(membership includes monthly subscription)

The Digital VIKING

Twin Cities PC USER GROUP NEWSLETTER

Minneapolis & St. Paul, Minnesota USA • Vol. 44 No.4 • November 2023

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

## November 2023



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# General Meeting

**Tuesday, November 14, 2023**
**7:00 PM**

## Let's Hear from a Retired Microsoft Software Development Manager

**Via Zoom Only**

Dave of Dave's Garage on YouTube has produced an interesting collection of videos focusing on his projects during his extensive career with Microsoft. We will be viewing some of that collection that may be of interest to our members. Curt Trout had been wondering about the state of the mainframe computer in this age of laptops and tablets and smartphones and found Dave's video about the current use of mainframes an eye-opener. We will also take a look at Dave's videos about the Windows Key/Activation and advancements in LED technology. Make some popcorn and join us for some interesting movies💻

**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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# TC/PC 2023-2024 Board of Directors

Meets once or twice per year. All members welcome to attend.
Visit www.tcpc.com for meeting details.

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## Newsletter Staff

**Editor Sharon Walbran**

## Live Package Tracking Comes to Gmail

**By Kurt Jefferson, Editor, Central Kentucky Computer Society**
**https://ckcs.org/**
**lextown2 ** gmail.com**

Gmail users anxiously awaiting a package's delivery may smile when they hear about this late-2022 feature.

Mashable reports, "Gmail will initially ask users in a pop-up at the top of the inbox if they wish to opt-in to receive tracking updates before enabling package monitoring. Users can choose whether to click "Allow" or "Immediately now" based on their preferences."

If users opt in, a small green label with the estimated package delivery day will automatically appear under the sender's name and subject line in the Gmail
inbox. Mashable reports that a small truck icon and the order's progress status are shown after the estimated delivery date.

Most major freight delivery companies are expected to provide the new feature. However, according to Tom's Guide, the user must have an order confirmation with a tracking number for Google to offer live tracking in its Gmail service.

Of course, you must be using the Gmail app for this to work. This feature won't be available if you're viewing your Gmail account messages using a different email app (such as Apple Mail, Outlook, Thunderbird, Postbox, or Canary Mail).

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## KIM-1

**By Dick Maybach, Brookdale Computer User Group**
**www.bcug.com**
**n2nd (at) att.net**

The KIM-1 (Keyboard Input Monitor), https://en.wikipedia.org/wiki/KIM-1, was a single-board "computer" launched in 1976 based on the MOS Technology 6502 processor. The company introduced the processor as the 6501, a pin-compatible clone of the Motorola 6800. When Motorola objected, the 6501 was replaced by the 6502, which was identical except that the pins were scrambled. Developers could experiment with the 6501 by plugging into boards designed for the Motorola processor, but the 6502 didn't allow this. So the KIM-1 was developed to provide a 6502-test environment for engineers and enthusiasts.

Calling the KIM-1 a computer was generous and misleading by today's standards. Figure 1 shows an early advertisement.

Figure 1. Introductory KIM-1 Advertisement.

The $245 price (equivalent to about $1200 today) included only the single board. You needed two power supplies, plus a terminal and permanent storage, to have something close to a (quite primitive) computer. More capable and expensive personal computers, such as the Altair 8800, were available, and the Radio Shack TRS-80 would appear a year later. However, the KIM-1 provided a relatively inexpensive computer technology introduction for those willing to get their hands dirty.

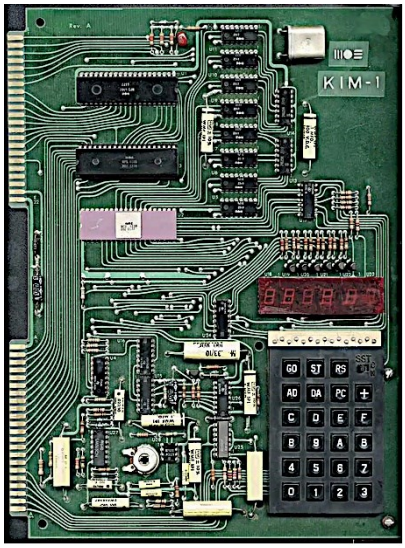

Figure 2. KIM-1 Circuit Board.

