

Newsletter of Sydtrug Inc.

Sydney TRS-80/MS-DOS Users' Group

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AUSTRALIA

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Meeting Arrangements

Meetings will be held on
SECOND Saturday afternoon each Month
Starting 1:00pm at 1st Sefton Scout Hall
4 Waldron Road, Sefton

2013 14th Sep

12th Oct
9th Nov
14th Dec

2014 11th Jan

**Closing date for the Newsletter contributions
is at the monthly meetings**

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Our newsletter "SYDTRUG News"

Distributed on a regular basis, it includes the Groups business information, membership list and contact details along with articles and information on software and hardware from local and overseas sources. Contributions are always welcome

COST: Included in your membership fee. **Printed Back Issues** (where available) are \$2.00 an issue, plus postage (60c in Australia). However you should first check our WebPages for available newsletter at **www.sydtrug.org**

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IVAN KENNEDY'S MODEL IIIs

by

Ian Mavric, contributing writer

ianm@trs-80.com

Back in February Ivan emailed me saying he had a number of old TRS-80 systems which he would like to get fixed, and asked if I was up to the task. After a few more details were sent back and forth between Ivan and I, we made plans for a visit to my workshop with a Subaru Forester full of TRS-80s. The actual count was 6 Model 4s, 3 Model IIIs, a Model 1 system, a Model 4P portable TRS-80, a Tandy 200 notebook, and boxes of spare parts and a small consignment of software. My briefing was simple: fix as many as I could before Ivan had to return to Sydney two weeks later.

I first had a look at the Model III computers, two looked complete, a 16K cassette-based machine and a very rare 48K disk-based machine with the optional factory high-resolution graphics kit (cat. no 26-1125) installed. For those who can't remember, the graphics option was super expensive, \$549 in 1982, and not many people bought it because there was no software support for it. The few computers which have the graphics option fitted are considered to be priceless restore-at-all-costs relics, so to me this one was a must-fix. Checking with Ivan, I found that this computer was owned by Graham Read and had not been in service since 1995.

First I thought I would deal with the easy machine, the 16K, and had a look inside to find it surprisingly clean. Nothing looked out of place so I plugged it in and was soon greeted with the familiar Cass? prompt and flashing block cursor. The picture was shaky but the machine seemed to work quite well, despite a few unresponsive keys. I made a list of the non-responsive keys and powered the machine down. Shaky picture on this type of computer is usually the result of ineffective ripple current filtering in the power supply and it didn't take long for me to find the culprit, a bulging electrolytic capacitor. I replaced it as well as the A/C line filter caps, re-installed it in the computer and was pleased to see a rock-solid picture. After fixing the keys I tested the machine further by loading some software the old fashioned way off cassette and was pretty pleased with my work. The computer had been stored in direct sunlight at some time in its life so both Enter keys were yellow, and it had also

lost its Model III nameplate. After bleaching the Enter keys finding a spare Radio Shack TRS-80 Model III Microcomputer nameplate the computer was finished. Not a bad start I thought.

Next I had a look at the hi-res Model III and jeez they are a complicated beast. The hi-res board mounts onto an aluminium chassis which sits over the motherboard. It's all a very tight fit inside the cabinet. Graham had modified his Model III with extra cables coming out of the hi-res board. I wasn't entirely sure what they were for but I'm guessing they are to drive an external monitor... perhaps for classroom presentations or the like. The cables were a mess and once I had removed them all I had the hi-res board removed from the machine. At this point it's just a regular Model III 48K disk system, which I powered up and it was in a very unhappy state. Model IIIs have 24 16Kx1 bit Ram chips arranged in three banks of 8 chips, each bank providing 16K of memory. After some swapping and changing, I ended up throwing out 14 bad Ram chips, replacing them with good used ones and finally after some hours was greeted with Cass? on the screen. The power supplies both (Model III disk systems have dual 35W power supplies in them) had blown A/C line filter caps which were changed, but the disk drives were both unhappy. I sourced a couple of good used disk drives from Ivan's collection of spare parts and before long the computer was booting up to TRSDOS 1.3 and running memory test routines. Enough work for one afternoon so I called it a day.

The next day I ran memory testing routines for most of the day while I restored the trace cuts and re-wiring Graham had done to the hi-res graphics board. The moment of truth was when I attempted to re-connect the hi-res board and loaded up Tandy's Service Centre diagnostic disk which has test patterns for the hi-res board. A pattern loaded up, it was high resolution, but none of the test patterns looked remotely like they should. A closer look at the patterns that did show up displayed alternating black and white blocks interspersed with sections of what the pattern should have been. Knowing that the memory on the hi-res board is "visible" memory, white blocks indicate a bit stuck high and a black block represents a bit stuck low. Given the poor state of the main RAM in the Model III it was reasonable to suspect the RAM on the hi-res board suffered the same fate, and so replacing the memory chips on the hi-res board cured the problem and displayed the proper test pattern.

