Width = 1024
    .Navigate("http://www.aismarthomes.com/")
EndWith
```

Notice how the `$object` is given to `.Visible`, `.Height`, `.Width`, and `.Navigate` automatically within the `With...EndWith` statement. See **Figure 7** for the results.

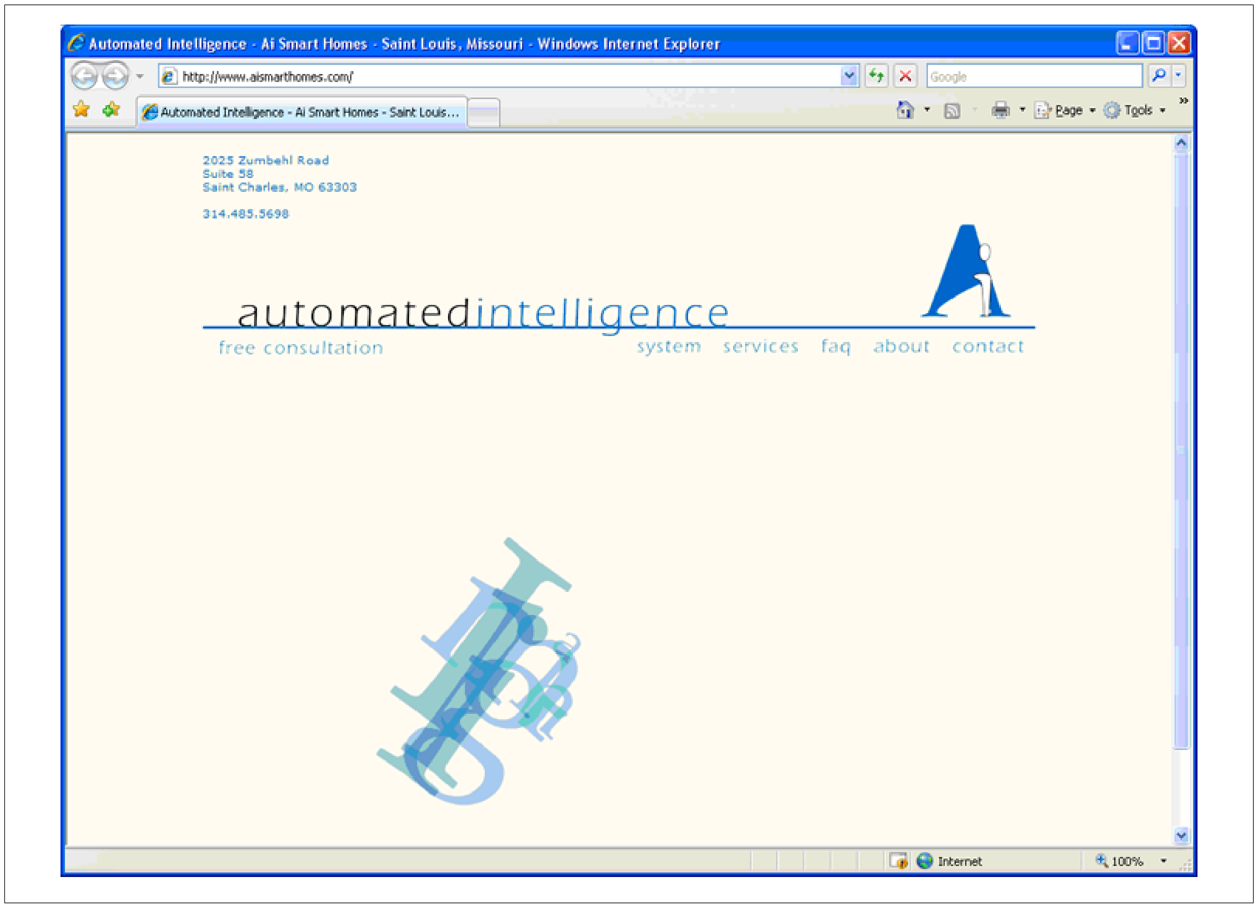

Automated Intelligence - Ai Smart Homes - Saint Louis, Missouri - Windows Internet Explorer
http://www.aismarthomes.com/
Automated Intelligence - Ai Smart Homes - Saint Louis...
2025 Zumbehl Road
Suite 58
Saint Charles, MO 63303
314.485.5698
automatedintelligence
free consultation
system
services
faq
about
contact
Internet
100%

Figure 7. Example 11 Long Method Without Using With...EndWith, and Example 12. Simplified Code Using With...EndWith—visible Internet Explorer window with dimensions of 1024×768

Component Object Models (COM) Extensions

`COM` extensions provide a common interface for working with software applications in a Microsoft environment. Applications have defined `COM` objects that can be used in AutoIt (and other programming languages) to manipulate the applications and perform tasks within them. To use `COM` objects, you must know the object name and its properties and methods. To find an application's objects, and the object properties and methods, you can utilize Microsoft's OLE/COM Object Viewer that is part of the Windows 2000 Resource Kit. You can download the OLE/COM Object Viewer here:

http://download.microsoft.com/download/win2000platform/oleview/1.00.0.1/nt5/en-us/oleview_setup.exe

You will likely receive an error about *iviewers.dll* when you run *oleview.exe*. To fix this error, download the following:

http://download.microsoft.com/download/2/f/1/2f15a59b-6cd7-467b-8ff2-f162c3932235/ovi386.exe

Once downloaded, run *ovi386.exe* and extract its contents to C:\MSTOOLS\BIN. Copy *iviewers.dll* from C:\MSTOOLS\BIN to the directory where you installed *oleview_setup.exe*. Then register the DLL using *regsvr32 iviewers.dll* within the install directory of *oleview_setup.exe*.

When viewing objects within the OLE/COM Object Viewer, only those objects with a TypeLib and an IDispatch control can be used within AutoIt.

The following is an example of using `COM` objects that simply creates an Excel spreadsheet and then closes Excel:

