

COMPUTOR EDGE
ONLINE

Television

The New Cyber Window

October 3, 2014

List of *ComputerEdge* Sponsors

San Diego *ComputerEdge* Sponsors

Colocation and Data Center

[redIT](#)

With approaches like smart security, customized colocation and an extensive range of managed services, redIT helps you intelligently leverage IT.

Macintosh Specialists

[Maximizers](#)

Serving San Diego County Since 1988 * Onsite Macintosh Service for Home and Small Office Needs * ACSP: Apple Certified Support Professional ACTC: Apple Certified Technical Coordinator Apple Consultant's Network

Repair General

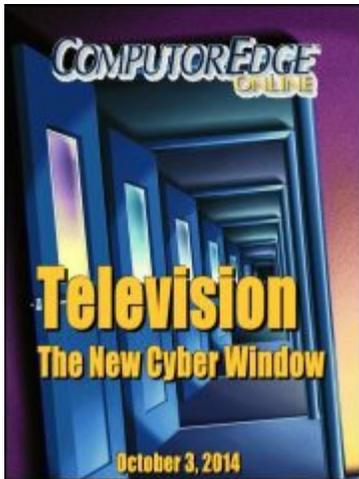
[Hi-Tech Computers](#)

Notebooks, Monitors, Computers and Printers We Buy Memory, CPU Chips, Monitors and Hard Drives Windows 7 Upgrades Phone (858) 560-8547

Colorado *ComputerEdge* Sponsors

ComputerEdge™ Online — 10/03/14

[Click to Visit ComputerEdge™ Online on the Web!](#)



Television: The New Cyber Window

WebTV is dead. Long live the new Web TV. The television sneaks into the world of Internet access.

Magazine Summary

[List of ComputerEdge Sponsors](#)

[Digital Dave](#)

by Digital Dave

Digital Dave answers your tech questions.

Get Rid of Trovi Hijacker; Public Versus Private Inbound Rules; Will System Restore Remove a Virus?

[Turning Big Screens into Cyber Windows](#)

by Jack Dunning

Everywhere I Look, I See an Internet Screen!

Computers need a monitor, but now televisions are being turned into cyber ports for viewing our Internet world.

[A Cool Tool for Writing Regular Expressions in AutoHotkey](#)

by Jack Dunning

Quickly Analyze How an AutoHotkey RegEx Works

A new AutoHotkey RegEx tool and insight into writing expressions.

[Wally Wang's Apple Farm](#)

by Wally Wang

Steve Ballmer's Myopic Vision

Steve Ballmer's Myopic Vision; More People Buying Macs and Chromebooks; Real and Fake iPhone Problems; Opposite Directions; Moving Away From Cross-Platform Development; Organize Finder Windows.

Editor's Letters: Tips and Thoughts from Readers **by ComputerEdge Staff**

Computer and Internet tips, plus comments on the articles and columns.

"Can't Format External Drive," "What Loads When Windows Starts?" "Windows Assigning Drive Letters,"
"Wally Wang, iPhone 6, Why Software Fails"

Send mail to ceeditor@computoredge.com with questions about editorial content.

Send mail to webmaster@computoredge.com with questions or comments about this Web site.

Copyright © 1997-2014 The Byte Buyer, Inc.

ComputerEdge Magazine, P.O. Box 83086, San Diego, CA 92138. (858) 484-1998

[Click to Visit ComputerEdge™ Online on the Web!](#)



Digital Dave

“Digital Dave answers your tech questions.” by *Digital Dave*

Get Rid of Trovi Hijacker; Public Versus Private Inbound Rules; Will System Restore Remove a Virus?

Get Rid of Trovi Hijacker

Dear Digital Dave,

I've inadvertently downloaded something called "Trovi" onto my desktop. It may have come along when I downloaded "Foxit" reader. I don't recall downloading anything else. It seems to be some kind of browser. It's interfering with Foxfire.

I tried uninstalling it through the Control Panel. That didn't get rid of it. I actually found a file called "trovi.search." I deleted that, but the thing still appears in Foxfire.

I did an Internet search for "trovi" and found a number of options to get rid of it, but I don't know which if any of them are more trustworthy than Trovi. Can you suggest a reliable source to remove the thing?

Thanks,

*Jim Burkhart
Santee, CA*

Dear Jim,

Trovi is a browser search engine hijacker produced by the notorious [adware company Conduit](#). It has been highly successful and tremendously annoying to users. When you encounter this type of malware there are two basic steps to removing the problem.

First, use Programs and Features (Add and Remove Programs in Windows XP) to remove the program installation in the system. Second, remove any add-ons or extensions in the individual browsers. Usually deleting individual files does not help. Occasionally, you may need to delete some Registry entries, but often that's unnecessary.

While there are people who produce short apps for removing malware, you are right to be

suspicious. The bad guys know that desperate people will try anything and take advantage of this weakness to produce their own malevolent versions. You are always safer if you do it yourself.

Rather than repeating all the specifics I found this very good tutorial on "[How to Remove Trovi Search](#)" by Lavasoft, the Ad Aware company. This should get the job done. Notice that some of the programs may have names which don't resemble Trovi. As you go through the programs, Google them to determine exactly what they do. If they look suspicious (or you don't need them), remove them.

You do need to be careful when you download free software. There are sites which will offer downloads bundled with this type of annoying software. You are usually better off downloading directly from the source, but even then you can get caught. As a rule, watch the installation carefully looking for automatic opt-ins for third-party toolbars and search engines. Use Custom Installation when available. This feature usually allows you to select what you want to install. When in double about an app, don't install it.

Digital Dave

Public Versus Private Inbound Rules

Digital Dave,

This is probably linked to your [response to AJ](#). I'm on Windows 7 Pro and recently ran a port check at [Gibson](#). I was clean (green) on all common ports (-1056) but received the following response:

Ping Reply: Ping Reply: RECEIVED (FAILED) — Your system REPLIED to our Ping (ICMP Echo) requests, making it visible on the Internet. Most personal firewalls can be configured to block, drop, and ignore such ping requests in order to better hide systems from hackers.

I was already going to e-mail you when I saw your response to AJ, so I went into the Windows Firewall setting and I have 50+ Inbound Rules showing as Public, Private/Public, or Domain/Public.

Shouldn't all of these be Private?

*Clay
Holly Rigde, NC*

Dear Clay,

There are many programs which need permission to pass through the firewall. When a program is installed it will reconfigure the firewall to respond to it on a specific port. Often the outgoing port is different from the incoming port. It is not unusual to have 50 or more inbound rules each of which relate to a specific program or system feature.

Usually, a port is triggered open by a program for only a short period of time, then closing when it is no longer needed. If you later run the test again, it is quite possible that the port will no longer be visible.

Update features of programs regularly check with the host site for new information. Whenever that occurs an incoming port will be triggered to allow a response from the host. If you keep seeing the same port when you run a test, you can try blocking it, but if it's needed by one of your programs you may encounter problems.

If you want to see which programs are accessing the Window Firewall, go to Control Panel => Windows Firewall => Allow programs to communicate through Windows Firewall (see Figure 1). This is an easier to read list of programs.