I put the computer back together and was working on it a bit when I decided the brightness needed to be turned up a little, so I reached under the computer where the brightness/contrast controls are, only to find the brightness control stuck solid. I've seen this before, where the control just seizes-up inside, and there is little you can do other than replace the control with a good used one. Once again the lid was removed from the computer and the faulty brightness control replaced. Satisfied everything had been done to make this computer happy again I put it together one last time and that is how it is now at Ivan's.



The last Model III? It was missing many parts, had no disk drives and no power supplies installed, it also had major scratches in the silver paintwork on one side and so I pretty quickly this one was going to be a parts machine to fix other TRS-80 Model IIIs. Key switches from it were used to fix the 16K cassette machine, and RAM chips, brightness control, and various other screws etc. were used to fix the hi-res Model III. Some parts were used to fix the Model 4, which I will talk about next time.

Ian.

Performance, Capacity, Ports...Tablet discriminators

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December 2012 issue, PC Monitor

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Performance, Capacity, and Ports - sounds like something you might think of when you are considering a Vacation Cruise. But Performance, Capacity, and Ports are the three technical things to consider when contemplating acquiring many new devices. These three things should be considered,

especially when you are planning to buy a tablet, a computer, or even a TV. TVs and computers have been around for quite a while, so let's take a look at these considerations for the new kid on the block, the tablet. Usually, when it comes to choosing a tablet, the first thing that meets the eye is the tablet size. Today's tablets seem to be roughly 7 or 10 inch. Once the size has been decided, then the Operating System becomes a choice: Apple's iOS (iOS5, iOS6), Google's Android (and all of its versions, like FroYo, Ice Cream Sandwich and Jelly Bean), or Microsoft's Windows 8 (Pro or RT). And then, with the number of tablets and Operating Systems, the choice can really get difficult. But another way to help you make the final choice may be just to look at Performance, Capacity, and Ports.

Performance is a measure of how fast the device is and how well it accomplishes the desired task. Capacity is a measure of how much you can do with this device. And Ports is a measure of how well the device will interact (interface) with the outside world.

Tablet performance is very hard to measure and quantify, but you really know when you don't have enough. When you do have plenty of performance, it is hard to ascribe the quality to any one thing, specifically. But, usually we look at the speed of the CPU. However, performance is very closely tied to the memory features, so performance may involve the memory speed as well as the CPU speed. Performance of the tablet CPU is measured in GHz, and currently good performance tablets clock in at around 1GHz. Because tablets are typically touchscreen devices, the first thing we do, to ascertain performance, is to try to control the operation with our finger flicks and swipes. Objects should move when flicked and actions should take place when the screen is tapped. If there is any lag, it is immediately noticed.

There are many different CPU processors used in tablets. Some of the manufacturers are ARM, Nvidia, Apple, Intel, and AMD. Apple CPUs are found in the iPad and CPUs from the other manufacturers are found in the Android and Windows 8 tablets. There are at least two high performance CPU chips being used in the latest tablets: the Nvidia quad-core Tegra 3 in Android tablets and the Apple A5X in the latest iPad. The performance of both of these tablets is breathtaking. But keep in mind, not all tablets have the latest processors.

CPU performance can be determined by running benchmark tests. Benchmark test data is rarely available, but sometimes it can be

found in reviews done by a magazine or other organization. Benchmark tests attempt to measure performance by running typically very lengthy and very complicated programs to see how long it takes to complete the task. There are many different benchmarks and when many different benchmark tests are run on a group of processors, the results may not always be conclusive. CPUs are sometimes fast in certain computational areas and not so fast in other areas, like data transfer. To really evaluate a CPU with a benchmark test, the benchmark test should be as close to the eventual use of the processor as possible, but this is not always easy to specify. Benchmark tests that involve a user, such as testing a game on a tablet, are even more difficult to use, because playing and observing a game may be very subjective, especially if it involves the screen display and input from the game player. So, the best test for performance is to try out the tablet yourself, while doing some of the things that you intend for the tablet, like web surfing, displaying pictures and videos, or playing a game (try Angry Birds for fun). Many tablets can be taken for a “test drive” at the “big box” stores like Best Buy and Office Depot.