```
$oExcel = ObjCreate("Excel.Application") ; creates an Excel object

With $oExcel
    .Visible = 1 ; shows Excel
    .WorkBooks.Add ; creates a new workbook
    .Quit ; closes Excel
EndWith
```

For more detailed information about `COM` objects, please read the AutoIt v3 help file.

Automation Examples

With its abilities to modify the registry, copy files, run as another user, control keyboard and mouse input, and use `COM` objects, there isn't much you can't do with AutoIt.

This section is full of examples modeled after scripts I have written and used as a server systems administrator. All of these scripts were rewritten for this book; they are designed and tested to work with Microsoft Windows XP Service Pack 2.

AntiVirus Compliance Check

This program checks for the existing McAfee AntiVirus version, ePO Agent version, and the DAT definition file date. The script was designed to block users from accessing domain resources if they do not keep their systems AntiVirus compliant. It first detects a missing AntiVirus and/or an ePO Agent, then verifies that the DAT definition file is within five business days old (McAfee does not usually release DAT files on weekends). *Lock.exe* is referenced in this script. It is listed later in this guide as *User Lockout*. **Example 13** uses nested `If` statements, `Select...Case` statements, and user-defined functions.

Example 13. AntiVirus Compliance Check

```
#include <Date.au3> ; Include Date constants

; Declare all Global Variables
;=====================================================================
Global $dat71, $dat71monthday, $dat71year, _
       $dat71format, $dat80i, $dat80imonthday, _
       $dat80iyear, $dat80iformat, $dat85, _
       $dat85monthday, $dat85monthday, _
       $dat85year, $dat85format, $datdate, _
       $sLongDayName, $currentdate, $datediff, _
       $answer, $username, $epoversion, _
       $eporeg, $updatepath, $weekday

; Finds out who is currently logged onto the machine
;=====================================================================
$username = EnvGet("USERNAME")

; Pulls ePO Version from the Registry
;=====================================================================
$eporeg = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Network Associates\ePolicy " & _
"Orchestrator\Application Plugins\EPOAGENT3000","Version")

; Truncates the ePO Version to the leftmost 3 characters
;=====================================================================
$epoversion = StringLeft($eporeg,3)

If $epoversion = "3.6" Then
    ; Do Nothing
ElseIf $epoversion = "" Then ; If the Agent key is missing, there is no Agent
; installed
    RunWait("Lock.exe","") ; lock the account
    MsgBox(0,"EPO Agent Not Installed!","You do not have a Virus-Scan Update " & _
    "Agent installed!  Your account has been locked out!  Click OK to exit.")
    Exit
Else ; If there is an Agent installed, but an outdated version
    RunWait("Lock.exe","") ; lock the account
    MsgBox(0,"EPO Agent Outdated!","You do not have a current Virus-Scan
Update " & _
    "Agent installed!  Your account has been locked out!  Click OK to exit.")
    Exit
EndIf

; Runs the DatDate() function to determine the age of the installed DAT file
;======================================================================
DatDate()

Func DatDate()

    $dat71 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Network Associates\ePolicy " & _
    "Orchestrator\Application Plugins\VIRUSCAN7100","DatDate") ; pulls
    ; registry information for datdate for McAfee Scan Engine 7.1
    $dat71monthday = StringTrimRight($dat71, 5) ; takes the month and
day out of
    ; the datdate key
    $dat71year = StringTrimLeft($dat71, 6) ; takes the year out of
the datdate key
    $dat71format = ($dat71year & "/" & $dat71monthday) ; reorders
the date with
    ; the year first YYYY/MM/DD format for later calculations

    $dat80i = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Network Associates\
ePolicy " & _
    Orchestrator\Application Plugins\VIRUSCAN8000","DatDate") ; pulls registry
    ; information for datdate for McAfee Scan Engine 8.0i
    $dat80imonthday = StringTrimRight($dat80i, 5) ; takes the month and
day out of
    ; the datdate key
    $dat80iyear = StringTrimLeft($dat80i, 6) ; takes the year out of
the datdate key
    $dat80iformat = ($dat80iyear & "/" & $dat80imonthday) ; reorders
the date with
    ; the year first YYYY/MM/DD format for later calculations