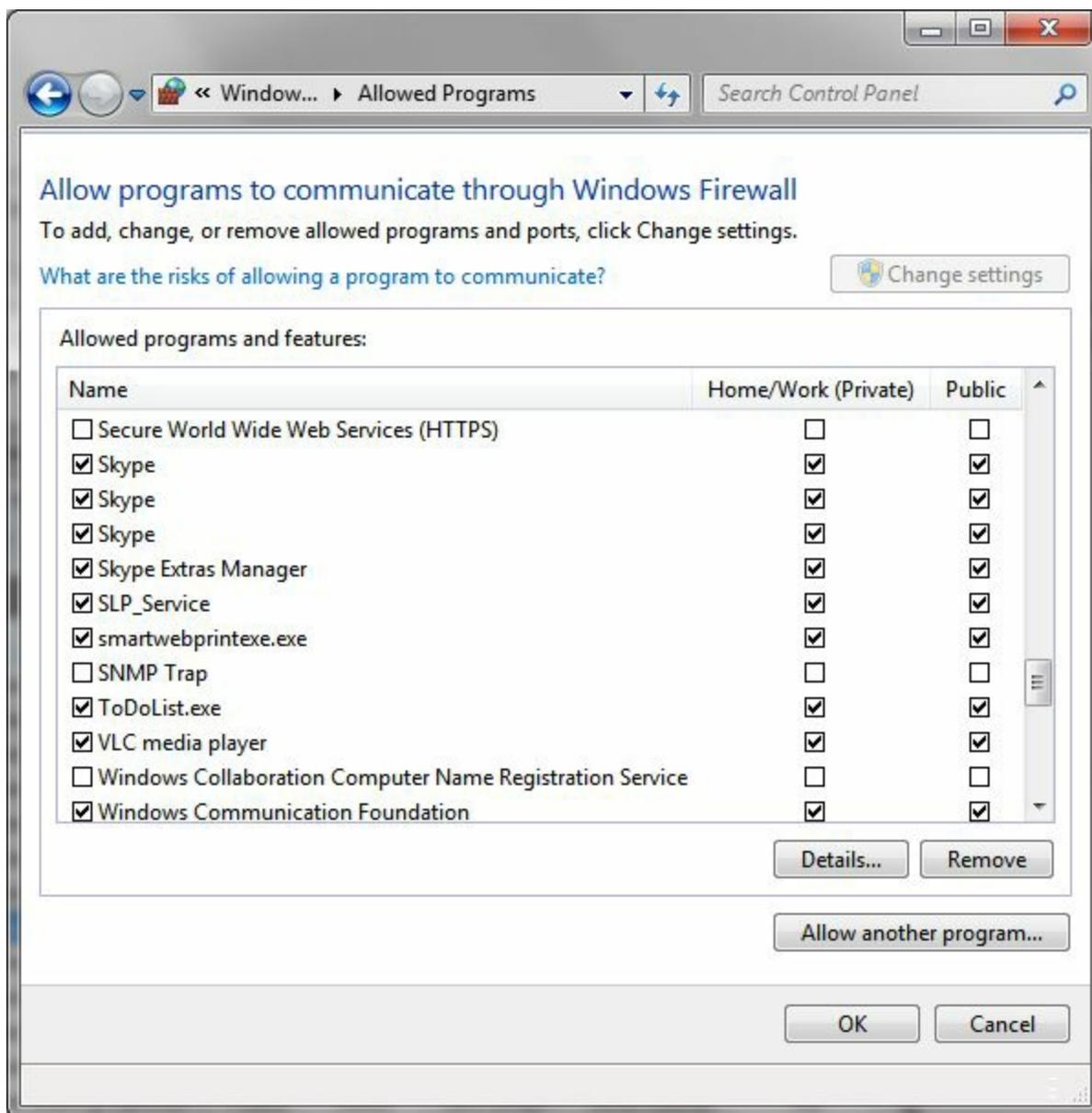


Figure 1. Windows Firewall => Allowed Programs shows which applications are authorized to work through the firewall.

The terms Public and Private refer to the type of network you're using. If you are using a local network behind a router with a firewall, it is considered a private network and more access may be granted for other computers on that same network. However, a public network, such as Wi-Fi at an airport, puts many unknown computers on the same network with you. The firewall will not allow private access in a public network.

There are many applications such as your browser which are safe to use on a public network and in fact require public access to even communicate with the Internet. The browsers have built in security that ensures that responses from the Web are properly isolated and routed back to the browser. Generally, the settings made by the program installation are safe—especially if the software uses standard built-in tools and comes from a reputable company.

Digital Dave

Will System Restore Remove a Virus?

Dear Digital Dave,

When using System Restore on a computer with a virus, will returning to a date that has no virus remove the virus?

*Bill
Sun City, CA*

Dear Bill,

The short answer is "no." System Restore does not remove files on your Windows computer. When you create a Restore Point, it contains "information about registry settings and other system information that Windows uses." It is not a complete restoration of the computer. Therefore, if you have a virus on your computer, at a minimum, the files will still be there after a System Restore. In fact, depending upon the virus, going back to an earlier restore point may infect that point as well.

What System Restore does do is reverse changes to the Registry and other Windows settings. While this may disable a newly installed program, it will not remove the files.

If you have a newly installed program that's causing you a problem, it is always best to attempt to uninstall it first. If that doesn't work, then you can try System Restore.

By the same token, if you think that you have a virus, make your best effort to remove the virus before attempting any System Restore. Many viruses have self-protection which prevents System Restore from working and, as I previously mentioned, may infect the restore point.

System Restore Points are useful for undoing problems in the Registry and other Windows settings, but they have their limits.

Digital Dave



Turning Big Screens into Cyber Windows

“Everywhere I Look, I See an Internet Screen!” by Jack Dunning

Computers need a monitor, but now televisions are being turned into cyber ports for viewing our Internet world.

The now defunct WebTV (rebranded to [MSN TV](#) in 2001) was ahead of its time. It essentially used a television set as a computer monitor with a box connected to the Internet for Web browsing and e-mail. The system was plagued with problems and required a subscription to help pay for the subsidized box. In 2013, Microsoft, who purchased the service in 1997, closed it down. Ironically, today's televisions could be called Web TV. The family television is now one of the primary ways that we view content from the Internet.

The New World of Multiple Monitors

For many high-end computer users multiple monitors are a must. They attach two (or more) screens to their machine—each with its own video card. This gives operators a much larger desktop surface for organizing and doing work. The people who do use a multi-monitor setup don't know how they would get along without it.

I use multiple screens, but not in the same way. I have two computers sitting on my desk. One is a Windows 7/Windows 8.1 desktop and the other is a Windows 8.1 laptop. This is parallel computing at its finest. I run certain programs on the desktop while other applications on the laptop are at my finger tips.

I do most of my writing on the desktop because I like the bigger screen and larger, separate keyboard. I also prefer it for any graphics work. When I'm in my home office, the desktop machine is definitely my primary computer—even though I consider the laptop my master

computer.

All working files are saved on the laptop. The desktop directly accesses the laptop master files via the network eliminating the need to copy the files to the desktop. When I travel, I just pack up the laptop and I have everything that I need with me.

While I do have an e-mail program on each of the computers, I only monitor and pick up my mail on the laptop. Over the years, I've found using more than one computer to pickup e-mail just gets too confusing. Sitting at my desk I can keep the e-mail program open on the laptop while grinding away on the desktop. Although I don't considered this true multi-monitor computing, dividing functions between screens is what I would do if I did have two screens attached to the same computer.

Adding the Television as Another Monitor

Without planning it, the television has now become an additional computer monitor. I'm not suggesting that you attach your television to your computer as a second screen—although there are many people who do just that. I'm saying that for many people (myself included) the TV has quietly become an additional way to view a variety of personal Internet content. It is one of those technological evolutions which has crept into our lives. We consciously added Netflix streaming to the television to watch movies and television reruns, but the extras that now come with the streaming devices may have more long-run impact on how we use the TV.

A few months back I purchased a [Roku Internet Streaming](#) box (see Figure 1). It was a quick and easy replacement for a DVD drive which supported Netflix via Wi-Fi. (I virtually never play DVDs anymore, although I still have a DVD player available.) What I didn't realize was that I would get much more than just Netflix—and I'm not talking about all the other streaming services (Amazon Prime, Hulu Plus, Vudu, etc.) which want an additional monthly subscription fee.



Figure 1. Roku 3 Streaming Media Player.

As with almost every other device manufacturer, Roku has its own app store. No longer are you stuck with whatever is preinstalled on a streaming device. (That was the problem with my Wi-Fi capable DVD player. While it did support Netflix and a few other services, there was no way to add more.) With the Roku you can now select from a growing list of software for making your television more useful and entertaining—much of it free.

For example, I tried out a free service called Couchy which connects my Dropbox account to the Roku device. It's pretty good for viewing Dropbox photos on TV without needing a computer or tablet, but it doesn't take advantage of the full screen unless you pay a \$15 one-time fee.

I'm not sure how important it is for me to hook up Dropbox. All my photos can be found with any of my computers via the network. There is another free app called Roku Media Player (Figure 2). It automatically finds media players on my home network—the most common of which is [Windows Media Player](#)—downloadable to any Windows machine—if you don't already have it. This is yet another tool for streaming music or video, plus viewing photos on a larger screen. With the Roku Media Player app, I can bore a group of friends by showing them the thousands of photos from my last trip on the big screen TV. This harkens back to the day when my parents did exactly the same thing with an 8mm projector.