Figure 2 shows 24 keys for input, a six-digit display for output, and two edge connectors for expansion. Unfortunately, the board was shipped with a connector for the lower set of pins of Figure

2, to which you connected a 5-Volt and a 12-Volt regulated power supply, which were not included. The resulting computer was limited indeed, with only the keypad for input and the numerical display for output.

| | |
|---|---|
| Processor | MOS Technology 6502 |
| Clock Rate | 1 MHz |
| Word size | 8 bits |
| RAM | 1024 bytes |
| Peripherals | Keyboard port, display port, Teletype port, audio tape port, 15 I/O pins |

The unit was shipped with a users manual (https://archive.org/details/KIM-1_Users_Manual/mode/2up), hardware, and programming manual.

Nevertheless, you could write programs using hex-digit machine language, as there was no assembler, let alone a compiler. Since there was no permanent storage, your work was destroyed when you turned off the unit. Most users quickly tired of coping with the limitations of the KIM-1 and expanded it with one or more of the following:

- a cassette tape drive for data storage,
- a terminal, usually built from a kit,

an additional 4 Kbytes of RAM, which allowed running Tiny Basic.

Each bit was encoded as a group of three audio tones for cassette tape storage, each lasting about 2.5 msec. The data rate was about 134 bits/second, but the high error rate made data transfer tedious. Nevertheless, it was popular despite its shortcomings because it was far cheaper than a paper-tape punch and reader. Moreover, later developments significantly improved this technique's speed and accuracy.

Commercial terminals were quite expensive, but users could assemble kits, such as the TV Typewriter, https://en.wikipedia.org/wiki/TV_Typewriter, shown in Figure 3. This had a 55-key keyboard and could display 16 text lines of 32 characters each on a small TV. The user-supplied the case. Those few hobbyists who could afford a Teletype could enjoy its built-in paper-tape reader, punch, keyboard, and printer.


Figure 3. TV Typewriter.

Tiny Basic (https://en.wikipedia.org/wiki/Tiny_BASIC) required perseverance, as loading it using an audio recorder was a 15-minute ordeal, but you could now save your work on cassettes. Tiny BASIC

was a popular, small (4K of ROM), open source interpreted language. (At the time, the cost of a commercial version of BASIC was comparable to that of a KIM-1, with the result that some hobbyists used pirated copies.) Tiny BASIC made many compromises to achieve its small footprint; most versions lacked string variables and floating-point math and allowed only single-letter variable names. It was a family of related languages with various features and various processors.

Many hobbyists chose to program their KIM-1s in machine code, where each instruction was a two-digit hex number, which was tedious. You first wrote the program in assembly language, which used three-letter mnemonics for the operations, and then you converted these to two-digit hex machine instructions. (Professional programmers at the time used an assembler program to make the conversions.) See The First Book of KIM, https://archive.org/details/The_First_Book_of_KIM/mode/2up, for some examples. A more thorough programming introduction is in the 6502 Programming Manual, http://retro.hansotten.nl/uploads/files/MCS6500%20Programming%20Manual.pdf, but it assumes you have access to an assembler. Figure 4 shows a simple program from The First Book of KIM that reads a key on the KIM-1 keyboard and displays its value on the display.

```
0200 D8       START CLD         clr dc mode
0201 A9 00          LDA #0      zero into A
0203 85 FB    STORE STA POINTH
0205 85 FA          STA POINTL
0207 85 F9          STA INH
0209 20 1F 1F       JSR SCANDS  light display
020C 20 6A 1F       JSR GETKEY  test keys
020F 4C 03 02       JMP STORE
```

Figure 4. Sample Program.

The left column shows the four-digit hex address addresses, and the second column is the two-digit hex instruction. Next are (zero, one, or two) two-digit hex addresses. Depending on the instruction length, the address increases by one, two, or three digits. The next columns assume you have an assembler. A home programmer would write the information on paper, then convert it manually to that shown on the left. You can probably see why Tiny BASIC was popular.