    $dat85 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Network Associates\ePolicy " & _
    Orchestrator\Application Plugins\VIRUSCAN8600","DatDate") ; pulls registry
    ; information for datdate for McAfee Scan Engine 8.5.0i
    $dat85monthday = StringTrimRight($dat85, 5) ; takes the month and
day out of
    ; the datdate key
    $dat85year = StringTrimLeft($dat85, 6) ; takes the year out of
the datdate key
```

```
    $dat85format = ($dat85year & "/" & $dat85monthday) ; reorders the
date with
    ; the year first YYYY/MM/DD format for later calculations

    If $dat71 = "" And $dat80i = "" And $dat85 = "" Then
        RunWait("Lock.exe","") ; lock the account
        MsgBox(0,"No Virus Protection Detected!","You are not currently
running " & _
        any anti-virus protection and your account has been locked out. Click " & _
        "OK to close this message.")
    ElseIf $dat71 = "" And $dat80i = "" Then ; engine version is 8.5
        $datdate = $dat85format
    ElseIf $dat71 = "" And $dat85 = "" Then ; engine version is 8.0i
        $datdate = $dat80iformat
    ElseIf $dat80i = "" And $dat85 = "" Then ; engine version is 7.1
        $datdate = $dat71format
    Else
    EndIf

    If FileExists("C:\Program Files\Network Associates\VirusScan\mcupdate.exe")
Then
        $updatepath = "C:\Program Files\Network Associates\VirusScan\mcupdate.exe"
    ElseIf FileExists("C:\Program Files\McAfee\VirusScan Enterprise\mcupdate.exe") _
    Then
        $updatepath = "C:\Program Files\McAfee\VirusScan Enterprise\mcupdate.exe"
    Else
    EndIf

    $sLongDayName = _DateDayOfWeek( @WDAY ) ; converts the date into
the current
    ; day of the week for the Select...Case statement
    $currentdate = ( @YEAR & "/" & @MON & "/" & @MDAY ) ; pieces
together system
    ; variables to come up with the date in YYYY/MM/DD format
    $datediff = _DateDiff( 'd', $datdate, $currentdate) ; calculates the date
    ; difference between the current date and the DAT date

EndFunc

Select
       Case $sLongDayName = "Monday"
              $weekday = 2
       Case $sLongDayName = "Tuesday"
              $weekday = 2
       Case $sLongDayName = "Wednesday"
              $weekday = 2
       Case $sLongDayName = "Thursday"
              $weekday = 2
       Case $sLongDayName = "Friday"
              $weekday = 2
        Case $sLongDayName = "Saturday"
               $weekday = 0
        Case $sLongDayName = "Sunday"
               $weekday = 1
EndSelect

If $datediff >= (5 + $weekday) Then ; If the DAT is 5 business days
old or older
    If $username = "Administrator" Then ; pops up an error and closes
the script
    ; if Administrator is the logged in user
        MsgBox(0,"Anti-Virus Out of Date","Your are currently logged onto a " & _
        "machine with out of date Anti-Virus. Click OK to exit.")
        Exit
    Else
    EndIf
    RunWait("Lock.exe","") ; locks the account
    $answer = MsgBox(4,"AntiVirus Warning","Your Anti-Virus definitions
are out " & _
    "of date. Your account is now locked out and will remain locked out until " & _
    "your Anti-Virus is up to date. Would you like to update now?")
    If $answer = 6 Then ; yes is clicked
        RunWait($updatepath) ; runs the Anti-Virus manual update
        DatDate() ; reruns the datdate checker to verify whether the DAT was
        ; successfully updated or not
        If $datediff >= (5 + $weekday) Then ; if the DAT is still
5 business days
        ; or more old then pops up an error message
            MsgBox(0,"Error","Your update was unsuccessful. Click OK to exit.")
            Exit
        ElseIf $datediff < (5 + $weekday) Then ; if the DAT is now
less than 5
        ; days old shows successful pop up
           MsgBox(0,"Update Successful","Your Anti-Virus was successfully " & _
            "updated! Please click OK to exit.")
            Exit
        EndIf
    ElseIf $answer = 7 Then ; no is clicked
        MsgBox(0,"Warning","You have chosen NOT to update your Anti-Virus. " & _
        "Your account will remain locked out until you do so.")
    EndIf
Else
EndIf
Exit
```

AutoPatcher Fix

The script in **Example 14** uses examples of `FileCopy`, `WinWait`, `WinActive`, `WinActivate`, `WinClose`, `Run`, and `RunWait`. The purpose of this program is to fix some DLL registration problems with an old version of AutoPatcher—a free utility used to update Windows.

Example 14. AutoPatcher Fix

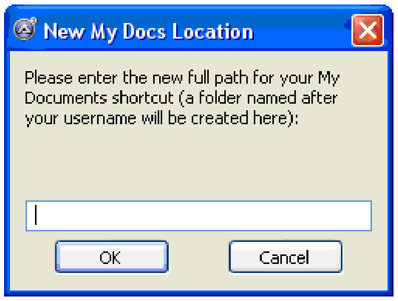
```
#NoTrayIcon ; Hides tray icon

; Run the Program
;=====================================================================
Run("C:\Program Files\AutoPatcher\Tools\AutoPatcher Module Editor.exe")

; Wait for the program to Open
;=====================================================================
WinWait("AutoPatcher Module Editor 2.0","")