Figure 1. Roku Media Player is an app which streams music and video, plus displays photos on your television.

I also discovered that there is a Facebook app for Roku. It is not the complete Facebook experience with all the associated drudgery, but does show photos and videos posted by your friends. The advantage to this app is that my spouse can use it without needing a computer or tablet to see the latest posted photos of our grandchildren unencumbered by all the usual chaff and advertising—at least for now. It even shows the comments made by friends.

Apps like these turn the television into a computer monitor. The TV doesn't become a full computer, but rather a viewing device. The TV is an additional screen looking into the Internet of Stuff (IoS). In a universe where people take photos and videos for uploading with their smartphone—a constant companion—the large-screen family displays offer a window into our cyberworld. The subject matter is immediately available to everyone, but it's the many screens which facilitate the connection between that content and our mind. The TV is no longer just a TV.

A Plethora of Screens

I now realize that there are even more screens in my future. Eventually, I will get a smartphone. Why? Because it will give me a screen that I can carry with me at all times. There are things that I want to see when I'm away from a computer such as e-mail and certain Web activity. The smartphone data plans are still expensive, but that's the price for mobility and a screen that fits in my pocket. But probably the most important reason for me to get a smartphone is that they are computers—and this is *ComputerEdge*.

Last week, I discussed the [Internet of Stuff \(IoS\)](#) and the [free Cloud services](#) tying all the devices together. Maybe this technology creep should be called the Internet of Screens (also IoS). By far, smartphone screens are the most ubiquitous of them all. Unlike computers,

phones are not readily shared. They are a personal item. It is expected that someone will take their phone with them everywhere. Each person is assumed to have their own cellular device—whether a basic setup or a smartphone.

Plus, every couple of years you're supposed to get a new phone. (To make matters worse, the old phones pile up in landfills—if people don't take the time to recycle them.) Every two years it's time to upgrade to the latest model. The wireless companies subsidize new phones because customers must re-up for another contract. (This upgrade cycle accounts for the majority of Apple's earnings--iPhones. With the new iPhone 6 upgrades, their revenues are getting another shot in the arm.) It would be devastating for smartphone manufacturers if people suddenly decide that the current technology is "good enough"—as has happened, first, in the PC market, and, now, in the slowing tablet market. In the meantime, millions of old disconnected phones sit in drawers, a box in the garage, or, even worse, in the local dump.

From the point of view of the users, it's all about the screen. Without the hi-res display a smartphone would be just a phone. The screen is a window into the cyber world. People have discovered that size does matter, although not as much as it used to. While tablets computers have succumbed to mini versions, the smartphone display is growing in size. The world wants the bigger screens on their smartphones (which drove Samsung to the top of the pile and now accounts for the explosive sales of Apple's iPhone 6 upgrades). In the meantime, the larger, less mobile tablet screens are getting squeezed—both literally in the form of mini tablets and commercially in the form of shrinking sales.

Look around and all we see are more screens—each capable of accessing our Internet world. We carry a smartphone in our pocket or purse. The tablet is available on the bedside table or next to the TV. Our laptops are available as a mobile office. The desktops computers are useful for when we want to totally immerse ourselves in our computer work or cyberspace. And now the family television is being enwrapped by the tentacles of the Internet. It is all about the visual display. That's why the most common computer/device question is now, "How big is your screen?" It used to be, "How much memory do you have?"

Jack is the publisher of ComputerEdge Magazine. He's been with the magazine since first issue on May 16, 1983. Back then, it was called The Byte Buyer. His Web site is www.computoredge.com. He can be reached at ceeditor@computoredge.com. Jack is now in the process of updating and compiling his hundreds of articles and columns into e-books. Currently available:

Recently released is Jack's FREE AutoHotkey book, [AutoHotkey Tricks You Ought to Do with Window](#), available exclusively at ComputerEdge E-Books in the EPUB for e-readers and tablets, MOBI for Kindle, and PDF for printing formats.

ComputerEdge E-books offering is his [AutoHotkey Applications](#), an idea-generating intermediate level e-book about using the AutoHotkey Graphical User Interface (GUI)

command to write practical pop-up apps for your Windows computer. (It's not as hard as it sounds.)

[*Hidden Windows Tools for Protecting, Problem Solving and Troubleshooting Windows 8, Windows 7, Windows Vista, and Windows XP Computers.*](#)

Jack's [*A Beginner's Guide to AutoHotkey, Absolutely the Best Free Windows Utility Software Ever!: Create Power Tools for Windows XP, Windows Vista, Windows 7 and Windows 8 and Digging Deeper Into AutoHotkey.*](#)

Our second compilation of stupid *ComputerEdge* cartoons from 2011 and 2012 is now available at Amazon! [*That Does Not Compute, Too! ComputerEdge Cartoons, Volume II: "Do You Like Windows 8 or Would You Prefer an Apple?"*](#)

Special Free Offer at ComputerEdge E-Books! [*Jack's Favorite Free Windows Programs: What They Are, What They Do, and How to Get Started!*](#)

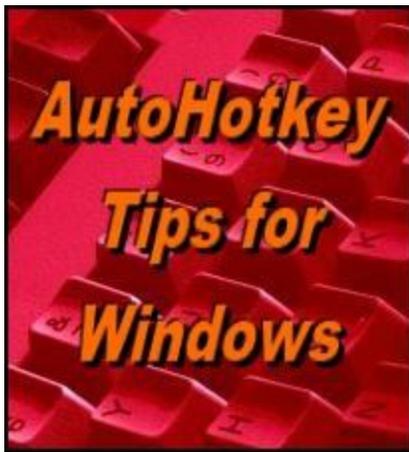
[*Misunderstanding Windows 8: An Introduction, Orientation, and How-to for Windows 8 \(Seventh Edition\)!*](#)

[*Windows 7 Secrets Four-in-One E-Book Bundle,*](#)

[*Getting Started with Windows 7: An Introduction, Orientation, and How-to for Using Windows 7,*](#)

[*Sticking with Windows XP—or Not? Why You Should or Why You Should Not Upgrade to Windows 7,*](#)

and [*That Does Not Compute!*](#), brilliantly drawn cartoons by Jim Whiting for really stupid gags by Jack about computers and the people who use them.



**Yet, One More
Reason to Use
AutoHotkey
Free Software!**

A Cool Tool for Writing Regular Expressions in AutoHotkey

“Quickly Analyze How an AutoHotkey RegEx Works” by Jack Dunning

A new AutoHotkey RegEx tool and insight into writing expressions.

Last week, I took a look at a Regular Expression (RegEx) I found on the Web for ensuring that an e-mail address was properly formatted. As it turned out, there were a lot of problems with that expression. I then introduced the RegEx that is used by the [ComputerEdge E-mail Subscription form](#) for discussion this week. It was many years ago when I added this JavaScript RegEx to the Web page and I know that there were changes made, but originally I must have copied it from somewhere. What surprised me in my current AutoHotkey RegEx studies is both how clean the expression is and how well it works. In addition, deciphering this expression turned a corner for me in my understanding of RegEx. It gave me a glimpse into the power of RegEx and its numerous possibilities. If you're one of the few who has hung in there while digging into the mysteries of AutoHotkey RegEx techniques, then I hope to pass on some valuable insights.

But, before tearing apart the latest e-mail address validation expression, there is free RegEx testing app worth adding to your AutoHotkey toolkit.

If you're new to AutoHotkey RegEx, then you may want to start with the simple introduction found in [this previous column](#). If you're new to AutoHotkey, then check out our [Introduction to AutoHotkey](#).

Regular Expression Testing App

I was thinking of automating the tiny AutoHotkey script I wrote for testing my attempts at writing a RegEx, but first I checked the AutoHotkey Scripts Forum. I found this [Regular Expression Tester](#) written by Robert Ryan (see Figure 1). It's pretty slick, saves a lot of time, and offers instant understanding into how RegEx works. It needs to be noted that this script was written for AutoHotkey_L and won't work with the Basic version of AutoHotkey. However, AutoHotkey_L is the currently accepted version of AutoHotkey and the download

available on the site. Also, this RegEx tester was written for Perl Regular Expressions. While almost everything is identical with AutoHotkey RegEx functions, there are some differences, such as escaping the double-quote mark with another double-quote (""), which are unique to AutoHotkey and don't work with this script.

