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The Digital VIKING

Twin Cities PC USER GROUP NEWSLETTER

Minneapolis & St. Paul, Minnesota USA • Vol. 42 No.7 • Feb. 2022

TC/PC Exists to Facilitate and Encourage the Cooperative Exchange of PC Knowledge and Information Across All Levels of Experience

February 2022

General Meeting
Tuesday, February 8, 2022
7:00 PM

Cord Cutting 2022
Presenter: Jack Ungerleider

Via Zoom Only

Things seem to always be changing on the streaming TV front. We will discuss what the current state of the "art" is and look at Jack's setup as an example.

Bring your questions and comments for a lively discussion 💻

Note: All TC/PC Meetings and SIG Groups will be virtual until further notice. Visit tcpc.com for info.

Tech Topics with Jack Ungerleider via Zoom at 6pm before the General Meeting.

The Digital Viking

The Digital Viking is the *official monthly publication of the Twin Cities PC User Group, a 501(c)(3)organization and an all-volunteer organization dedicated to users of IBM-compatible computers. Subscriptions are included in membership. We welcome articles and reviews from members.* The Digital Viking is a *copyrighted publication and reproduction of any material is expressly prohibited without permission. Exception: other User Groups may use material if unaltered and credited.*

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Editor Sharon Walbran

Locate files and folders instantly!

By Jasmine Blue D'Katz, Lake County Area Computer Enthusiasts
www.lcace.org
jj1450xl (at) yahoo.com

I have been watching Tech for Seniors for several months, and like attending our monthly club meeting, I learn about different programs available to make using my computer easier. Recently, during his Evernote presentation, one of the TFS hosts was asked a question about finding files and folders on his computer. He suggested and showed a program called Everything.

Everything is a piece of Windows software that bypasses Windows search, and in the blink of an eye, it gives you a list of all files and folders on your local storage device. If that is what you want, then basically that is what it does, and it is efficient, effective, stable, and uses low system resources.

When I run Everything, it creates an index of all the files and folders on my machine. Now I am talking about indexing a 4 TB hard drive that may have millions of files, but this program is wicked fast. Furthermore, the searching is done in real-time.

The screen display can be shown with several different files: Name, Path, Size, Last Write Time, Creation Time, Last Access Time, and Attributes. Sorting by any field will take a little longer than the search.

You no longer must struggle with Windows search again to find files on your disorganized system so you might want to give Everything a try.

The best part of Everything is it is a **FREE** download and works with Windows 10, 8, 7, and XP. Everything is a simple app and one of the most useful ones I use on my computer. Everything - Download (softonic.com)


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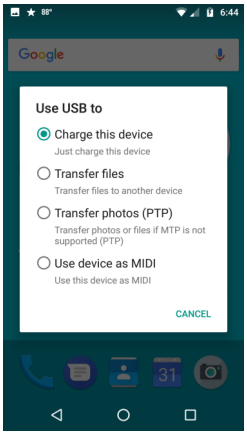
Lots of Pictures – File Explorer to the Rescue

By Phil Sorrentino, Newsletter Contributor, Sarasota Technology Users Group
www.thestug.org
philsorr (at) yahoo.com