; Check to see if the window is active, if not then make it active
;=====================================================================
If Not WinActive("AutoPatcher Module Editor 2.0","") Then _
WinActivate("AutoPatcher Module Editor 2.0","")

; Wait for the program window to become the active window
;=====================================================================
WinWaitActive("AutoPatcher Module Editor 2.0","")

; Close the program window
;=====================================================================
WinClose("AutoPatcher Module Editor 2.0","")

; Copy all files necessary for the fix to C:\WINDOWS\system32 and Overwrite existing
;=====================================================================
FileCopy("C:\Program Files\AutoPatcher\bin\COMDLG32.OCX", _
"C:\WINDOWS\system32\COMDLG32.OCX",1)
FileCopy("C:\Program Files\AutoPatcher\bin\COMCTL32.OCX", _
"C:\WINDOWS\system32\COMCTL32.OCX",1)
FileCopy("C:\Program Files\AutoPatcher\bin\FM20.DLL","C:\WINDOWS\system32\
FM20.DLL",1)
FileCopy("C:\Program Files\AutoPatcher\bin\FM20ENU.DLL", _
"C:\WINDOWS\system32\FM20ENU.DLL",1)
FileCopy("C:\Program Files\AutoPatcher\bin\MSCOMCTL.OCX", _
"C:\WINDOWS\system32\MSCOMCTL.OCX",1)
FileCopy("C:\Program Files\AutoPatcher\bin\SSubTmr6.dll", _
"C:\WINDOWS\system32\SSubTmr6.dll",1)
FileCopy("C:\Program Files\AutoPatcher\bin\poweroff.exe", _
"C:\WINDOWS\system32\poweroff.exe",1)

; Register all .ocx and .dll files with regsvr32.exe silently
;=====================================================================
RunWait('regsvr32 "c:\WINDOWS\system32\COMDLG32.OCX" /s')
RunWait('regsvr32 "c:\WINDOWS\system32\COMCTL32.OCX" /s')
RunWait('regsvr32 "c:\WINDOWS\system32\FM20.DLL" /s')
RunWait('regsvr32 "c:\WINDOWS\system32\FM20ENU.DLL" /s')
RunWait('regsvr32 "c:\WINDOWS\system32\MSCOMCTL.OCX" /s')
RunWait('regsvr32 "c:\WINDOWS\system32\SSubTmr6.dll" /s')

; Run the AutoPatcher program with the defaults.ini settings file in unattended mode
;==================================================================
Run('C:\Program Files\AutoPatcher\AutoPatcher.exe /unattend:t2 /noeula " & _
"/noreboot /skipdetection /defaults:C:\Program Files\AutoPatcher\defaults.ini')

Exit ; Exit the script
```

Change My Documents Location

The program in **Example 15** changes the location of the logged-in user's My Documents short cut. This example uses keyboard presses and `If` statements.

Example 15. Change My Documents Location

```
#NoTrayIcon; Hides tray icon

; Declare Global Variables
;==================================================================
Global $username, $newpath

$username = @UserName ; Detects username of current user

; Sets $homepath variable to desired location of My Documents
;==================================================================
$newpath = InputBox("New My Docs Location","Please enter the new full path
for " & _
"your My Documents shortcut (a folder named after your username will be created " & _
"here): “,"”)

; Check for the existence of $newpath and create it if it doesn't already exist
;==================================================================
If FileExists($newpath) Then
Else
    DirCreate($newpath)
EndIf

; Open the My Documents Properties window with keyboard commands
;==================================================================
Send("{LWINDOWN}d{LWINUP}")
Sleep(500)
Send("my{SPACE}d")
Sleep(500)
Send("{LSHIFT}+{F10}")
Sleep(500)
Send("{UP}{ENTER}")
Sleep(500)
```



Please enter the new full path for your My Documents shortcut (a folder named after your username will be created here):

Figure 8. Prompt from Example 15.Change My Documents Location

```
; Set the My Documents shortcut path to $newpath\$username
;======================================================================
Send($newpath & "\" & $username)
Send("{ENTER}")

; Wait 5 seconds for the Move Documents question to pop up, then answer No
;======================================================================
WinWait("Move Documents","Would you like to move all",5)
If WinExists("Move Documents","Would you like to move all") Then
    If Not WinActive("Move Documents","Would you like to move all") Then _
    WinActivate("Move Documents","Would you like to move all")
    WinWaitActive("Move Documents","Would you like to move all")
    Send("n")
Else
EndIf

; Wait 5 seconds for the Create Folder question to pop up, then answer No
;======================================================================
WinWait("Create Folder","The folder",5)
If WinExists("Create Folder","The folder") Then
    If Not WinActive("Create Folder","The folder") Then _
    WinActivate("Create Folder","The folder")
    WinWaitActive("Create Folder","The folder")
    Send("n")
Else
EndIf
Exit
```

Figure 8 shows the results.

Data Execution Prevention—Disable

Written to disable DEP in Windows XP, the script in **Example 16** reruns itself as the local Administrator, and then rewrites the *boot.ini* configuration file.

Example 16. Data Execution Prevention—Disable