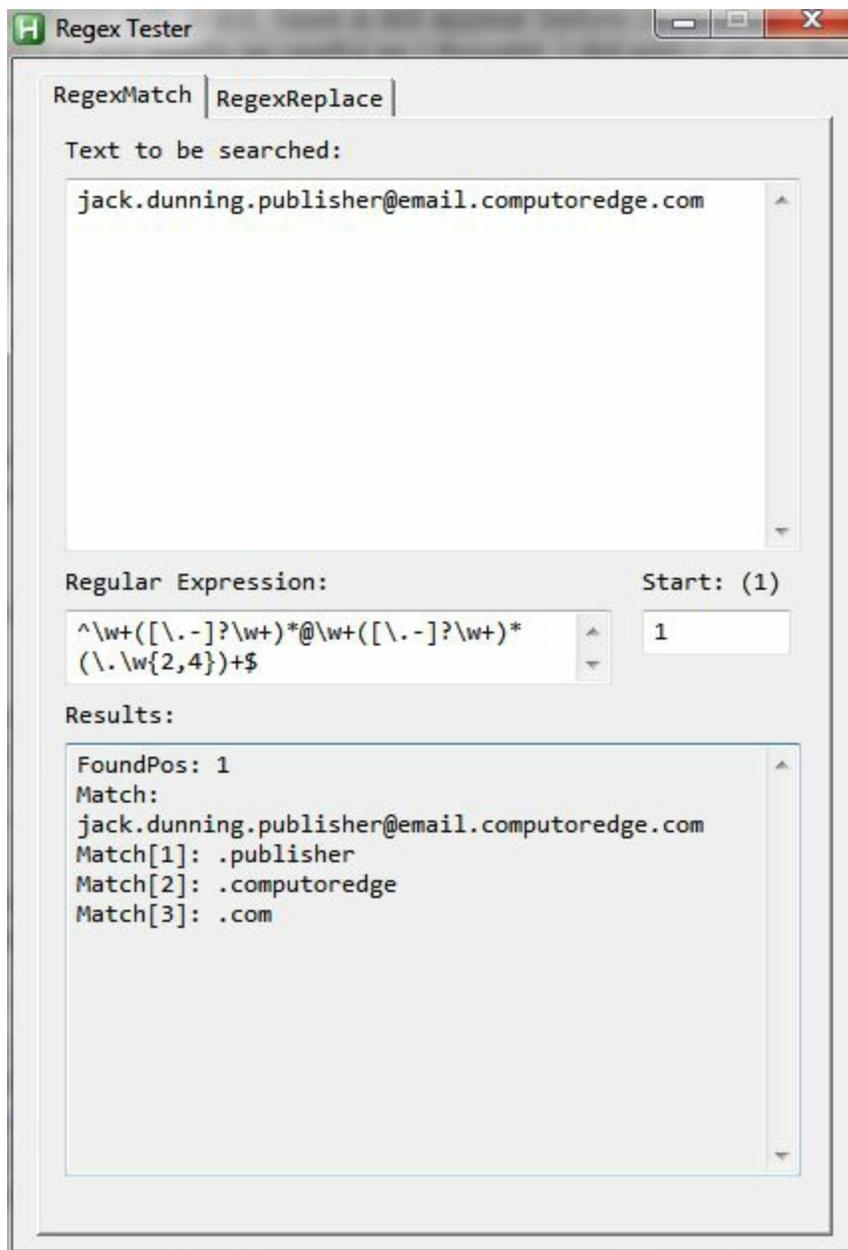


Figure 1. Ryan's Regular Expression Tester is used to evaluate the e-mail address validating expression used by the ComputorEdge E-mail Subscription Form.

This RegEx tester is interactive and immediately updates as either the input text data or expression is changed. For matching expressions ([RegExMatch\(\)](#)—the first tab) the search string is entered into the top edit box. The RegEx is entered into the second edit box and the start character is entered into the next edit box (default is the first character). The results appear in the text box at the bottom of the window.

If the RegEx works and a match is found, then the results will show the match plus any subpattern matches (*Match[1]*, *Match[2]*, and *Match[3]*). If the RegEx fails to find a match, then *FoundPos* is 0 and *Match* is blank. The beauty of this tester is that you can change the data and instantly see if the RegEx is accepting or rejecting the data format or if there is a problem with the expression. Making minor changes can give you tremendous insight into how RegEx works. It did for me!

ComputerEdge Subscription Form Validation RegEx

It's worthwhile to take a look at the e-mail address format RegEx used by the *ComputerEdge* Subscription Form:

```
^\w+([\.-]?\w+)*@\w+([\.-]?\w+)*(\.\w{2,4})+$
```

There are a couple of features used in this RegEx which show its power. If you remember from [last week](#), I was having trouble dealing with the dots (.) in an e-mail address. The RegEx I had copied allowed extra dots in the bad locations and double dots (..) almost anywhere. As I tried to resolve the problems, the expression became longer and more confusing. This new RegEx solved all the problems and simplified the code. When I plugged it into Ryan's RegEx tester, it became clear how it worked. It was the clever use of subpatterns as designated by expressions enclosed in parentheses that did the job.

I have seen parentheses used in a RegEx, but often they serve no real purpose. For example, last week's RegEx contained a few sets of parentheses, but they could be removed without any impact on the results. They were gratuitously inserted probably to help the programmer see key elements. (To be fair, if you insert the original RegEx from last week into the tester, you will see that the portions of the e-mail address are broken out (name, domain, extension) which could be used for other purposes. By the time I finished with that expression, even that value was lost.)

When a portion of a RegEx is enclosed with a set of parentheses, it creates a *subpattern* which can be repeated or used as a *backreference* with the *RegExReplace()* function. (Consult the [AutoHotkey RegEx Quick Reference](#) for options.) Just as a key concept in writing a RegEx is designating a class (or range) by enclosing characters in square brackets (*[]*) (discussed in earlier columns), it important to understand subpatterns as designated by enclosing expressions in a set of parentheses.

Using the symbols ***, *+*, *?*, or *{min,max}* after a subpattern (in this example *([\.-]?\w+)**), causes the entire subpattern to be matched: zero or more times, *(subpattern)**; one or more times, *(subpattern)+*; zero or one time only, *(subpattern)?*; or a minimum and maximum number of times, *(subpattern){min,max}**. This extends the power for RegEx.

In this first subpattern, the range or class enclosed in the square brackets, *[\.-]*, consists of the dot and hyphen. Either constitutes a match. By adding the question mark to the range, *[\.-]?*,

the class becomes optional (match zero or one time). Next the `\w` symbol is used to indicate that any letter (upper or lowercase) or digit, plus the underline mark is an acceptable match (equivalent to `[a-zA-Z0-9_]`). Adding the plus sign, `\w+`, means continue matching until it doesn't match. Ultimately, adding the asterisks to the subpattern, `([\.-]?\w+)*`, tells the RegEx to continue matching the subpattern until it doesn't match the entire subpattern. The affect of this subpattern is to continue to allow segments starting with either a dot or hyphen (not two in a row or both) to be matched in the first section of any e-mail address as shown in Figure 1 above.

Note that `Match[1]` in the Results section of Figure 1 only shows the last match, `.publisher`, for the subpattern. As each new match is made only the last subpattern match is saved in the array for possible reference. When the `@` symbol is encountered (once only) in the string, the RegEx moves on.

At this point it is worth noting that this RegEx is anchored, `^`, at the beginning with `^\w+` which forces at least the first character (plus any other following characters, `+`, until a dot or hyphen in the subpattern is encountered) to match only a letter (upper or lowercase), numeric digit, or the underline mark. This same expression is used after the `@` symbol for the same purpose. This prevents random dots and other illegal symbols matching in e-mail addresses.

The second subpattern, `([\.-]?\w+)*`, which appears in the second half of the RegEx (after the `@`) is identical to the first subpattern and serves the same purpose. It allows the repeating of matches which start with a dot or hyphen.