So much for Performance: now for Capacity. The Capacity of a tablet is typically the amount of solid state memory the tablet provides. It is basically the data storage component of the tablet, which currently ranges from about 1GB to 64GB. This storage is space that is available for your Apps (software programs), and data (used by the Apps). Today, capable tablets usually have from 8GB to 32GB of memory. Many Android tablets, and Microsoft’s Surface, also include a microSD slot for extending the memory capacity. Currently, the SDHC standard has been implemented in the microSD hardware, allowing for up to 32GB of added memory capacity. (At this time, Apple, unfortunately, has not included a memory expansion slot on any of its iPad devices, although they do sell a model with 64GB of memory.)

Ports: refers to the availability of interface connections provided by the tablet. This is the way your tablet interacts with your other devices. Some tablets include a micro, mini, or standard size USB connector. The USB interface allows the tablet to be connected to a computer (desktop or laptop) in order to move files to and from the tablet. This is one method of getting your entertainment media (pictures and videos) on to, or off of, the tablet. This is how you can get the pictures or videos that you captured with your tablet’s camera into your

picture collection on your computer. (Again, at this time, Apple, unfortunately, has not included a USB connection on any of its iPad devices, although they do provide a 30-pin dock connector that may be used to connect to a computer.)

Another valuable port found on some tablets is a micro-HDMI port. With this interface, the tablet can directly show video (picture and sound) on any TV with an HDMI input, which is found on almost every new flat panel TV. (Again, at this time, Apple, unfortunately, has not included a micro-HDMI port on any of its iPad devices, although they do provide a 30-pin dock connector that may be used to output video.)

Two other interface connections should be considered as ports although they are not obvious when you look at the hardware. These are Wi-Fi and Bluetooth, neither of which has a hardware connection because both of these are wireless interfaces. These interfaces allow the tablet to interact with other devices that subscribe to the Wi-Fi and Bluetooth wireless standards. [And finally, although few tablets incorporate this, let’s not forget about NFC (Near Field Communications). This wireless interface has many uses, but may only end up on smartphones. NFC will allow easy transfer of files between closely situated (within a few centimeters) devices. This interface may be instrumental in allowing you to use your device as a wallet, in the future.]

Once you’ve decided to buy a tablet, the next thing is to evaluate the Performance, Capacity, and Ports of the most interesting offerings in the market. Usually, there will be a few that meet most of your criteria. At that point it becomes a matter of value: capability for dollars. Good luck.

Back to Basics

Connecting Things to Your

Computer – The USB Port

Jim Cerny, Director, Sarasota PCUG, Florida

December 2012 issue, Sarasota PC Monitor

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Printers, cameras, flash drives – is there any limit to what you can connect to your computer? Today we want to look at how to connect all

those wonderful devices to your laptop or desktop. Almost all such connections (which are not wireless connections) are through a “USB” port cable. USB stands for Universal Service Bus and just like a city bus can carry all kinds of people a USB connection can connect almost anything. The purpose of this article is to provide you with the information you need to connect things using the USB connection port. All computers have at least two and maybe three or more USB ports. They are rectangular “holes” in your computer, approximately one-half inch wide by 3/16 inch thick. Any device you purchase which can connect to your computer will probably come with a connection cable with one end being a USB port connector. The other end of the cable will probably have a different shape which plugs into the device you are connecting (camera, printer, mouse, etc.). Here is how you connect something to your computer using this port:

1.. Using the connection cable, plug your device into your computer’s USB port. (The USB plug does have a “right side up,” so if it doesn’t fit one way, turn it over).

That’s it. There is no second step. Oh -- maybe you have to turn on the device you are connecting.

Yes, it’s simple, but I think it is helpful to know a little of what is going on and how to best use your USB ports on your computer. For example, did you know you can have as many USB ports as you need? If you have three USB ports and they all are used and you have a fourth device to connect, what do you do? You go to a store and buy a USB multiplier (or “splitter”) that connects to one USB port and provides four more ports! Believe it or not, you can connect over 100 different devices through one USB port.

So what basically happens when you connect something to a USB port? Well, the computer, all on its own (please make sure the device you are connecting is turned on), identifies the device and establishes the communication code or language it must use to work with the device. If the computer does not have this code in its memory it will go to the internet and get it. So it is usually a good idea to be connected to the internet when plugging in something new to your computer. Pretty neat, huh?