```
#NoTrayIcon ; Hides tray icon

; Declare Global Variables
;====================================================================
Global $admin, $password

$admin = "Administrator"
$password = "password"

; The following IF statement forces the script to rerun itself as the Administrator
;====================================================================
If Not $CMDLINE[0] Then
    RunAsSet($admin, @Computername, $password)
    If @Compiled Then
        RunWait('"' & @ScriptFullPath & '" /admin')
    Else
        RunWait('"' & @AutoItExe & '" "' & @ScriptFullPath & '" /admin')
    EndIf
    RunAsSet()
ElseIf $CMDLINE[0] And $CMDLINE[1] = '/admin' Then
    FileSetAttrib("C:\boot.ini","-R") ; removes the Read-Only attribute
from boot.ini
    FileDelete("C:\boot.ini") ; deletes the original boot.ini
    IniWrite("C:\boot.ini","boot loader","timeout","30") ; writes first line
of new
    ; boot.ini
    IniWrite("C:\boot.ini","boot loader","default", _
    "multi(0)disk(0)rdisk(0)partition(1)\WINDOWS") _
    ; writes second line of new boot.ini
    IniWrite("C:\boot.ini","operating systems","multi(0)disk(0)rdisk(0)" & _
    "partition(1)\WINDOWS",'"Microsoft Windows XP Professional" /fastdetect " & _
    "/NoExecute=OptIn') _
    ; writes final line of new boot.ini including the /NoExecute=OptIn switch to
    ; disable DEP
    FileSetAttrib("C:\boot.ini","+RH") ; sets attributes on new boot.ini file to
    ; Read-Only and Hidden
EndIf
```

Outlook XP Preview Pane—Disable

The short and simple script in **Example 17** writes a registry key that disables the Outlook Preview Pane in Outlook XP.

Example 17. Outlook XP Preview Pane—Disable

```
#NoTrayIcon ; Hides tray icon

; Writes registry key to disable the Outlook Preview Pane in OfficeXP
;====================================================================
RegWrite("HKEY_CLASSES_ROOT\CLSID\{00020D75-0000-0000-C000-000000000046}" & _
"\Shell\Open\Command","","REG_SZ",'"C:\PROGRA~1\MICROS~2\Office10\OUTLOOK.EXE"' & _
'/nopreview')
```

Enable Remote Desktop Connection and NetMeeting

Here is another example of a script that reruns itself as the local Administrator. **Example 18** enables Remote Desktop Connections and NetMeeting on the local machine.

Example 18. Enable Remote Desktop Connection and NetMeeting

```
#NoTrayIcon ; Hides tray icon

; Declare Global Variables
;====================================================================
Global $admin, $password

$admin = "Administrator"
$password = "password"

; The following IF statement forces the script to rerun itself as the Administrator
;====================================================================
If Not $CMDLINE[0] Then
    RunAsSet($admin, @Computername, $password)
    If @Compiled Then
        RunWait('"' & @ScriptFullPath & '" /admin')
    Else
        RunWait('"' & @AutoItExe & '" "' & @ScriptFullPath & '" /admin')
    EndIf
    RunAsSet()
ElseIf $CMDLINE[0] And $CMDLINE[1] = '/admin' Then
    RegWrite("HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Terminal " & _
    "Server","fDenyTSConnections","REG_DWORD",0) ; writes value to enable RDP
    RegWrite("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Conferencing\Mcpt", _
    "Fpx","REG_BINARY","01000000") ; writes value to enable Netmeeting
EndIf
```

Microsoft Windows XP Update Verifier

The program in **Example 19** checks for the existence of various critical Windows XP Post-SP2 updates since August 2006. It only runs on Windows XP SP2; any other operating system forces the program to exit. For the May 2007 Internet Explorer 6 patch, the script only installs the update if IE6 is detected on the machine. This example does not include every critical security patch since August 2006. *Lock.exe* is referenced in this script;it is listed later in this guide as *User Lockout*.

Example 19. Microsoft Windows XP Update Verifier

```
#NoTrayIcon ; Hides tray icon
```

```
;Restricts to English - United States Operating Systems
;================================================================
If Not (@OSLang = "0409") Then
    Exit
EndIf

; If not Win_XP then Exit
;================================================================
If @OSVersion <> "Win_XP" Then
    Exit
EndIf

;If the computer is the following machine, don't run this script
;================================================================
If @ComputerName = "Computer" Then
    Exit
EndIf

;Global Variables not related to XP or 2K specifically
;================================================================
Global $ieversion = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\" & _
"Internet Explorer","Version")

;Global Variables for XP Patches
;================================================================
;August 2006 Updates
Global $XPKB921883,$XPKB920214,$XPKB920670,$XPKB920683,$XPKB921398, _
$XPKB922616,$XPKB918899

;September 2006 Updates
Global $XPKB919007,$XPKB920685,$XPKB925486

;October 2006 Updates
Global $XPKB922819,$XPKB923191,$XPKB923414,$XPKB924191,$XPKB924496

;November 2006 Updates
Global $XPKB920213, $XPKB924270

;January 2007 Updates
Global $XPKB926255

;February 2007 Updates
Global $XPKB928843,$XPKB926436,$XPKB924667,$XPKB918118

;April 2007 Updates
Global $XPKB925902, $XPKB930178, $XPKB931261, $XPKB931784, $XPKB932168