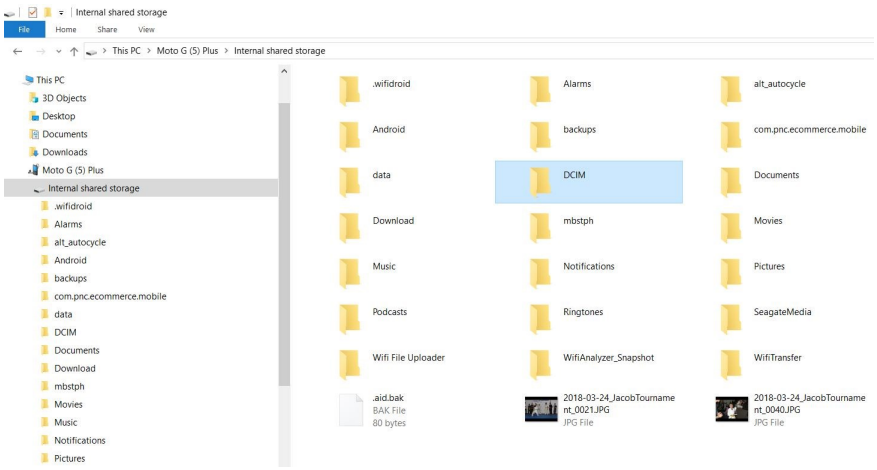
Everyone these days has a phone, and every phone these days has two cameras, so everyone, these days, has lots of pictures. And it seems that these days everyone has their pictures on their phone. Just ask someone about their grandchildren or pet; I bet they pull out their phone and start swiping through loads of images; some may be from five or six years ago. They may find the pictures in question, or they may not. The phone is a great way to show your photos because it is always with you. The problem is that all the pictures are on the phone, the good, the bad, and the ugly. Many are not the subject of the question of the moment. Getting to the pictures in question can be a real-time consuming activity. There's got to be a better way. There is, but it involves a few organizational skills and a bit of stick-to-itivity. You've got to organize regularly so that the organization will be there when you need it. It is sort of the same logic that makes you backup all your important documents regularly.

the application that has been called "the keys to the kingdom" (if you've taken the File Explorer class) because it lets you get into and modify your file organization by allowing you to create and delete folders. In addition, it enables you to move or copy files so you can get them into the proper folders. But the pictures are on your phone, you say. Yes, the first thing to do is get the photos from the phone to the computer, and File Explorer is the tool to use. You can connect your smartphone to your computer using a USB cable, one with a USB connector on one end and probably a micro-USB connector on the other end. If you have a very new phone, you might have to use a USB cable with a USB-type-C connector on the phone end. The micro USB ends are not compatible, so you can't plug into the wrong slot. (Be sure that the cable is more than just a charging cable; it has to be able to transport data between devices.) There are other ways to get your pictures transferred to your computer, one of which is using the App "Wi-Fi file transfer," which has been previously covered in a so-named article from January 2017. Another way is to use a "cloud storage" service like OneDrive or Google Drive. Just upload your pictures from your phone to your cloud of choice, and then download the pictures to your computer using your browser of choice.



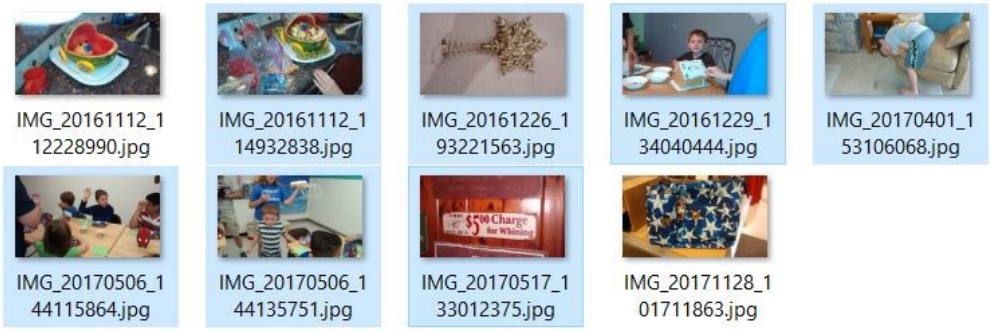
Android System Notification (select Transfer files)

Using a cable on an Android phone, you might have to change an "Android System" notification. Just pull it down from the Notification bar and tap it, then select "Transfer files," and your phone will show up in the navigation pane of File Explorer. Next, click on internal storage, then DCIM, and finally "camera." (On an Apple phone, it is as easy as connecting the phone to the computer with the USB cable.)