If you are connecting some kind of memory device, such as an external disk drive or a flash drive, there will be an exchange of data to and from the device while you are using it. You can

save files to the device and you can change or delete files already on the device. The only danger here is what if you disconnect the device (i.e. unplug it) while it was receiving information from the computer? The file could be incomplete – a file error. So, the idea is to make sure that the device is done transferring data before you disconnect it. Here’s how to safely disconnect a memory device:

In Windows, when you connect a memory device to your computer you will see a new icon in your SYSTRAY– those little icons by your clock on the right end of your taskbar.. The icon will look like a USB cable connector plug and a green circle with a white checkmark in it (in Windows 7). It will be tiny, so look closely. (If you don’t see it, click on the little arrow to the left of these icons to reveal the icons that didn’t fit into this area). Whenever you connect a new memory device to your computer Windows assigns it a drive letter. Most computers have the main “C” drive and a CD/DVD drive assigned the letter “D”. When you connect another memory device to your computer it would then be assigned the letter “E”. When you are ready to disconnect your device, click on this icon. You will then see a list of all the memory devices connected to your computer (most of the time it will be only one device). Click on the specific device on the list to tell the computer you are through using it. You should then see a message displayed that says it is safe to remove the device. It is just a little extra step to make sure you are not unplugging a device while it is in use. Another way is to simply turn off the device before you disconnect it.

There are other connection ports (i.e. “holes”) in your computer where you can plug things in, like the ISDN connector, monitor, keyboard, mouse, and other cables. Make sure you are plugging your USB plug into a USB port – match the shape carefully! Remember, there IS a “right side up” on the plug too, so if it does not go in one way, turn it over and try again. Never force a plug into a port!

USB ports have made connecting many devices very easy. So go ahead and buy that camera or jump drive and plug them in!

Worth Repeating

Expert: A person who can take something you already knew and make it sound confusing.

— Clyde Moore

The Tip Corner

Bill Sheff, Novice SIG Coordinator,
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January 2013 issue, The LVCG Journal

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Remove Malware

If you do not do a routine cleaning out of malware from time to time, you can be subject to system crashes, blue screens, computer slowdowns, and even hardware failure. You want to periodically clean out your cookie folder, internet files and scan your computer. Unlike virus checkers, where you only want one program operating on your system, you can have more than one program to check for malware and spyware. There are various strengths and weaknesses with each one. There are several free ones, and there are others included within the security suites like McAfee, Avast and Norton as well as Microsoft Security Essentials. Some standalone programs are Malwarebytes, AdAware and AVG. I have been using CCleaner for many years which not only checks for malware and Trojans but will also search and clean your registry of orphan shortcuts and other problems. One of the useful items included in CCleaner is the ability to select cookies – such as from your banks or shopping sites – and save them before you do a cookie cleanup, keeping your important ones so you do not have to reenter data on sites you use frequently. Another important feature is making a copy of your registry before making any changes in case something was inadvertently removed. I have trusted CCleaner to do its job with no adverse results. Better yet, it is free. We have discussed this at the Novice SIG but I thought it worthwhile to include it in my tip column.

Using the Command Prompt to Reveal Hidden Files

Some viruses leave behind nasty side effects, even when your antivirus program has cleaned the actual virus from your computer. If your desktop icons are missing and your C: drive appears blank, don't panic, your files haven't gone permanently AWOL.

Common viruses, such as the Windows 7 Recovery virus, will hide your files in an attempt to coerce you into paying for the virus's removal. When you view your desktop or click

on your C: drive, it may appear that all of your files have been deleted, but they haven't. If this happens to you here is how to restore them. Click the Start button in the lower left corner of your taskbar. Type cmd in the search box at the bottom of the menu and press Enter. If you're using Windows XP, click Run and type cmd into the Run box.

Type `attrib -s -h -r c:/*.* /s /d` and press Enter to execute the command.

Allow the command to finish executing (it may take a few minutes). When it's done, close the command prompt window and check your desktop — your files, hidden by the virus, have been restored. You can use the same trick to restore files the virus may have hidden on other drives, including removable storage such as flash drives

and external hard drives; just change the drive letter (c:) in the command above to the drive letter of the storage device with the hidden files.

Do we have to defrag a USB Flash or thumb drive?

The short answer is NO. Since they are solid state without any moving parts there is no reason to do a defrag. Additionally, you could even damage the device if you defragment it too many times. Each memory cell on a flash memory device only has a certain number of times you can read/write to it before it becomes damaged.

But don't panic, it will take quite a while for that to happen. With memory prices still falling, think of multiple backup scenarios to protect your data.

I think I gave this one before, but it is a goodie. Re-name multiple files at once

The next time you have a bunch of files, folders, or pictures with names like DSC_5678 and want to rename them in a more uniform way, do this: Highlight all the files/folder in question, then Right-click, choose Rename and call it something that best describes them. For example: XmasParty2012. Now you have the name you want, and it numbers each picture. Note the file that the cursor is on when rename is selected will

be the 1st on the list. So if you want to keep the order put the cursor on the top file.