;May 2007 Updates
Global $XPKB931768
```

```
; Check for WinXP SP2
;=================================================================
If @OSServicePack = "Service Pack 2" Then
    WinXPUpdate()
Else
    MsgBox(48,"Error","Your System is not running Windows XP Service Pack 2.")
    RunWait("lock.exe","")
    Exit
EndIf

;Windows XP Patch check routine
;================================
Func WinXPUpdate()

    ;August 2006 Updates
    $XPKB920214 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB920214","Description")
    $XPKB920670 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB920670","Description")
    $XPKB920683 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB920683","Description")
    $XPKB921398 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB921398","Description")
    $XPKB922616 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB922616","Description")

    If $XPKB920214 = "" Or $XPKB920670 = "" Or $XPKB920683 = "" Or
$XPKB921398 = "" _
    Or $XPKB922616 = "" Then
        Lock()
    EndIf

    ;September 2006 Updates
    ;==================
    $XPKB919007 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB919007","Description")
    $XPKB920685 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB920685","Description")
    $XPKB925486 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB925486","Description")

    If $XPKB919007 = "" Or $XPKB920685 = "" Then
```

```
        Lock()
    EndIf

    ;October 2006 Updates
    ;================
    $XPKB922819 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB922819","Description")
    $XPKB923191 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB923191","Description")
    $XPKB923414 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB923414","Description")
    $XPKB924191 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB924191","Description")
    $XPKB924496 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB924496","Description")

    If $XPKB922819 = "" Or $XPKB923191 = "" Or $XPKB923414 = "" Or
$XPKB924191 = "" _
    Or $XPKB924496 = "" Then
        Lock()
    EndIf

    ;November 2006 Updates
    ;================
    $XPKB920213 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB920213","Description")
    $XPKB924270 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB924270","Description")

    If $XPKB920213 = "" Or $XPKB924270 = "" Then
        Lock()
    EndIf

    ;January 2007 Updates
    ;================
    $XPKB926255 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB926255","Description")

    If $XPKB926255 = "" Then
        Lock()
    EndIf
    ;February 2007 Updates
    ;================
    $XPKB928843 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB928843","Description")
    $XPKB926436 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB926436","Description")
    $XPKB924667 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB924667","Description")
    $XPKB918118 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB918118","Description")

    If $XPKB928843 = "" Or $XPKB926436 = "" Or $XPKB924667 = "" Or
$XPKB918118 = "" _
    Then
        Lock()
    EndIf

    ;April 2007 Updates
    ;================
    $XPKB925902 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB925902","Description")
    $XPKB930178 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB930178","Description")
    $XPKB931261 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB931261","Description")
    $XPKB931784 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB931784","Description")
    $XPKB932168 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB932168","Description")

    If $XPKB925902 = "" Or $XPKB930178 = "" Or $XPKB931261 = "" Or
$XPKB931784 = "" _
    Or $XPKB932168 = "" Then
        Lock()
    EndIf

    ;May 2007 Updates
    ;================
    $XPKB931768 = RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Updates\
Windows " & _
    "XP\SP3\KB931768","Description")
    If $XPKB931768 = "" Then
        If StringLeft($ieversion,1) = "6" Then
            Lock()
        Else
        EndIf
    EndIf

EndFunc

;======================================================================
;Prompt and Lockout Function to notify users they are not updated
;======================================================================

Func Lock()
    RunWait("lock.exe","")
    Sleep(2000)
    MsgBox(48,"Attention!","You are missing Microsoft Windows XP Critical " & _
    "Security Patches, please install them.")
    Exit
EndFunc
```

Proxy Server Detector for Internet Explorer

The program in **Example 20** pings proxy servers and sets Internet Explorer to use the first proxy that it can ping successfully. Replace "proxy1," "proxy2," "proxy3," etc. with valid proxy server IP addresses, and replace "portnumber" with a valid port number for the respective proxy server.

Example 20. Proxy Server Detector for Internet Explorer

```
#NoTrayIcon ; Hides tray icon

; Ping first proxy server then set it if pingable
;======================================================================
If Ping("proxy1") Then
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyEnable","REG_DWORD",1)
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyServer","REG_SZ","proxy1:portnumber")
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyOverride","REG_SZ","<local>")

; Ping second proxy server then set it if pingable
;======================================================================
ElseIf Ping("proxy2") Then
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyEnable","REG_DWORD",1)
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyServer","REG_SZ","proxy2:portnumber")
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyOverride","REG_SZ","<local>")


; Ping third proxy server then set it if pingable
;======================================================================
ElseIf Ping("proxy3") Then
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyEnable","REG_DWORD",1)
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyServer","REG_SZ","proxy3:portnumber")
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyOverride","REG_SZ","<local>")


; Ping fourth proxy server then set it if pingable
;======================================================================
ElseIf Ping("proxy4") Then
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyEnable","REG_DWORD",1)
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyServer","REG_SZ","proxy4:portnumber")
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyOverride","REG_SZ","<local>")