Android connected to PC

Now you should see all of the pictures that have been taken with your phone's cameras (both landscape and selfie). They are probably titled "IMG_date code_large sequential number.jpg," something like IMG20200810_12345678. The date code is probably the year, month, and day that the picture was taken. The date gives you a clue as to where to store the picture on your computer. The sequential number is to make sure every picture has a unique file name. Now you can move these pictures from the camera to your picture library, which may be in Pictures, but better still, it is in a high-level folder of your choice, like MyPhotos or MyPictures. (Just something other than the "well known" folder name - Pictures.) I keep my pictures in a "Slides&Photos" folder in chronological folders. Every year has its own folder, and the years are collected in decades. You can drag & drop the pictures from the camera folder to the computer folder, or you can use Copy and Paste, remember Ctl-C & Ctl-V, or right-click the picture and find Copy and Paste in the Menu. Any of these will do the job. Once the pictures are on the computer - and backed up - you can delete them from the camera, if you want, or at least delete the ones that you won't need with you all the time.



Pictures from Camera

Now that your pictures are on the computer, you can move them into the folder organization that you have previously set up. If you haven't set up a folder structure, think about it and decide how to organize your memories. As I alluded to earlier, I keep my pictures in chronological folders, with special folders for special memories. A chronological organization is pretty straightforward, a folder for each year collected in decades. And in each year's folder, there will be folders for special events, like a visit to a National Park, a visit to some old friend's new lake cottage, or a visit from old friends. Birthdays and Holidays can also have their own folders, which are named with dates and events like "19-07FourthOfJulyParty". The date in the title guarantees that the folders will be kept in chronological order (remember that File Explorer keeps items in alpha-numeric order, numbers first, then letters).

Even though most of my folder organization is in chronological order, I have special folders for special memories. For example, I have special folders for many, not all, of my extended family (Aunts, Uncles, Cousins) and folders for special friends (i.e., Jim&Terry). This organization lets me review the pictures of these people quickly because they are all together in one folder (these are typically copies from the chronological folder). On the other hand, pictures are always in chronological order because I put the date in the file name when I transferred the image to the computer, for example, 2019-07-04FourthOfJulyAtBill&Nancy. (Including the date in the file name takes some extra time, but I have found that it is worth the time in the long run.) Picture folder organization is a very personal choice, but once you have yours set up, File Explorer will help you easily maintain it, even if you have tens for thousands of pictures.

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Keyboard — Refresher Quiz

By Jim Cerny, Forums Coordinator / Instructor, Sarasota Technology Users Group
www.thestug.org
vp1 (at) thestug.org

Most of us have been using a computer keyboard for years, so you are probably comfortable using it. But a good review of these helpful keyboard keys can make your texting much easier. There are keyboards for computers, laptops, on-screen touch keyboards for tablets and phones. They may look a bit different and have some different keys, but they all will (basically) do the same thing (well, with very few exceptions). How many of these do you remember? Answers are provided at the end of the article, but don't peek!

1. How do you repeat a letter or symbol?
2. What do you call that vertical line that appears BETWEEN letters to allow you to insert or delete text?
3. How do you enter all capital (uppercase) letters?
4. What does hitting the "delete" key do when you are editing text NOT highlighted?
5. How do you highlight or select the text you want to delete, move, or copy?
6. What is the difference between "cut" and "copy"?
7. What does the "tab" key do?
8. What are "function" keys (the "f"-keys)?
9. Can you use a keyboard to enter a menu option?
10. What do the arrow keys do?
11. What does the ESCAPE key (Esc) do?
12. Can you find these controls on your keyboard? Volume up or down, insert, page up or down, or "call a 10-year-old for help"?

[Answers are on the next page.]