KIM-1 disappeared quickly as far more usable computers, such as the Commodore PET, the Radio Shack TRS-80, and the Apple II, became available for hobbyists. Today, the devices closest to the KIM-1 are the Arduino, https://www.arduino.cc/, and Raspberry Pi, https://www.raspberrypi.org/, families. Both are far more powerful and easier to use, but if you have a masochistic urge to return to the computing dark ages, you can recreate the KIM-1 with a kit based on an Arduino, https://create.arduino.cc/projecthub/obsolescence/kim-uno-a-6502-kim-1-computer-on-arduino-e5c82c. As shown in Figure 5, the result is physically different, although it performs the same as the original.


Figure 5. KIM-1 Simulated Using an Arduino.

Before spending much time with this, you would undoubtedly want to devise a way of labeling the keys. You can experience programming the 6502 without building anything, as several online emulators are available, http://www.6502.org/tools/emu/.

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# Make Your Batteries Last Longer

**By Kurt Jefferson, Editor, Central Kentucky Computer Society**
**https://ckcs.org/**
**lextown2 ** gmail.com**

When the battery was first invented, no one could imagine that we'd rely so heavily on them in the 21st century.

Wikipedia.org notes, "Experimentation with lithium batteries began in 1912 under American physical chemist Gilbert N. Lewis, but commercial lithium batteries did not come to market until the 1970s in the form of the lithium-ion battery."

Batteries operate our cell phones, tablets, laptops, landline phones, flashlights, wireless mice, trackballs and some trackpads, and many more items. They even power our EV (electric) cars. Batteries are everywhere.

But as all of us know–batteries die. They need to be continually charged. There are steps you can take to extend your batteries' lives. The Cliff Notes version is here: keep them away from heat. Don't leave them in a hot car. Don't leave them sitting in the sun or lying in front of a heat register in your home in the winter.

The How-to-Geek website explains: "You can't fully stop batteries from discharging, but you can do one simple thing across all battery types to lower the discharge rate:
keep them cool."

Don't put your devices in the freezer. How to Geek says, this causes condensation that can wreck the electronics as you constantly take the devices in and out of the freezer.

On the other hand, keep battery–powered devices in a cool spot. "You might consider charging and storing your power tool batteries in your cool basement instead of leaving them in your sweltering detached garage. You'll also want to keep electronics out of hot cars and store them in the coolest part of your home if they aren't in use for a while," adds How to Geek.

"If your batteries are discharging rapidly enough that you practically need to leave them on the charger to ensure they are ready to use when you need them, then it's time to replace them. Batteries degrade over time, even with the best care, and if a battery is no longer properly holding a charge, it should be recycled and replaced." writes the website.

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# Smartphone Wireless Connections – Help Keep Us Connected

**By Phil Sorrentino, Secretary and APCUG Rep**
**Sun City Center Computer Club, FL**
**https://www.scccomputerclub.org/**
**philsorr ** yahoo.com**

The smartphone is a wireless marvel. You may not have thought about your smartphone in this way, but your smartphone may be able to connect to up to five different wireless networks. (I'm sure this would have made Nicola Tesla very happy, he is credited with the wireless transmission of energy via his patented Tesla coil, though Marconi got the credit, and the patent, for inventing radio communications.) Just think about the hardware and software that allow your smartphone to participate in five different kinds of networks, all wrapped up in your smartphone package along with all the other electronics needed to support a powerful computer system. I bet even Steve Jobs would be impressed.

Cell Phone Network

The most apparent wireless network your smartphone works with is the one you initially bought your smartphone to use; that is the cell phone network supported by all those antenna towers that have sprouted up all over in the past 40 years. (Not many landlines around anymore.) This network lets you keep in voice contact with just about anyone since over 91% of the people in the world has smartphones; that's over 6.6 billion possibilities. (Even more impressive is that most Americans – 97% now - own a cellphone. The share of Americans that own a smartphone is now over 85%). This cell phone network also provides access to the internet when you are out and about. The internet is considered a "Wide Area Network" or WAN. A WAN is an extensive computer network spread over a wide geographic area. A network's speed is its data speed or data rate and is measured in bps or bits per second. Typically Mega bps or Giga bps. WAN data rates are typically around 150 Mbps. When you are not out and about and are within a Wi-Fi network, the Wi-Fi router provides access to the internet. Without this ability to be constantly connected to the internet, I'm not sure how many would own what would only be a competent personal digital assistant.