; Disable proxy settings if no proxy server is reachable
;======================================================================
Else
    RegWrite("HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\" & _
    "Internet Settings","ProxyEnable","REG_DWORD",0)
EndIf

Run("C:\Program Files\Internet Explorer\IEXPLORE.EXE") ; Run Internet Explorer
```

User Lockout

Example 21 uses a purposely failed network drive mapping to the C$ admin share on the local machine repeatedly to lock out a user's account. You can use a local or domain account, but you must set the loop count above the lockout threshold as set by your group policy or local security policy.

Example 21. User Lockout

```
#NoTrayIcon ; Hides tray icon

If @UserName = "Administrator" Then
    Exit
; ElseIf @UserName = “user” Then
    ; Exit
```

```
Else
    LockAcct() ; run the lockout function if the user is not exempt
EndIf

Func LockAcct()
    $i = 0
    While $i < 4 ; loops 4 times to lockout the current user’s account
        RunWait(@ComSpec & " /c " & "net use * \\127.0.0.1\C$ BadPassword " & _
        "/USER:DOMAIN\%USERNAME%","",@SW_HIDE)
        $i = $i + 1
    WEnd
EndFunc
```

User SID Lookup

Written to solve the issue of finding a user’s SID in Windows, this utility can find a SID on the local machine or on a domain. **Example 22** uses COM objects as well as the *A3LSecurity.au3* include from the Auto3Lib UDF library mentioned earlier in this Short Cut.

Example 22. User SID Lookup

```
#NoTrayIcon ; Hides tray icon
#include <A3LSecurity.au3>

Opt("MustDeclareVars", 1)

Global $sUser, $aName

$sUser = InputBox("SID Lookup", "Enter UserName:", "", "", 200, 130)

If @Error <> 0 Then Exit

$aName = _Security_LookupAccountName($sUser)
If @Error = 0 Then
    MsgBox(0,"SID Lookup","SID .....: " & $aName[0] & @CR & _
    "Domain ..: " & $aName[1] & @CR & _
    "SID Type : " & _Security_SidTypeStr($aName[2]))
Else
    MsgBox(0,"SID Lookup","Invalid user name")
EndIf
```

Figure 9 shows the results.

Word Document Title Changer

This program was written using the Microsoft Word Automation Library mentioned earlier in the user-defined functions section. The script in **Example 23**

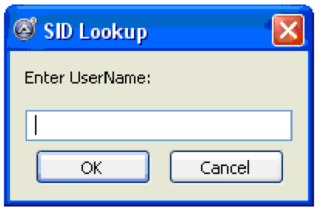


Figure 9. Prompt from Example 22.User SID Lookup

scours a directory for **.doc* files, and then sets the Title property of each file to its filename while keeping modified dates intact.

Example 23. Word Document Title Changer

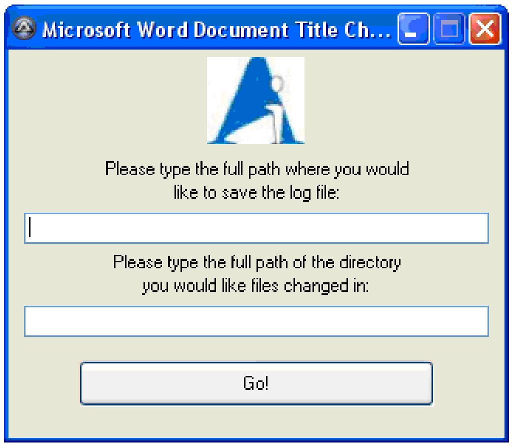
```
#NoTrayIcon ; Hides tray icon

; Include File, Word, and GUI Constants
;======================================================================
#include <file.au3>
#include <Word.au3>
#include <GuiConstants.au3>

; Change to OnEvent Mode
;======================================================================
Opt('GUIOnEventMode', 1)

; Declare Global Variables
;======================================================================
Global $LogPath, $DocPath, $progress, $progresspercent

; GUI
GUICreate("Microsoft Word Document Title Changer", 320, 250)
GUISetIcon("icon.ico")
GUISetOnEvent($GUI_EVENT_CLOSE, 'Event_GUIClose')

; PIC
GUICtrlCreatePic("logo.gif", 128.5, 5, 63, 56)

; Log Path
GUICtrlCreateLabel("Please type the full path where you would", 10, 70, 300, 15, _
$SS_CENTER)
GUICtrlCreateLabel("like to save the log file:", 10, 85, 300, 15, $SS_CENTER)
$LogPath = GUICtrlCreateInput("", 10, 105, 300, 20)

; Modification Path
GUICtrlCreateLabel("Please type the full path of the directory", 10, 130, 300, 15, _
$SS_CENTER)
GUICtrlCreateLabel("you would like files changed in:", 10, 145, 300, 15, $SS_CENTER
)
$DocPath = GUICtrlCreateInput("", 10, 165, 300, 20)
```

```
; Button
GUICtrlCreateButton("Go!", 45, 200, 230, 30)
GUICtrlSetOnEvent(-1, 'TitleChange')

GUISetState(@SW_SHOW) ; show the GUI

While 1
    Sleep(250)
WEnd

Func TitleChange()
    ; Hide the GUI while the function is running
    ;=====================================================================
    GUISetState(@SW_HIDE)