The last subpattern, `(\.\w{2,4})`, is anchored `$` at the end of the string, `(\.\w{2,4})+$`. This forces the end of the e-mail address to start with a dot (no hyphen this time), then accept letters (upper or lowercase), numeric digits, or the underline mark, but only two to four characters, `{2,4}`. The last plus sign `+` can be removed since the `\w+` in the previous subpattern makes it superfluous. If you play with the RegEx Tester, you will quickly find out which pieces of the expression are important and which are unneeded clutter.

One last note about unneeded characters in an AutoHotkey RegEx. The dot is normally a wildcard which can represent any single character in any RegEx. However, within a class (or range) designated by the square brackets the dot is not a wildcard, but just a dot. With the exception of characters with special meaning inside the square brackets, such as `^` and `\`, an escape sequence is not required. That means in our example the dot found inside the square brackets in the first and second subpattern is merely a dot and not a wildcard. The backslash serves no purpose here and can be removed. This is not the case for the dot in the last subpattern where it acts as a wildcard if the escape backslash is removed.

The final expression can be reduced to:

```
^\w+([\.-]?\w+)*@\w+([\.-]?\w+)*(\.\w{2,4})$
```

There are a number of uses for parentheses in a RegEx. (Examples of those other uses of

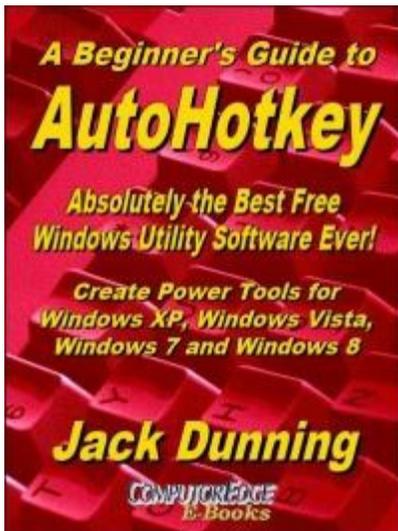
parentheses can be found in the [AutoHotkey RegEx Quick Reference](#).) Creating subpatterns which are saved to an array is one of the most powerful features of RegEx. Next time, I'll take a look at how subpatterns can be used as a backreference with the RegExReplace() function and the RegExReplace tab of Ryan's RegEx Tester.

I've compiled Ryan's RegEx Tester into an EXE file and included both the AHK file and EXE in a ZIP file for download at the [ComputerEdge AutoHotkey download site](#).

* * *

Free! [AutoHotkey Tricks You Ought To Do With Windows!](#) This e-book includes both those tips and the reference material (Table of Contents and indexes) from the other three AutoHotkey books. Pick up a copy free and share it with your friends.

* * *



The second edition with more chapters and an index to the AutoHotkey commands found in the book is available in e-book format from Amazon (and other formats—EPUB and PDF— at the ComputerEdgeBooks Web site linked below). Jack's [A Beginner's Guide to AutoHotkey. Absolutely the Best Free Windows Utility Software Ever!: Create Power Tools for Windows XP, Windows Vista, Windows 7 and Windows 8](#) (preferred, EPUB format for iPad, Android, and computers; MOBI for Amazon Kindle; and PDF for printing) offers a gentle approach to learning AutoHotkey. (Also available from [Amazon](#) for the Kindle and Kindle software on other devices.)

Building Power Tools for Windows XP, Windows Vista, Windows 7 and Windows 8, AutoHotkey is the most powerful, flexible, *free* Windows utility software available. Anyone can instantly add more of the functions that they want in all of their Windows programs, whether installed on their computer or while working on the Web. AutoHotkey has a universality not found in any other Windows utility—free or paid.

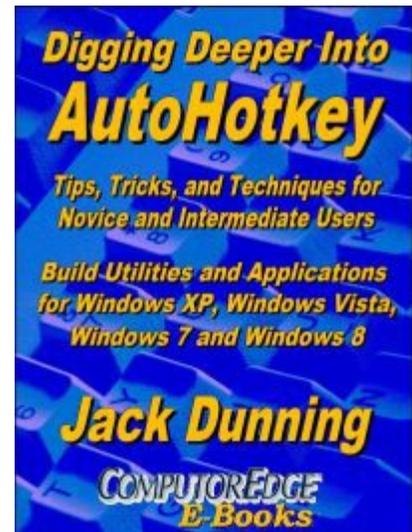
Based upon the series of articles in *ComputerEdge*, Jack takes you through his learning experience as he explores writing simple AutoHotkey scripts for adding repetitive text in any program or on the Web, running programs with special hotkeys or gadgets, manipulating the size and screen location of windows, making any window always-on-top, copying and moving files, and much more. Each chapter builds on the previous chapters.

[For an EPUB \(iPad, NOOK, etc.\) version of A Beginner's Guide to AutoHotkey click here!](#)

[For a PDF version for printing on letter size paper for inclusion in a standard notebook of A Beginner's Guide to AutoHotkey click here!](#)

* * *

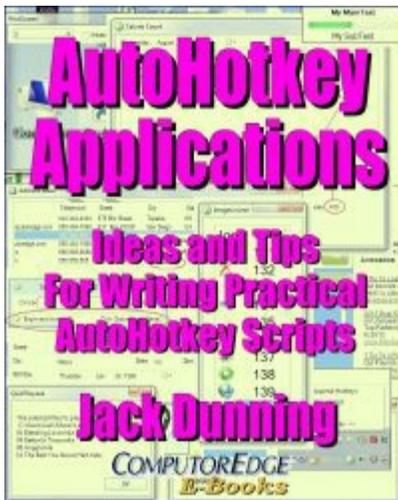
Jack's second AutoHotkey book, [*Digging Deeper Into AutoHotkey*](#) (preferred, EPUB format for iPad, Android, and computers; MOBI for Amazon Kindle; and PDF for printing) is comprised of updated, reorganized and indexed columns from *ComputerEdge* is now available. Since the columns were not all written in a linear fashion, the book has been reorganized and broken up into parts by topic. The book is not for the complete beginner since it builds on the information in [*A Beginner's Guide to AutoHotkey*](#). However, if a person is reasonably computer literate, they could go directly to this book for ideas and techniques without the first book. (Also available from [Amazon](#) for the Kindle and Kindle software on other devices.)



[For an EPUB \(iPad, NOOK, etc.\) version of Digging Deeper into AutoHotkey click here!](#)

[For a PDF version for printing on letter size paper for inclusion in a standard notebook of Digging Deeper into AutoHotkey click here!](#)

* * *



Jack's third AutoHotkey book [*AutoHotkey Applications*](#) (preferred, EPUB format for iPad, Android, and computers; MOBI for Amazon Kindle; and PDF for printing) is an intermediate level book of ideas and applications based primarily on the AutoHotkey GUI command. The book emphasizes practical applications. The book is not for the complete beginner since it builds on the information in the other two books. However, if a person is reasonably computer literate, they could go directly to this book for ideas and techniques without the other books. There is an extensive index to the ideas and techniques covered in the back of the book. (Also available from [Amazon](#) for the Kindle and Kindle software on other devices.)

[For an EPUB \(iPad, NOOK, etc.\) version of AutoHotkey Applications click here!](#)

[For a PDF version for printing on letter size paper for inclusion in a standard notebook of AutoHotkey Applications click here!](#)

Jack is the publisher of ComputerEdge Magazine. He's been with the magazine since first issue on May 16, 1983. Back then, it was called The Byte Buyer. His Web site is

www.computoredge.com. He can be reached at ceeditor@computoredge.com. Jack is now in the process of updating and compiling his hundreds of articles and columns into e-books. Currently available:

Recently released is Jack's FREE AutoHotkey book, [AutoHotkey Tricks You Ought to Do with Window](#), available exclusively at ComputerEdge E-Books in the EPUB for e-readers and tablets, MOBI for Kindle, and PDF for printing formats.

ComputerEdge E-books offering is his [AutoHotkey Applications](#), an idea-generating intermediate level e-book about using the AutoHotkey Graphical User Interface (GUI) command to write practical pop-up apps for your Windows computer. (It's not as hard as it sounds.)