Wi-Fi Network

So, Wi-Fi is the second wireless network that your smartphone can take advantage of. Wi-Fi is considered a "Local Area Network" or LAN. A LAN is a collection of wired and/or wireless connected devices typically in your home or office. LAN data rates can be from 100 Mbps to 1 Gbps. Using Wi-Fi, you can connect to the many servers on the internet. The use of your smartphone in this manner is sometimes called "Cloud Computing" because you are accomplishing a task on the smartphone by using the resources of a server computer somewhere out there on the internet (in the cloud), like using GPS and the Maps or Waze app on your smartphone to help navigate you from home to a place you've never been to before. Cloud Computing is just a more common term for "Client-Server Technology," which allows our smartphones to take advantage of powerful computer servers connected by the internet.

GPS Network

Remember that every wireless network your smartphone can work with requires a transmitter, a receiver, and an antenna in the smartphone so that it can send data to and receive data from the other network members. (This is only possible because of digital electronic circuitry; this would never have been possible in the analog electronics world. Thanks to micro-miniature integrated circuits that typically get smaller and cheaper over time.) Though GPS, which is a third wireless network, is an exception. Your smartphone only has GPS receivers and antennas, no GPS transmitters. But it has multiple receivers because to determine your location, your smartphone has to receive data from at least 3 GPS satellites. (More detail than that may be the subject of a future article.)

Bluetooth Network

The fourth wireless network supported by your smartphone is Bluetooth. You may not have taken advantage of this feature unless you have a relatively new car and you have introduced (paired) your smartphone to the car's entertainment system. If you have, you are familiar with one of the best safety features in the new cars, the ability to receive and make calls from your smartphone while always keeping your hands on the steering wheel. (Now, if they could only convince the many speeding drivers to stay under the speed limit; another topic for a future article.) Bluetooth has also become the preferred connection for speakers and headphones (earbuds). Bluetooth headphones are for quiet listening, and Bluetooth speakers are for loud listening (a whole lot louder than the sound capability of the smartphone). Bluetooth is considered a "Personal Area Network" or PAN. A PAN is a computer network for interconnecting devices within a person's workspace. It transmits data among devices such as computers, smartphones, tablets, and personal digital assistants. Bluetooth data rates can be as high as 1 Mbps.


NFC Network

The fifth wireless network may not be available on some older smartphones or even some new ones. This network is called NFC or Near Field Communications. NFC is a set of communications protocols (rules) that enables communications between two devices over very short distances, maybe an inch or two. It facilitates data transfer between nearby smartphones, laptops, tablets, and other devices. NFC data rates are around 400 Mbps. NFC is used for making easy contactless payments with your smartphone using Apple Pay or Google Pay. Just enable the amount in the payment app and touch the smartphone to the NFC reader or terminal. This type of payment protects your payment information with multiple layers of security to help keep your account safe. The payment terminal does not share your card number when you pay, so your private information stays secure.

So, with these five networks, your smartphone helps you keep in touch and connected.

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# U.S. Airport Free Internet Wi-Fi Speeds Compared

**By Kurt Jefferson, Editor, Central Kentucky Computer Society**
**https://ckcs.org/**
**lextown2 ** gmail.com**

Tis the season for traveling by air. If you are stopping at one of the 50 busiest airports in the U.S. over the holidays, now might be a good time to check out how wireless Internet speeds stack up at the different airports.

Ookla, the company behind the popular Speedtest app (available through the various App stores) and on the web at Speedtest.net, has crunched the speed data at these airports.

In its article headlined, 17 U.S. Airports With Supersonic Wi-Fi (and 12 That Are Still Stuck At the Gate), Ookla discovered that Cincinnati/Northern Kentucky Airport comes in second place with a download speed of 177.16 megabits per second (Mbps). This reading shows how much data an Internet connection can send in one second.