Answers: 1. Hold down the key. 2. The insertion point (also known as the cursor). 3. Hit the "caps lock" key or double-touch the capital (uppercase) key. 4. It will delete the character to the RIGHT of the insertion point. 5. Drag your mouse or finger over the text to highlight it. 6. "cut" will remove the text you have highlighted, "copy" will not. But either one will place your selection on the clipboard. 7. It moves the insertion point a few spaces to the right (actually you are entering a "tab" character and you may be able to change the size (length) of the tab spacing. 8. They will execute a command depending upon the app you are running. For example, the f3 key in a game app could mean "jump". Usually the f1 key is used for getting help. 9. Yes, usually with a two (or at most three) key combination with the "Alt", "Ctrl", or "Windows" keys. 10. They move your cursor or insertion point that direction on the screen. 11. It will try to "escape" out of (or stop running) the app you are using. 12. Keep looking!

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Storing Numbers in Number Bases other than Base-10

By Joel Ewing, President Bella Vista Computer Club
president (at) bvcomputerclub.org
www.bvcomputerclub.org
***Bits & Bytes*, July 2021**

Why This is Relevant

The number representation everyone is taught in grade school is the decimal notation, using the ten digits 0 through 9, where the value represented by the digit is multiplied by a power of 10 based on its position relative to the decimal point. Progressing to the left the powers of 10 increase (10^0 = 1, 10^1=10, 10^2=100, etc.); following the same pattern progressing to the right of the decimal point, the powers of 10 decrease (10^{-1}= 1/10, 10^{-2} = 1/100, 10^{-3} = 1/1000, etc.)

On most computers today, the most commonly used internal representation for numbers that are used in calculations is based on binary or base-2. This internal format is chosen because it is the format that is most efficient for storage space and most directly supported by the hardware, meaning that it also takes the least amount of clock time and CPU resource to perform calculations with numbers in this format.

Computer application users, on the other hand, enter values in decimal or base-10, and expect results to be displayed in decimal. That base-2 is used under-the-covers is for the most part invisible to the user, but there are some cases – specifically when decimal places are involved – where unexpected results can become visible to the user: values that the user expects to be identical and which may even be displayed as identical are not; values displayed to enough decimal places appear to have "random" garbage digits or unexpected "rounding" errors. Occasionally users experiencing these artifacts for the first time will report them as software "errors". They are not errors, but the unavoidable consequence of the use of binary representations internally to improve the performance of the application.

Spreadsheet applications like Excel and Calc store numeric values in base-2, but use enough significant digits so that with rounding of displayed decimal equivalent values the counter-intuitive effects with fractional values are rarely seen by users. You should, however, be aware that if you started to work with very large currency values accurate to one cent

(on the order of trillions of dollars), that you might start seeing discrepancies at the penny level.

Integer Values

Any integer value may be exactly represented using any base ≥ 2, provided storage is available for enough digits. The higher the base, the fewer the number of digit positions generally required to represent larger values.

To represent a value using base n requires n unique digit symbols corresponding to numeric values of 0, 1, …,up to n-1. For decimal base-10 we use the 10 symbols "0", "1", "2", "3", "4", "5", "6", "7", "8", and "9". For base-n where "n" is less than 10, we use the first n digit symbols used for base 10. For hexadecimal base-16, we need 16 symbols, now customarily using "0" through "9" plus "A", "B", "C", "D", "E", and "F" to represent the six values corresponding to the decimal values 10, 11, 12, 13, 14, and 15.

So, for example, the value 510 in base-10 (written as 510_{10} to explicitly show the base used) is interpreted to mean (taking digits from right to left) as $0 + 1 \times 10 + 5 \times 10^2$

In base 2 that value would be $111,111,110_2 = 0 + 1\times2 + 1\times2^2 + 1\times2^3 + 1\times2^4 + 1\times2^5 + 1\times2^6 + 1\times2^7 + 1\times2^8$
= (in base 10) $2 +4+8+16+32+64+128+256 = 510_{10}$

In base 3 it would be $200220_3 = 0 +2\times3 + 2\times3^2 + 0\times3^3 + 0\times3^4 + 2\times3^5$
$= 6 + 18 + 486 = 510_{10}$

In base 8 it would be $776_8 = 6 + 7\times8 + 7\times8^2$
$= 6 + 56 + 448 = 510_{10}$

In base 16 it would be $1FE_{16} = 14 + 15\times16 + 1\times16^2$

$= 14 + 240 + 256 = 510_{10}$

To represent the same numeric value takes 9 digits in base-2, 6 digits in base-3, 3 digits in bases 8, 10, and 16.