Here is a new subject: Android OS

More of us are getting or have smart phones. Here is a tip for the Android Operating System.

I do not know if it also applies to the iOS, so check it out. You know that each phone or tablet comes with multiple screens you can swipe to. After awhile there are icons and widgets spread across the four to five screens we have (actually, the new Samsung Galaxy S III has seven). Here is a way to make one of those screens your home screen without moving the icons.

First, pinch your screen with two fingers to zoom out. This “zoomed-out” view will show you all of the screens you’re able to work with. On my phone I just have to tap the screen I want to be home. With some other phone you will find a little, tiny house icon in the upper right corner of each zoomed out screen. Tap that little house and it will set the specified screen as your new home screen. Going back to your original home screen is easy. Just do it again.

Tablet Shopping: Accessories Worth Buying

If a tablet is now part of your high tech items, be it the Apple iPad or the Amazon Kindle or anything in between, what accessories are worth buying and which should you avoid?

Cases: A case is a good investment. Find a case with a comfortable feel, along with a stand or a holder for other items you already carry. Avoid cases that weigh too much, though, as the combined weight of the tablet and case can get bothersome for your wrist.

Screen Protector/Cleaning Cloth: A screen protector film is very popular because they provide a scratch resistant, plastic-like coating to the screen. I use it on both my phone and tablet. A cleaning cloth or other cleaning device is great to remove fingerprints and smudges on the screen. A good microfiber or pad-based cleaning device works best and will let you wipe the screen clean hundreds of times over.

Stylus: A stylus is very useful. You can buy one that will allow you to take handwritten notes or draw on your screen, and another that will allow you to do a one stylus typing. There are a host of note-taking applications available and a lot of coloring/drawing applications. Make sure you purchase a stylus that has a good tip and is designed especially for tablets with capacitive touchscreens, as they require special tips to work with.

There are also App Store Gift Card Applications, and are a great add-on to any tablet. There are a host of retailers who will offer gift cards to the store the tablet works

with. For iPads, any iTunes gift card can be used. For Amazon Kindles, any Amazon.com or Kindle Gift Card can be used. For Google Android devices, any Google Play gift card works. During the holidays, some vendors offered discounts on bulk packages of gift cards, and some of them might still be available. Google it.

Extended Warranty: WATCH OUT! This can either be a good deal or a horrible waste of money, so get the specifics on terms, deductible (price you pay to make a claim), replacement rules, and period before agreeing to anything. Make sure you see it in writing, and don’t just take the salesman’s word for it. There are also third party warranties, such as SquareTrade who offer third-party warranties on most electronics, including tablets, usually at very fair prices. I myself do not go for warranties, since most items come with a one year guarantee.

Customizing the Ribbon in Office 2010

Nancy DeMarte, Regular Columnist
(Office Talk), Sarasota PCUG, Florida
May 2013 issue, Sarasota PC Monitor

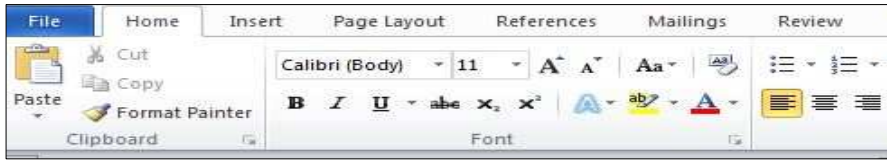
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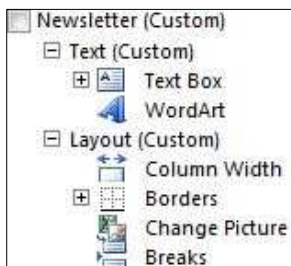
If you are a Microsoft Office user, by now you have probably experienced the “ribbon.” Introduced with Office 2007, the ribbon was a radical change in the way commands were displayed in the Office programs, such as Word, PowerPoint, and Excel. In previous versions, “drop down menus” were the norm. You clicked a term on the menu bar, and a list of clickable commands slid down the page. Beginning with Office 2007, commands were lined up across the top of the screen, organized by tabs in a ribbon-like structure. Each tab contained “groups” of similar commands. Needless to say, the new ribbon met with much resistance. There was no way to revert to the earlier look or to customize the ribbon. All a user could do was minimize the ribbon by double-clicking any tab or add and delete items from the Quick Access bar above the ribbon.

Microsoft got the message. When Office 2010 was released, one of the categories in the Options sections of each program was “Customize Ribbon.” Users could create new

tabs and fill them with groups of any commands they chose. They could hide any or all tabs, rename them, save their customized ribbon, and export it to other computers. Customization of the ribbon was easy; it was all done in a single window.