    _WordErrorHandlerRegister()

    ; Opens Word
    ;=====================================================================
    $oWordApp = _WordCreate("", 0, 0, 0)

    ; Creates $sDocPath variable based on the entry in the GUI for the Change path
    ;=====================================================================
    $sDocPath = GUICtrlRead($DocPath)

    ; Adds trailing backslash if it doesn't exist
    ;=====================================================================
    If StringRight($sDocPath, 1) <> "\" Then
        $sDocPath &= "\"
    EndIf
        $logpathfirst = GUICtrlRead($LogPath)
    If StringRight($logpathfirst, 1) <> "\" Then
        $logpathfirst &= "\"
    EndIf

    ; Creates $sLogPath variable based on the entry in the GUI for the Log path
    ;=====================================================================
    $sLogPath = $logpathfirst & "wordtitle.log"

    ; Pulls the filenames of all files in the Change directory
    ;=====================================================================
    $search = FileFindFirstFile($sDocPath & "*.doc")
    $filelist = _FileListToArray($sDocPath,"*.doc",1)

    ; Calculates the percentage change of each doc file toward the total number
    ;=====================================================================
    $filepercent = 100 / $filelist[0]

    ; Check if the search for *.doc was successful
    ;=====================================================================
    If $search = -1 Then
        MsgBox(0, "Error", "No files/directories matched the search pattern")
        Exit
    EndIf

    ; Opens the log file for writing
    ;=====================================================================
    FileOpen($sLogPath, 1)

    ; Turns on the Progress Bar
    ;=====================================================================
    ProgressOn("Doc Title Change Progress","Word Document titles " & _
    "changing...","",300,200,16)

    While 1 ; loops until there are no more *.doc files
        $file = FileFindNextFile($search)
        If @error Then ; if the last file listed was not *.doc then the
loop exits
            ProgressOff() ; turns off progress bar
            ExitLoop ; exits the While...WEnd statement
        Else
        EndIf
        $filetime = FileGetTime($sDocPath & $file,0,1) ; pulls the
Modified Date
        ; from file properties
        $oDoc = _WordDocOpen($oWordApp, $sDocPath & $file) ; opens
the last found
        ; *.doc file
        $sTitle = _WordDocPropertyGet($oDoc, "Title") ; gets original
title of Word
        ; Doc
        ; Writes the old title to the log file
        ;=====================================================================
        FileWriteLine($sLogPath, "===========================")
        FileWriteLine($sLogPath, $sDocPath & $file)
        FileWriteLine($sLogPath, "===========================")
        FileWriteLine($sLogPath, "Old Title was: " & $sTitle)
        ; Creates $sFileName variable based on the filename and removes the trailing
        ; .doc
        ;=====================================================================
        $sFileName = StringTrimRight($file, StringLen($file) -
StringInStr($file, _
        ".", Default, -1) + 1)
        _WordDocPropertySet($oDoc, "Title", $sFileName) ; sets new title
to $sFileName
        $sTitleNew = _WordDocPropertyGet($oDoc, “Title”) ; gets new title
for Log
        ; Write the new title and the modification date to the log file
        ;=====================================================================
        FileWriteLine($sLogPath, "New Title is: " & $sTitleNew)
        FileWriteLine($sLogPath, "Modification Date: " & $filetime)
        FileWriteLine($sLogPath, "")
        FileWriteLine($sLogPath, "")
        _WordDocClose($oDoc, -1) ; closes the Word doc saving changes made
        FileSetTime($sDocPath & $file,$filetime,0) ; sets the
modification date back
        ; to the original time/date
        $progress = $progress + $filepercent ; adds the percentage change of
        ; completing one file to the progress bar
        $progresspercent = StringLeft($progress,2) ; trims the percentage
to 2
        ; characters
        ProgressSet($progress,$progresspercent & " % completed...")
; sets the
        ; progress bar to the current completion %
    WEnd

    FileClose($sLogPath) ; Closes log file
    FileClose($search) ; Closes the search handle
    _WordQuit($oWordApp) ; Closes MS Word
    MsgBox(0,"Completed","All Word Documents in " & $sDocPath & " have
had their " & _
    "titles changed to their corresponding filenames. The modification dates on " & _
    "the files have remained intact.")
    Exit
EndFunc

; Closes the GUI if the X button is pressed to exit
;======================================================================
Func Event_GUIClose()
    Exit
EndFunc
```

Figure 10 shows the results.

Conclusion

By reading this guide to AutoIt v3, you have learned about variables and includes, graphical user interfaces, user functions, and conditional and loop statements. The sections and examples have given you the foundation for building any program possible in the AutoIt language. The final section of this Short Cut has provided automation examples that apply its teachings in real world environments. Many of these examples can be used by system administrators or can be modified and used for other purposes. AutoIt v3: Your Quick Guide is designed to be a continual reference for you as you develop your skills as an AutoIt programmer.



Please type the full path where you would like to save the log file:

Please type the full path of the directory you would like files changed in:

Figure 10. Prompt from Example 23.Word Document Title Changer

You should now be confident in your ability to conquer any automation task before you.