The bases most commonly used to represent values stored in a computer are base 2, base 8, base 10, and base 16; although in the past some other unusual bases like base-3 have even been used.

Bases corresponding to a power of 2 have a special relationship to base-2 values in that they may used as a kind of "shorthand" for representing a binary value but using either one third or one fourth the number of digits.

To write a binary value like 11111110_2 as an octal (base-8) value, no elaborate conversion process is required. Simply group the binary digits into groups of three digits (adding extra high-order zeros if not already a multiple of 3 digits) as in (111) (111)(110), treat each group as a separate value and calculate the base 10 value as in (7)(7)(6), and notice that 776_8 is indeed the representation of the same value in base 8. To reverse the process simply treat each base-8 digit as an independent value and rewrite each base-8 digit as the corresponding 3 digits in base-2 and then combine them end-to-end.

Since $16 = 2^4$, to convert base-2 to base-16, instead group the digits of the binary value in groups of 4 (adding high-order zeros to get a multiple of 4 digits). The same binary value becomes
(0001)(1111)(1110), treating each group as a separate value gets (1)(15)(14), converting each value to the corresponding valued symbol in base-16 gets (1)(F)(E), and $1FE_{16}$ is indeed the representation of the same value in base 16. To reverse the process simply treat each base-16 digit as an independent value and rewrite each base-16 digit as the corresponding 4 digits in base-2, and combine end-to-end.

Unless an integer value is so large that it exceeds the maximum number of digits that can be stored, any integer value can be exactly represented in any base. Computer numeric representations limit the maximum number of digits, so when that limit is exceeded either the number cannot be stored or an approximate value with a limited number of significant digits is stored. The user should receive an error indication if a value cannot be represented.

Non-Integer Values

Values from measurements in the real world rarely have exact integer values. Depending on measurement tools used, real world measurements are either made to a certain number of decimal places or precision, or perhaps to a nearest fractional subdivision, like a length measurement to the nearest 1/16 of an inch. While students in grade school are taught how to do basic arithmetic of addition and multiplication by hand using fractions, and calculations with fractions that leave results in fractional form can always be exact, keeping all intermediate and final results in the form of fractions for complex real-world calculations quickly produces results with very large numerators and denominators that are impractical to use and which may imply a precision that is not warranted.

For more complex calculations, one is taught to instead use decimal numbers with a fractional part separated by a decimal point. The rules for performing calculations with values expressed to a given number of decimal places, followed by rounding results to a precision appropriate to the precision of the original values, are both easier to perform and make it clearer that the accuracy of an answer is limited by the accuracy of the original data.

With values expressed in decimal (base-10), the value represented by digits to the right of the decimal point have progressively smaller weights, 1/10, 1/100, 1/1000,… etc progressing further to the right. From our familiarity with working with decimal fractions, we intuitively

understand that a value with three decimal places can represent a value to the nearest 1/1000th, and even exactly represent any value that happens to fall exactly on a 1/1000th boundary.

When a computer represents a value in base-2 with a fractional part, the values represented by digits to the right of the binary point have progressively smaller weights also, in this case ½, ¼, 1/8, 1/16, etc. So it you have a binary fraction with 10 binary places to the right of the binary point, you can express a value rounded to the nearest multiple of $1/2^{10}$ or 1/1024, roughly equivalent to being able to express a value to the nearest multiple of 0.000976562 in base 10.