Opening Word 2010, because I use it often, I set out to customize the ribbon. I found that, although the default commands could not be renamed, reordered or deleted, I could add new custom tabs and groups. So I decided to create a tab called Newsletter, into which I would put some groups of commands that I use when composing newsletters. First I opened the Customize the Ribbon window (File / Options / Customize Ribbon.) I soon learned that the quicker way was to right click any default tab on the ribbon and then click, Customize the Ribbon. Then I added a new tab (New Tab button - OK), which also added a new unnamed group. Both my tab and group had the word “custom” after them, but I found this word is not visible on the actual ribbon. Then I renamed my tab (Select the tab - Rename button - typed *Newsletter* – OK). If I had changed my mind and wanted to delete my new tab, I could have right clicked it and selected Remove at any time.



Then I created another new group on the tab, using the same steps as I had used for creating a new tab. I clicked each new group, selected Rename, and typed *Text* and *Layout*.

Then it was time for the hardest part – choosing the commands I wanted to add to the groups. Office programs contain hundreds of commands, many of which do not appear on the default ribbon. First I spent time scrolling through the Popular and All Commands lists in the left pane, where I found a few that fit my needs. I clicked Text group in the right pane, then the command name in the left pane, and then the Add button between the panes. I repeated this process to add the rest of the commands I wanted, looking in other lists, including “Commands not in the ribbon.” When I renamed the first command, I found I could attach an icon to it from a gallery which opened

next to the renaming box. I repeated these steps for the remaining tab and commands. Now when I open Word 2010, my Newsletter tab appears along with the default tabs. When writing a newsletter, I can stay on that tab most of the time. If later I want to get rid of it, I can go to the Customize the Ribbon window, right click each item and click Remove or choose to Reset the ribbon to its original state. Note: Resetting also removes all customizations of the Quick Access bar.

Some tips about customizing the ribbon

1. Since the ribbons on the Office 2010 programs each have different tabs, groups, and commands, customizations only apply to the program in which they are created.
2. You can't delete a default tab in Office 2010, but you can hide it by unchecking the box next to the tab name in the Customize the Ribbon window.
3. You can export your customized ribbon to another computer by saving it as a file and exporting it. In the Customize the Ribbon window, click Export/Import. Click “Export all customizations.” Then go to the computer which is to receive the file, open the customization window and click “Import customization file.” Caution: This will replace any customizations that have been done to that program on the receiving computer.
4. The ribbon is now being used by Microsoft in many venues, including Windows 8. In Office 2013, the ribbon can be customized in the same way as Office 2010.
5. It is easy to minimize the ribbon in Office 2010, leaving only the tabs. Click the tiny up arrow to the left of the Help icon near the right end of the ribbon. Minimizing the ribbon opens up more work space in the program window. Click it again to restore the full ribbon.
6. If you need help with the ribbon, click the Help icon (?) in the top right corner of any Office window and search for “Office ribbon customization.”

Worth Repeating

Everything is much simpler today instead of solving a problem, you just subsidise it. — Bill Vaughan

Freeware

By Berry F. Phillips, Member,
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April 2013 issue, eMonitor
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During the many years that I have been writing the Computer Hysteria Column, I have been a strong advocate of using freeware. On my computer, the only commercial software is my operating system. All the rest of the software on my system is freeware. Perhaps this frugality has something to do with my Scottish ancestry or I could be considered just plain cheap! In any event,

I have done my best to give my readers some tips on freeware that I have used on my system that is exceptional. Free software is a valid choice for the home computer, office computer and Internet server uses. It is very important to remember that freeware is not cheap or an inferior option. Freeware comes in two basic types, free software with proprietary (private) code, and open-source software. Some freeware can be functionally superior to equivalent commercial software and even of higher quality. For example, the Firefox browser was built and developed by a large distributed workforce as opposed to a small centralized one. A large number of programmers can contribute a range of skills, and whose input is graded by peer review. These programs can be tested and developed in a wide variety of locations and situations. These community based projects would cost millions to create commercially. The bottom line, free software can be of the highest quality and should not be considered inferior to commercial products. The products they generate are among the most successful applications in the world, PHP, MySQL, Apache, and various types of Linux.

What are the best free programs that work the best? It used to be utilities. However, today there are many priceless small programs that work better than the operating systems resident applications. Free software is a viable solution in every possible area of a computer's work. The acceptability of freeware is demonstrated as the standard server solution. Freeware is widely used in PC security situations. Free versions of popular firewalls, antivirus and antispyware programs are often accepted as first choice. How do you find the best freeware to use on your system?