[Hidden Windows Tools for Protecting, Problem Solving and Troubleshooting Windows 8, Windows 7, Windows Vista, and Windows XP Computers.](#)

Jack's [A Beginner's Guide to AutoHotkey, Absolutely the Best Free Windows Utility Software Ever!: Create Power Tools for Windows XP, Windows Vista, Windows 7 and Windows 8](#) and [Digging Deeper Into AutoHotkey](#).

Our second compilation of stupid *ComputerEdge* cartoons from 2011 and 2012 is now available at Amazon! [That Does Not Compute, Too! ComputerEdge Cartoons, Volume II: "Do You Like Windows 8 or Would You Prefer an Apple?"](#)

Special Free Offer at ComputerEdge E-Books! [Jack's Favorite Free Windows Programs: What They Are, What They Do, and How to Get Started!](#).

[Misunderstanding Windows 8: An Introduction, Orientation, and How-to for Windows 8 \(Seventh Edition\)!](#)

[Windows 7 Secrets Four-in-One E-Book Bundle](#),

[Getting Started with Windows 7: An Introduction, Orientation, and How-to for Using Windows 7](#),

[Sticking with Windows XP—or Not? Why You Should or Why You Should Not Upgrade to Windows 7](#),

and [That Does Not Compute!](#), brilliantly drawn cartoons by Jim Whiting for really stupid gags by Jack about computers and the people who use them.



Wally Wang's Apple Farm

“Steve Ballmer's Myopic Vision” by Wally Wang

Wally Wang's Apple Farm

Steve Ballmer's Myopic Vision; More People Buying Macs and Chromebooks; Real and Fake iPhone Problems; Opposite Directions; Moving Away From Cross-Platform Development; Organize Finder Windows.

After laughing at the iPhone, only to see it generate [more profits](#) than all of Microsoft's products combined, Microsoft's former CEO Steve Ballmer has now announced that he's going to [eliminate all Apple Products](#) from the Los Angeles Clippers.

Apparently the Clippers, like many other organizations, have been using iPads to replace bulky paper notebooks. Rather than evaluate what's the best technology for the Clippers, Steve Ballmer simply wants to replace all iPads with Surface tablets.

Remember, Microsoft markets the Surface tablets as a device that can replace a laptop and a tablet. So the big question is how will the Surface tablets work better than the iPad in helping players and coaches view video, pictures, and notes? How will the Surface tablet's laptop features be useful if the team uses them on the bench during games? If the Clippers already use iPads, where's the cost benefit in dumping them to buy Surface tablets? Will Surface tablets do something the iPads can't do?

When you take your eye away from results and only focus on blind allegiance to a product or company, you risk choosing the wrong technology. Notice how airport terminals aren't rushing to replace their Windows XP PCs with Linux or OS X computers? That's because if something already works, then switching technology will simply cost money and time to achieve the same or slightly different results. Switching technology only makes sense when the switch promises massive improvements that current technology can't offer.

By announcing that the LA Clippers can't use their existing Apple products and must use Surface tablets instead, Steve Ballmer continues wasting time and money in return for no additional benefit. Then again, Windows 8 and Microsoft Office 2013 (created during Steve Ballmer's days as Microsoft's CEO) never offered customers any additional benefit over Windows 7 and Office 2010.

Both Windows 8 and Office 2013 primarily benefited Microsoft through additional upgrade sales while actually decreasing productivity for its customers by increasing the number of steps needed to complete common tasks. When you release a product for your benefit and not for your customer's benefit, don't be surprised when customers stop buying your products altogether.

Steve Ballmer is proof that intelligence has nothing to do with being rich. For someone who completely missed the impact of the iPhone by [laughing at it](#), the only contribution Steve Ballmer made to Microsoft was in leaving, which promptly shot Microsoft's stock price way up.

Perhaps in the future, Steve Ballmer can help the LA Clippers by leaving them too. While Microsoft's current CEO, Satya Nadella, has to clean up the mess that Steve Ballmer left behind (Windows 8, Windows RT, Windows Phone, Surface tablets, etc.), Steve Ballmer continues demonstrating how his myopic vision helped turn Microsoft from a computing powerhouse into an afterthought.

The goal of any organization is to achieve useful results regardless of what they use to get it. That simple fact of business constantly seems to escape Steve Ballmer and people like him who think that it's more important what you use rather than what you can produce.

If all you care about is whether you're using Microsoft products and not using Apple products, then you're ignoring the real goal which is to produce results. If you'd rather sacrifice results for appearances, then you might as well do your best to drag down your organization as fast as possible just like Steve Ballmer did with Microsoft.

More People Buying Macs and Chromebooks

In the old days, everyone bought a Windows PC because at the time, Windows was the best and easiest solution. Now the NPD Group research firm has announced that during a ten week period, sales of Macintosh computers made up over a quarter of all sales while Chromebooks made up less than 5 percent of all sales. Windows PCs made up the remaining [68.4 percent](#).

So why are people no longer relying solely on Windows anymore? If you're truly concerned about cost, Chromebooks are still the best low-cost bargains. If you're willing to spend more money, Macintosh computers may cost more but give you a solid aluminum case instead of a flimsy plastic case. Macintosh laptops also offer a more responsive trackpad compared to many cheap Windows laptop PCs.

Pricing a Windows PC the same as a Macintosh won't work because it's less expensive to buy a lower priced PC running Windows. Pricing a Windows PC near Chromebook prices cuts into profits, which is why Microsoft allows manufacturers to use Windows for free on devices with smaller screens.

Of course, lower Windows PC prices also means eliminating expensive touchscreen features, which was supposedly the main reason for using the Windows 8 tile interface. At one time, Microsoft promoted touchscreen laptops as the future of computers. Now they're promoting inexpensive PCs without a touchscreen as the future of computers.

Whether people spend more money for a Macintosh or less money on a Chromebook, the future points to people wanting computers that are easier to use. If you're familiar with graphical user interfaces, using OS X won't take as much trouble to learn as switching to the schizophrenic tile interface of Windows 8. If you just want a simple browser-based interface, using a Chromebook will be nearly effortless.

On the other hand if you're addicted to complexity and prefer an operating system that seems familiar but forces you to relearn common tasks anyway, then you'll definitely enjoy spending time learning the Windows 8 interface before you can be productive with your computer once more.

If you want real choice, look at a Macintosh, a Windows PC, and a Chromebook to determine which one might best meet your needs. If you don't want any choice at all, feel free to accept deliberate lies to make your decision for you.

Real and Fake iPhone Problems

Every time a new iPhone comes out, critics try to find ways to point out possible flaws. Usually the flaws they find are the same flaws affecting other phones. Back when everyone complained about how your hand could cover the antenna in the iPhone and block signal strength, nobody complained when phones from other manufacturers suffered from the same problem.

The latest fake controversy involves bending the iPhone 6 due to its thinness. Consumer Reports tested various phones and found that nearly all of them could withstand a significant amount of [pressure before bending](#).

Results of Consumer Reports smart phone bend test		
	Deformation	Case separation
HTC One (M8)	70 pounds	90 pounds
Apple iPhone 6	70 pounds	100 pounds
Apple iPhone 6 Plus	90 pounds	110 pounds
LG G3	130 pounds	130 pounds
Apple iPhone 5	130 pounds	150 pounds
Samsung Galaxy Note 3	150 pounds	150 pounds



Figure 1. Consumer Reports tested multiple phones for bendability and breakage.

Not surprisingly, a non-iPhone 6 phone (the HTC One) could withstand even less stress than the iPhone 6 before bending. How come critics didn't complain about the HTC One being prone to bending and breaking? Probably because few people care about the HTC One and more people hate Apple for no apparent reason while they cheerfully use products that Apple helped promote such as expansion slots in a computer (Apple II), graphical user interfaces (Macintosh), touchscreen interfaces (iPhone), and tablet designs (iPad).

Apple also helped shape the design of [ARM processors](#) that they used in their Newton personal digital assistant (PDA) for their power and low energy requirements. Not surprisingly, ARM processors now dominate smartphone and tablet computers so if you use any modern

smartphone or tablet with an ARM processor inside, you can thank Apple for helping make that possible. (If you hate Apple, simply refuse to use any smartphone or tablet that uses an ARM processor or any computer that uses expansion slots and graphical user interfaces. If you're not willing to do that, ask yourself why.)