While it is true that one significant digit in a decimal representation roughly corresponds to about 3.32 significant digits in a binary representation (the ratio of log 10 to log 2), what is not intuitively obvious is that fractional values that may be exactly represented in one base may require many more places than that ~3.32 factor would imply to exactly represent the same value in a different base. We also find that some very simple fractional values, like 1/3 cannot be exactly represented as a decimal fraction. It can be approximated to any desired degree of accuracy (0.3, 0.33…, 0.3333, etc.), but can never be exactly represented. What is not intuitively obvious is that although a 10 bit binary fraction can express values to a slightly higher precision than a 3-digit decimal fraction, not only can a very simple decimal fraction like 0.1_{10} not be represented exactly by a 10 bit binary fraction, it can't be exactly represented by any binary fraction. The fraction 0.1_{10} becomes an infinitely repeating binary fraction ($0.000110011(0011)..._2$) that cannot be exactly represented in binary by any number of bits.

Programming languages and user interfaces to spreadsheet applications typically allow the user to specify fractions in base-10 for values that are actually stored in base-2. That means that fractions that the user considers to be exact, like 0.1, may actually be stored as an inexact approximated value. This can cause unexpected results in some cases. For example, using Excel to add various powers of 10 to 0.1 and then subtracting that same power of 10 value off again and displaying the result to 12 decimal places gives the expected result of 0.100000000000 up to 10^4, but for 10^5 and above strange garbage starts to appear to the right:
When 10^{14} is reached, adding 0.1 just gets an intermediate result of 10^{14} and a final result of 0.0 .

This is not the behavior one would expect if the calculations were being done in base-10. In base-10 one would expect to consistently get back the exact same 0.1 value until the power of 10 reached the number of significant digits that could be handled, causing the 0.1 to be dropped when the larger value was added with a 0.0 final result. By doing other tests it can be shown the "garbaged" result values obtained for 10^5 through 10^{13} are consistent with loss of bits in base-2 arithmetic from the approximate binary representation of 0.1. Both Excel and Calc do a good job of hiding this behavior by rounding displayed results. If the results above are displayed to only two decimal places, all results are consistently displayed after rounding as "0.10" until changing to "0.00" on the last line. This is what one would expect if the calculations were done in decimal, but in this case the

displayed values would be deceptive: If you were to compare the last two "0.10" displayed result values, we know from displaying the values with more decimal places that you would find they are not equal.

One can experiment and find other cases where the lack of an exact representation of 0.1 in base 2 causes strangeness:
=100+0.1-100 with the cell formatted for 15 places yields 0.099999999999994 instead of 0.1;
adding 522 cells containing 0.1, formatted for 13 places yields 52.1999999999999 instead of 52.2 (a sum of fewer than 522 cells displays sums that appears exact to the nearest 1/10)

Conclusions

Unless a computer application or the implementation of a programming language explicitly says that calculations will be done in base-10, you should assume that they are done using more efficient computations in base-2, with all the limitations that implies on representing some simple decimal fractions exactly. It is technically possible even on a binary-based computer to create a computer application that will store numeric values in base-10 and do all arithmetic calculations using base-10 arithmetic; but this is rarely done because it is more complex to do so and would have noticeably poorer performance than using the base-2 functions directly supported by the computer hardware.

Do not assume that fractional values entered or displayed are exactly stored, even though they may be displayed as exact; or that two displayed fractional values that are displayed identically are indeed identical. Any spreadsheet logic or program logic working with numeric values based on numbers with fractional parts needs to take this into account and be aware that comparing values derived from fractional values for exact equality may not work as expected. Where this becomes a problem, It may be possible to use the ROUND function to eliminate non-significant differences between two values with fractional parts.

These caveats can also apply to spreadsheets containing US currency values expressed to the nearest cent, as 1/100 like 1/10 lacks an exact representation in binary. Because of the number of significant digits retained and the rounding of displayed results, using spreadsheets for personal accounting or for most business applications you shouldn't see any problems. But, if you you try to track the U.S. national debt to the exact penny using a spreadsheet, that is getting close to the point where entered values and computed results might not have enough significant digits in Excel or Calc to resolve correctly to the nearest penny, and values could easily get off by a penny or so.