For years I have recommended Gizmo's Freeware be bookmarked on your computer for fast reference when you need fully reviewed and recommended freeware. In August 2010, PC Magazine included Gizmo's Freeware in its "100 Top Websites of 2010." As of November 2011 it was rated by Alexa in the top 3000 sites in English speaking countries and in the top, 5,000 worldwide with more than 100,000 people visiting the site every day. It is also the most bookmarked site under "freeware" at most of the web's major bookmarking services.

Gizmo's Freeware is a community-based site dedicated to keep the site independent and noncommercial. The site is maintained by hundreds of volunteers. Freeware is reviewed for safety and performance by these volunteer editors with comments from users. Gizmo's best freeware list is available at the website and has been used for years to locate the best freeware. You can post on forums, respond to reviews after using the freeware, and even write review depending on your computer skills. I would strongly encourage you to bookmark and visit this website which will save you money as well as increase your computer capabilities.

<http://www.techsupportalert.com>

I will have to admit that I am "hysterical" about this website.

External Storage

By Dick Maybach, member, Brookdale
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Although we use external storage much less than in the early days of home computing, it is still an essential technology for backing up internal hard disks, exchanging files among different computers, and expanding storage capacity. The increasing size of files had made obsolete many older technologies, and those that are still attractive fall into four types: electronic, optical, magnetic, and Internet.

There are many variations of electronic storage, but two are now dominant, USB memory sticks and SD cards. They have similar capacities with current "sweet spots" (capacities where the cost per byte is lowest) of around 16 Gbytes, although this is continually moving up. SD

cards are typically faster, but appear to be less rugged with exposed connections and thinner packages. I have carried a naked USB memory stick in my key case for many years, and it has never failed, but I always keep my SD cards in their plastic cases. USB sticks have the further advantage that every computer has USB connectors, while SD access is less common, and although memory card readers available are very cheap, they also have low quality and often are unreliable. The circuits used for electronic storage do have finite lifetimes, in that they wear out after a (very large) number of writes; however, the risk is negligible for external storage devices.

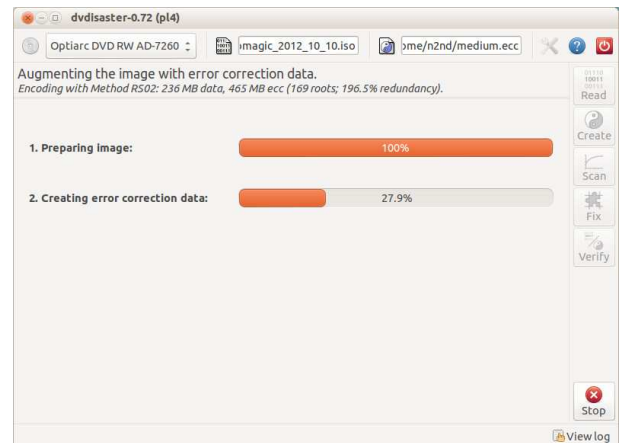
Optical storage is problematic, because much the available media is of poor quality and may begin to develop errors in just a few months. Even high-quality media rapidly deteriorate if exposed to high heat or humidity. For more on this, see my article, *Using DVDs for Long Term Storage*, BCUg Bytes, June 2008, available at <http://www.bcug.com>. Actually, my own experience with CD-ROMs and DVDs has been good, although I'm careful to use only quality media. Of the dozens stored at home, some for several years, I've had problems with only one, which can be read only on the drive that created it. On the other hand, the outer tracks of several music CDs stored in my car are no longer playable. Another problem is the low quality of CD-ROM and DVD drives, with Blu-Ray being especially bad. Blu-Ray drives are acceptable for play-back, but their lasers frequently burn out after writing just a few discs. This is unfortunate, as the capacities of CD-Roms and DVDs are rapidly becoming too low to be really useful.

If you use optical storage for archiving, consider using the free program *dvdisaster* (<http://dvdisaster.net/en/>) for Linux, OS-X, and Windows, which adds error-correction and thus allows you to recover your stored files, even though up to 20 percent of the bits on the medium are corrupted. You need a disk-burning program that can create a file (called an iso-image) that is a bit-for-bit image of a CD-ROM or DVD and also has the ability to copy an iso-image to an optical medium. The procedure for creating an error-resistant disk is the follows.

1. Use your disk burner to create an iso-image, which must be at least 20 per cent smaller than the capacity of the medium.
2. Use *dvdisaster* to add error-correcting data to the iso-image. The screen-shot below shows this in progress. After

creating this image, click on the *Verify* button to check that it's good.