While the whole phony crisis over the iPhone 6 has now been exposed except for people who cling to lies in lieu of actual facts like Flat Earth supporters or moon landing deniers, the real crisis was the iOS 8.01 update that killed iPhone 6 models.

Strangely, iOS 8.01 worked perfectly well on every device except the iPhone 6. Since Apple and all the carriers tested iOS 8.01 for a week before releasing it, how come nobody thought of the obvious by testing iOS 8.01 on an iPhone 6, especially since that was the device Apple was promoting the most?

When major problems could be prevented through simple logic, you realize how any organization can allow incompetent people to seep into their ranks. When people don't take responsibility for their work, they can easily hide behind layers of bureaucracies.

Look at any artist and he or she takes full responsibility for their creations. You might not like what they create, but there's no doubt that they did it. Now look at how corporations work where nobody takes responsibility for failure but everyone rushes to take credit for success.

People willing to accept both credit and blame for their work are true leaders. People who only want the credit while avoiding the blame are the ones who spread mediocrity and incompetence wherever they go. It's easy to be mediocre and incompetent. At least if you're mediocre and incompetent, you can easily find other people just like you in any organization.

Opposite Directions

While Microsoft tries to get everyone excited about the next version of Windows (tentatively dubbed Windows 9) that promises to fix the problems that Microsoft created when they introduced Windows 8, Apple keeps improving iOS for future products including the Apple Watch, Apple TV, and possible updates to new iPad models such as a rumored larger iPad Pro.

In addition, Apple needs iOS to handle Apple Pay, HealthKit, and HomeKit. Apple Pay will let people securely use their iPhone 6 or Apple Watch to purchase items, HealthKit will allow iOS devices to store and capture health-related data, and HomeKit will allow iOS devices to control household items such as an Apple TV, lights, heating, and even locks on a building.

Health insurance company Humana recently announced their own [iOS app to use HealthKit](#) to track and improve a person's health. Initially, expect health insurance companies to introduce health-related apps for tracking and storing health data. Then the next step will be to reward users who maintain healthy lifestyles and willingly share their health data with insurance

companies in return for lower premiums.

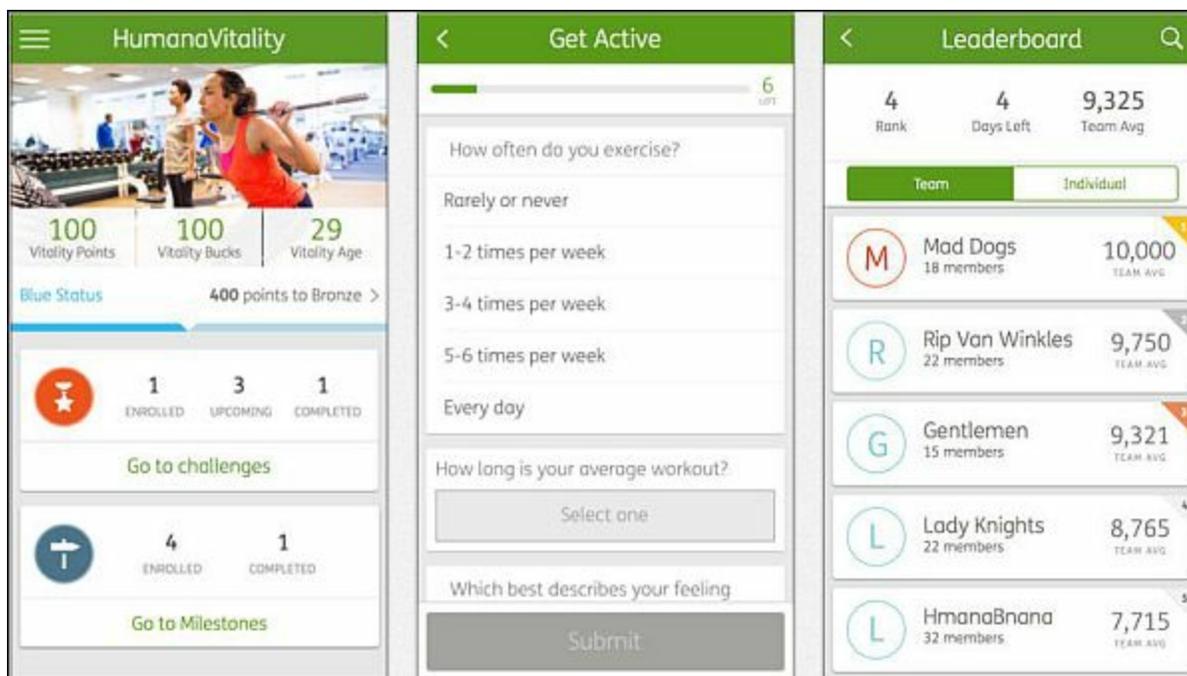


Figure 2. The free HumanaVitality iPhone app helps track health-related data.

With Apple planning to use iOS in iPhones, iPads, Apple Watches, and Apple TVs combined with HealthKit and HomeKit to monitor and control your health and home, it's easy to see where the future lies. You can focus on iOS to control your payments (Apple Pay), monitor your fitness (HealthKit), and control a building (HomeKit) in addition to running apps on the lucrative markets defined by the iPhone, iPad, and soon to be released Apple Watch.

If you prefer to avoid anything made by Apple, you can hope and pray that Windows 9 will actually fix Windows 8 without introducing new problems of its own. Even if Windows 9 succeeds in fixing Windows 8, that will still leave you stuck in the desktop PC world that's slowly fading from importance. Can Windows 9 magically convince the world to switch to Windows 9 tablets and Windows Phone phones? Probably not, which means no matter how good Windows 9 might be, it still can't achieve success in the faster growing mobile computing market defined by iOS.

As a developer, you can't afford to ignore iOS. As a user, expect iOS to become the dominant operating system platform across a variety of devices. In either case, the future potential of iOS keeps getting bigger and brighter while the future potential of Windows remains rooted in repairing problems from the past. For people who prefer clinging to the past so they don't have to learn anything new, it's easy to see which operating system they'll loudly proclaim must always be superior even if they can't cite any facts to support their beliefs.

Moving Away From Cross-Platform Development

To see the future of computing, watch what the developers are doing. During the transition from CP/M-80 to MS-DOS, many developers were trying to develop programs capable of running on both operating systems such as WordStar, VisiCalc, and dBASE. Creating cross-platform programs was important because developers weren't sure which operating system would dominate so they hedged their bets.

However, by wasting time creating cross-platform programs, companies like WordStar failed to optimize their program for any particular operating system. That's when programs like WordPerfect and Lotus 1-2-3 (that focused on the MS-DOS market) wiped out the cross-platform programs. Oddly enough, dBASE managed the transition from CP/M-80 to MS-DOS, but failed to make the similar transition from MS-DOS to Windows.

Cross-platform programs must work on different operating systems so they can't be optimized for any one particular operating system. That means programs optimized for one particular operating system will be able to offer features that cross-platform programs can't.

As soon as everyone realized that MS-DOS was going to be more popular, developers stopped worrying about creating CP/M-80 programs and switched entirely to MS-DOS. In today's world, developers are still creating cross-platform programs that run on both Windows and OS X.

In the old days, developers mostly ignored OS X and focused on the more lucrative Windows market instead. While some developers focus on creating Windows and OS X programs, others are starting to focus on OS X exclusively.

Smaller developers may still cling to the Windows-only market, but even those developers can't afford to lose potential customers who use OS X or iOS. As OS X and iOS grow in popularity, developers have a choice of continuing to create cross-platform programs or take a chance and gamble on the future growth market of OS X and iOS.

The fact that few big companies only sell Windows programs anymore tells you the shift has begun. Now that most developers are hedging their bets with cross-platform programs that run on Windows and OS X/iOS, the next step is waiting to see which operating system will become dominant next.

Will everyone suddenly shift back to Windows and make every other operating system irrelevant? Or will more people rely on OS X/iOS and rely less on Windows? As past developers have learned from the transition between CP/M-80 to MS-DOS and then MS-DOS to Windows, clinging to the past and hoping anything new will go away has never proven to be a smart, long-term strategy.