Understand the limitations when a computer application uses base-2 representations internally..

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Tricky Spam Emails

By Jim Cerny, Forums Coordinator / Instructor, Sarasota Technology Users Group
www.thestug.org
vp1 (at) thestug.org

You probably are all aware by now of those awful spam emails that come to you in your inbox. But recently, I had a very sneaky and tricky spam email that appeared to come from a friend, and I need to tell you about it so you can be very careful.

First, I received a brief email from a friend of mine who was also listed in my contact list, but I found out later that the source email address was not really his. It "looked" like his, even having his wife's first name in it, but it was NOT his email address; it was from a different email provider, which he never used. Yes, that was tricky all right, but later that week, I received one even worse. The email sent to me appeared to come from another friend and, being very careful, I "hovered" my mouse on the email address, and it did show his actual email address, exactly as it is entered in my contact list! But it was NOT from him. Fortunately, I called him, and he confirmed that someone had "stolen" his email address and was using it to try to get gift cards from people.

So, in addition to the usual email precautions, I would like to offer these to help you from being scammed –

+ Brief emails from a "friend" that say something like "Can you help me?" or "Can I ask a favor?" are clues that they are bogus. Call your friend to confirm if they really need your help. As they say, if it was really urgent, they would have called you, not sent an email.

+ If you do reply to such an email by mistake, you will get a follow-up email with a sad story and an urgent request for something like a "cash card" or donation. Don't do it!

+ Do not reply or provide ANY personal information in ANY email. Emails can be forwarded to anyone anywhere. Valid email addresses are traded like stolen credit card numbers.

+ Do NOT send money or credit card information in any email. Instead, use your online banking to pay bills.

+ THINK – did the email text really appear to be something your friend would write to you? If there is the least bit of oddness about it, call the person.

How do these scammers get started? Our neighborhood has a directory provided to all residents, which includes phone numbers and email addresses. Many people purposely do not provide their personal information in such a directory. Once you get an email address, I suppose it is possible to tap into some emails sent by that address and thus obtain many more email addresses.

Finally, it appears a scammer can send an email that appears to come from someone else's address, and yet they still receive replies to the scammer's email inbox. How they do this, I have no idea, so be careful.

One final story – I was at the Walmart customer service desk when an older man was requesting a money transfer to his son, who needed money quickly. The Walmart people knew right away that it was a scam and refused to fulfill his request. The man was angry, but it was the right thing to do. He wanted to send "his son" several thousand dollars!

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Special Interest Groups (SIGs)

w Work phone h Home phone c Cell phone
* Meets at an alternate location

Most SIGs will meet at Edina Executive Plaza, Conference Room #102, 5200 Willson Road, Edina, MN
Confirm with a SIG group if they meet elsewhere.
For more info contact the SIG Leader(s) listed here.

Get SIG announcements!
Link from www.tcpc.com

Board of Directors*
All members are welcome! Check www.tcpc.com for location.
Selected Saturday mornings

Linux on Saturday
This is for the Linux newbie and those trying to come over from Microsoft to a different operating system.
Second Saturday @ 9 AM-Noon
Note: No Meetings June-August

Jack Ungerleider 612/418-3494 c
jack@jacku.com

Tech Topics
Technical presentation/discussion on various technical topics from the following areas:
- **Web/Internet**
- **Mobile Devices and Apps**
- **Playing with Programming**
- **DIY (3D Printing, R-Pi, other hobby electronics, etc.)**

Second Tuesday @ 6:00-7:00 PM
Every month
Right before the general meeting.