3. Finally, use your disk burner to write the iso-image to the optical medium.



(Note the small blue circle containing a question mark at the upper left of the screen-shot. Clicking on it brings up an extensive manual in your Web browser, which you should read carefully.) Periodically scan your optical media (using *dvdisaster*'s *Scan* button) for errors. If they begin to appear, recover the data using *dvdisaster* (which will produce an iso-image), create a new disk, and discard the one with the error. Until the medium begins to develop errors, you can read it like any other disk using your usual software.

Magnetic storage, in the form of external hard disks, offers high transfer speed and high capacity, making it attractive for many applications. It also has the lowest cost per byte. To achieve this performance, these devices are assembled with very tight clearances, which means they must be sealed against air-borne contamination. The magnetic disks cannot be separate from the motor and head assemblies, making these devices much larger and less rugged than electronic storage devices. Here, you have a choice of interfaces with USB being the most common, followed by E-SATA. USB-3 drives are beginning to appear, but are considerably more expensive than USB-2, although this will surely change, probably soon. Diskettes are now obsolete, for good reasons. Their capacities are tiny, and their reliability is low. You can still buy drives, but their quality is very poor, with many delivered dead-on-arrival or failing very quickly. If you still have valuable data on diskettes, you should transfer it to a better medium soon.

Internet storage, commonly called "the cloud" is expanding rapidly. Modest capacities, up to around five Gigabytes, are widely available without charge. Transfer rates can be low, often

just a few tens of kilobytes per second, and of course, the storage is available only if you have an Internet connection. There are also concerns about how secure the data is and whether it will continue to be available if the vendor goes out of business.

Which of these approaches you use depends on your application. For synchronizing the data among your own computers, Internet storage is the most convenient. Once you have set it up, the contents of the synchronized directories are always identical, no matter which computer you use to make changes. Since the information resides on every PC, you lose nothing if the cloud vendor discontinues the service.

For transferring files between your PC and a friend's, a USB memory stick (up to a few Gbytes) or a USB hard disk (for larger transfers) is the best choice. Almost every computer has a USB port, so your friend doesn't need to install any special software or hardware to affect the transfer. I always carry an eight-Gbyte USB memory stick, formatted as FAT-32, in my key-case, and I've never found a computer that couldn't read from and write to it. (Actually, my stick has two partitions, a seven-Gbyte FAT-32 one for transferring files, and a one-Gbyte Linux one containing Parted Magic. See my article *Parted Magic: Lots of Disaster-coping Tools*, BCUG Bytes, April 2012, available at <http://www.bcug.com>. This means I always have the ability to transfer files and a tool kit to solve computer problems.)

For backing up your PC, and external hard disk is the only reasonable solution. These feature high capacities, fast transfer rates (especially if equipped with a USB-3 interface), and high reliability. Their bulk and relative high fragility are not serious problems in this application.

External hard disks are also good for archiving things like photos and financial data, but you could use DVDs, provided you add error-correction using and store them in a benign environment. For added security, consider making more than one copy, and either transfer the information to new media every few years or periodically scan it for errors using *dvdisaster*. Archival storage is an especially difficult problem. Computer technology is changing fast, and you must stay alert lest you lose the ability to access your archives (as happened to me when 5 ¼ inch diskette drives disappeared from PCs). For example, if you used *dvdisaster* to safeguard your archived DVD, you must be sure not only that the program runs on your new PC, but also that it

uses the same methods as those used to record the data, and of course the new PC must be able to read DVDs.

For sharing photos or files with friends, Internet storage is hard to beat, although mailing them a DVD or CD-ROM also works well, especially if they want to show the pictures to their friends.

To expand internal disk storage capacity, the preferred solution is an external hard disk with an E-SATA interface, although USB-3 is not a bad solution. Most likely, you would use E-SATA for a desktop, since it requires an expansion card, and USB-3 on a laptop (USB-2 if your laptop is older or not top-of-the-line). Mac owners could consider Firewire or Thunderbolt.

As you can see, there is no single solution, unlike in ancient times when diskettes were universal (or if we go back to near pre-history, cassette tapes, audio tapes, punched paper tape, or even punched cards). However, there is a good and inexpensive solution for every application.

Ian Mavric collects and repairs TRS80 machines, he will provide a home to any unwanted TRS80's complete or otherwise. He is trying to stimulate interest in the TRS machines, not so much as a useful alternative to a current Win7 or MAC computer, but as collectors and restorers of old hardware for posterity. Ian repairs, upgrades, purchases and re-sells TRS stuff... following is the address of his website to give you more of an idea of what he does.

<http://ianmav.customer.netSPACE.net.au/trs80/>