* * *

If you use the Finder often, you may wind up with multiple Finder windows scattered all over

the screen. If you're using Mavericks, just click the Window menu and choose Merge All Windows. This will create a single Finder window with multiple tabs representing each previously open Finder window.

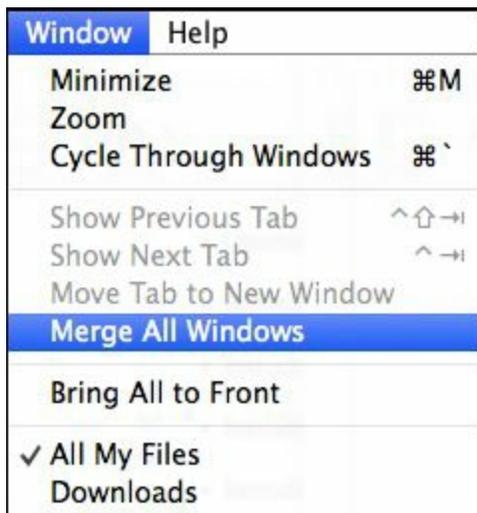


Figure 3. The Merge All Windows command helps keep multiple Finder windows organized in tabs inside a single window.

In the early days, before Wally became an Internationally renowned comedian, computer book writer, and generally cool guy, Wally Wang used to hang around The Byte Buyer dangling participles with Jack Dunning and go to the gym to pump iron with Dan Gookin.

Wally is responsible for the following books:

[Microsoft Office 2013 For Dummies](#)

[Beginning Programming for Dummies](#)

[Beginning Programming All-in-One Reference for Dummies](#)

[Breaking Into Acting for Dummies with Larry Garrison](#)

[Strategic Entrepreneurism with Jon and Gerald Fisher](#)

[How to Live with a Cat \(When You Really Don't Want To\)](#)

[The Secrets of the Wall Street Stock Traders](#)

[Mac Programming For Absolute Beginners](#)

[Republican Fairy Tales \(Children's Stories the 1% Tell About the Rest of Us\)](#)

[The Zen of Effortless Selling with Moe Abdou](#)

[*The 15-Minute Movie Method*](#)

[*Erotophobia \(A novel\)*](#)

[*Math for the Zombie Apocalypse*](#)

[*How to Write a Great Script with Final Draft 9*](#)

[*How to Write a Great Script with Fade In*](#)

[*The Elements of a Great Script: Star Wars*](#)

[*The Elements of a Great Script: Die Hard*](#)

[*The Element of a Great Script: Back to the Future*](#)

[*The Elements of a Great Script: Rocky*](#)

[*The Elements of a Great Script: It's a Wonderful Life*](#)

In his spare time, Wally likes blogging about movies and writing screenplays at his site "[The 15 Minute Movie Method](#)," finding interesting news stories about cats at his site "[Cat Daily News](#)," giving advice to authors who want to self-publish e-books at his site "[The Electronic Author](#)," and providing the type of advice he wishes someone would have told him when he was much younger at his [personal Web site](#). Wally can be reached at wally@computoredge.com or you can follow him on Twitter [@wallacewang_com](#).



Editor's Letters: Tips and Thoughts from Readers

“Computer and Internet tips, plus comments on the articles and columns.” by ComputerEdge Staff

"Can't Format External Drive," "What Loads When Windows Starts?" "Windows Assigning Drive Letters," "Wally Wang, iPhone 6, Why Software Fails"

Can't Format External Drive

[Regarding the September 12 [Digital Dave column](#).]

I'd try connecting it to another computer (friend, whatever) and see both if you can read (copy some files from it), and/or write (copy some files to it as well as creating a new folder or two).

If so, try reformatting (if that's what you want to do) it from that computer.

Finally, try it attached to the original computer again.

-Rich Ernst, San Diego, CA

What Loads When Windows Starts?

[Regarding the September 5 [Digital Dave column](#).]

A routine that I have used upon occasions that assists with explaining what is in MSConfig and where or not they can be removed is a routine called Solutio at www.solutio.com/boot-time. Really a pretty neat little utility. Thanks for your interesting troubleshooting columns.

-Don Piller, Escondido, CA

I use a free program called SlimCleaner, it is really neat the way you can click on Hijack Log (lower left) and it will scan your computer for what loads on startup. It has a Novice mode (I recommend) and an Expert Mode (which could get you in real trouble).

The nice thing is it has a community rating after the entry and a note that tells whether the SlimCleaner Online Community thinks it is Good or Optional. But the best part is you can click on the "More Info" button and the community explains why or why not to keep the entry, with pros & cons, and different people's recommendations. Also, it is easy to remove

the entry, and it keeps it in a "restore" location so you can bring it back if it makes something glitch.

And, no, I don't work for SlimCleaner, I've been using it for the last three or four years and like it better than CCleaner.

-Dave Bisbee, Chula Vista, CA

Windows Assigning Drive Letters

[Regarding the September 12 [Digital Dave column](#).]

I think, but have not verified, that if you change/set a drive letter for a device or partition in disk management, it's reserved for that device so that letter would not be used if other drives/devices get added or removed. It just skips that letter.

What I do is always use really high letters for things that matter (USB external drives, for example, but *not* just USB flash drives that are only occasionally attached and a different letter wouldn't matter much). I have an external Seagate as well and made it drive S: and it's never changed.

Many backup programs will automatically recognize something about the external drive (name, files on the drive already, or something hidden) so if the drive letter changes, it'll automatically default to the same backup drive, but since we don't know what backup program you're using, it is hard to be sure so do the above instead.

-Rich Ernst, San Diego, CA

Wally Wang, iPhone 6, Why Software Fails

[Regarding the September 12 [Wally Wang's Apple Farm column](#).]

The segment on the new iPhone 6 was excellent, especially "Why Software Fails." Wally Wang's description was what I had to live with in my early work life, but e-mail has eliminated shirking of responsibility in both government and multinational private sectors. The non-productive members of a project team can be tracked by reviewing their e-mail history.

Government now contracts out to the private sector for technical projects. Projects may also fail because a politically favored firm is picked over more experienced firm.

-James Taylor, San Diego, CA

ComputerEdge always wants to hear from you, our readers. If you have specific comments about one of our articles, please click the "Tell us what you think about this article!" link at the top or bottom of the specific article/column at ComputerEdge.com. Your comments will be attached to the column and may appear at a later time in the "Editor's Letters" section. If you want to submit a short "ComputerQuick Review", or yell at us, please e-mail us at ceeditor@computoredge.com. If you would like to review our recent e-books, please visit [ComputerEdge E-Books](#).

Send e-mail to ceeditor@computoredge.com with questions about editorial content.
Send mail to cwebmaster@computoredge.com with questions or comments about this Web site.
Copyright © 1997-2014 The Byte Buyer, Inc.

ComputerEdge Magazine, P.O. Box 83086, San Diego, CA 92138. (858) 484-1998

[Click to Visit ComputerEdge™ Online on the Web!](#)

Table of Contents

List of ComputerEdge Sponsors	2
San Diego ComputerEdge Sponsors	2
Colorado ComputerEdge Sponsors	2
ComputerEdge™ Online — 10/03/14	3
Television: The New Cyber Window	3
Magazine Summary	3
Digital Dave	5
Get Rid of Trovi Hijacker	5
Public Versus Private Inbound Rules	6
Will System Restore Remove a Virus?	9
Turning Big Screens into Cyber Windows	10
The New World of Multiple Monitors	10
Adding the Television as Another Monitor	11
A Plethora of Screens	13
A Cool Tool for Writing Regular Expressions in AutoHotkey	16
Regular Expression Testing App	16
ComputerEdge Subscription Form Validation RegEx	18
Wally Wang's Apple Farm	23
More People Buying Macs and Chromebooks	24
Real and Fake iPhone Problems	25
Opposite Directions	27
Moving Away From Cross-Platform Development	28
Editor's Letters: Tips and Thoughts from Readers	32
Can't Format External Drive	32
What Loads When Windows Starts?	32
Windows Assigning Drive Letters	33
Wally Wang, iPhone 6, Why Software Fails	33