Jack Ungerleider 612/418-3494 c
jack@jacku.com

Microsoft Access
All levels. Presentations by expert developers within the group and by MS reps.
Third Saturday 9:00 AM—Noon
Note: No Meetings June-August

Steve Kuhlmey 952/934-8492
skuhlmey@hotmail.com

Microsoft Office
Addresses the use, integration, and nuances of the Microsoft Office applications.
Combined with Systems on Saturday
Third Saturday of the Month
9:00 AM—Noon
Note: No Meetings June-August

Steve Kuhlmey 952/934-8492
skuhlmey@hotmail.com

Directions to **Accord, 1515 Energy Park Drive** for **General Meetings**:
From I-94 in St. Paul, take the Snelling Avenue exit, then go north on Snelling Avenue about one mile to Energy Park Drive. Take Energy Park Drive and take the first left into the driveway to 1515 Energy Park Drive.
From I-694 or Hwy 36 in St. Paul, take the Snelling Avenue exit, then go south on Snelling Avenue past Como Avenue to Energy Park Drive. Take Energy Park Drive and take the first left into the driveway to 1515 Energy Park Drive.

Directions to **Edina Executive Plaza** for **Systems on Saturday, Access, Word and Picture Perfect SIGs**: Take Highway 100 to the 50th Street/Vernon exit. [If you have come from the north, cross back over Highway 100 to the east side.] Take the first right and go past Perkins [The golf course will be on your left.] and continue on the east frontage road (Willson Road) to the next building—5200 . There is ample parking in the building's lot. Conference Room #102 is on 1st floor.

Help yourself by helping others!

Join the team & share your knowledge with others.

Contact TC/PC at www.tcpc.com

Meetings start at 7:00 PM (9:00 AM on Saturday) unless otherwise noted. *Virtual Meetings during Covid pandemic..

February

SUN	MON	TUES	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8 7pm General Mtg TBA 6pm Tech Topics	9	10	11	12 Linux on Saturday SIG 9am-Noon
13	14	15	16	17	18	19 Microsoft Office SIG (including Access) 9am-Noon
20	21	22	23	24	25	26
27	28	1	2	3	4	5

March

6	7	8 7pm General Mtg TBA 6pm Tech Topics	9	10	11	12 Linux on Saturday SIG 9am-Noon
13	14	15	16	17	18	19 Microsoft Office SIG (including Access) 9am-Noon
20	21	22	23	24	25	26
27	28	29	30	31		

Twin Cities PC USER GROUP

You have just read an issue of The Digital Viking.

Would you like to receive this delivered directly to your email or business each month?

As a member of TC/PC, the Twin Cities Personal Computer Group, one of the benefits is reading this monthly publication at www.tcpc.com..

As a member of TC/PC, you may attend any or all of the monthly Special Interest Group (SIG) meetings and be eligible for software drawings. The small membership fee also includes access to real-live people with answers via our helplines, discounts, and various other perks.

Does membership in this group sound like a good way to increase your computer knowledge?

It's easy to do! Simply fill in the form below and mail it to the address shown.
(If you use the form in this issue, you will receive an extra month for joining now.)

2/22

Here's the info for my TC/PC Membership:

Full name_____

Company name_____

Address_____

City_____ State_____ Zip_____

❍Home ❍Business ❍Change address: ❍Perm. ❍Temp. 'til _____

Home phone_____ Work phone_____

Online address(es) _____

Where did you hear about TC/PC? _____

❍ I DO NOT want any of my information disclosed.
❍ I DO NOT want to receive any mailings

Administrative Use Only Rec'd_____ Chk#_____

I'm signing up for:

❍ Individual/Family Membership ($18)
❍ Business Membership ($100)
If an existing member your # _____
Make checks payable to:
Twin Cities PC User Group
341 County Rd C2 W
Roseville, MN 55113

http://www.tcpc.com

❍ Check #_____ ❍ Bill me
❍ New member ❍ Renewal ❍ Prior member
I'm interested in:
❍ Training classes ❍ Volunteering
❍ Special Interest Groups: New User, Access, etc.
List here:

February 8, 2022
7:00 pm

General Meeting

Cord Cutting 2022

Presenter: Jack Ungerleider

Via Zoom Only

Twin Cities PC USER GROUP

341 County Rd C2 W
Roseville, MN 55113

FIRST CLASS MAIL