First place goes to San José International Airport (the epicenter of Silicon Valley), with a Wi-Fi Internet speed of 203 Mbps.

Rounding out the top ten airports in order with the fastest Internet (along with their airport codes):

U.S. Airports With 100+ Mbps Internet Speeds Over Free Wi-Fi
(Tested in the third quarter of 2022)

- San José Int'l (SJC) FASTEST at 203 Mbps
- Cincinnati/Northern Kentucky Int'l (CVG)
- San Francisco Int'l (SFO)
- Daniel K. Inouye Int'l (HNL) Honolulu)
- Oakland Int'l (OAK)
- Louis Armstrong Int'l (MSY) (New Orleans)
- Seattle-Tacoma Int'l (SEA)
- Dallas Love Field (DAL)
- JFK Int'l (JFK)
- LaGuardia (LGA)

The ten airports in order with the slowest Internet
(along with their airport codes):

U.S. Airports With Less Than 50 Mbps
Internet Speeds Over Free Wi-Fi

- Pittsburgh Int'l (PIT) SLOWEST at 5.23 Mbps
- George Bush Intercontinental (IAH) (Houston)
- William P. Hobby (HOU) (Houston)
- Southwest Florida Int'l (RSW) (South Fort Myers)
- Logan Int'l (BOS) (Boston)
- Philadelphia Int'l (PHL)

- Tampa Int'l (TPA)
- Sacramento Int'l (SMF)
- John Glenn Columbus Int'l (CMH)
- Denver Int'l (DEN)

What about some of the busiest airports that nearly all of us have visited? Most of us in Central Kentucky think of Atlanta–Hartsfield International because so many flights in this part of the country are routed through that airport.

Atlanta Hartsfield clocks in with Internet download speeds of 78.17 Mbps.

Many travelers in the Bowling Green area or other spots in southern, south-central, and southwestern Kentucky travel through Nashville International.

Nashville airport offers free Wi-Fi speeds of 100.46 Mbps – ahead of John Wayne Airport in California (Orange County) and a bit slower than Midway International (Chicago).

Speaking of Chicago, one of the busiest airports in the country (usually competing with Atlanta for passenger traffic), O'Hare International offers 56.39 Mbps Internet speeds.

Los Angeles International, another very busy airport, provides free Internet speeds of 50.59 Mbps.

Other airports in the region include:

- Indianapolis Int'l (IND) with an Internet speed of 74.59 Mbps
- Charlotte Douglas Int'l – 45.02 Mbps
- St. Louis Lambert Int'l – 110.38 Mbps

Ookla notes that free Wi-Fi Internet speeds at these airports dropped between the first three months and the second quarter of this year: Seattle-Tacoma, O'Hare, Los Angeles, San Francisco, and Dallas/Fort Worth Airport.

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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..**

# November

# December

| SUN | MON | TUES | WED | THU | FRI | SAT |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 |
| **5** | 6 | 7 | 8 | 9 | 10 | 11<br>Linux on Saturday SIG<br>9am—Noon |
| **12** | 13 | 14<br>7pm General Mtg<br>Dave's Garage videos<br>6pm Tech Topics | 15 | 16 | 17 | 18<br>MS Office SIG (includes Access)<br>9am—Noon |
| **19** | 20 | 21 | 22 | 23 | 24 | 25 |
| **26** | 27 | 28 | 29 | 30 | 1 | 2 |
| **3** | 4 | 5 | 6 | 7 | 8 | 9<br>Linux on Saturday SIG<br>9am—Noon |
| **10** | 11 | 12<br>7pm General Mtg<br>TBA<br><br>6pm Tech Topics | 13 | 14 | 15 | 16<br>MS Office SIG (includes Access)<br>9am—Noon |
| **17** | 18 | 19 | 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.)

**11/23**

**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:4**

❍ 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**

**Or sign up on our website:**

**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:

**November 14, 2023**
**7:00 pm**

# General Meeting

## Let's Hear from a Retired Microsoft Software Development Manager

**Via Zoom Only**

Twin Cities PC USER GROUP

341 County Rd C2 W
Roseville, MN 55113

***FIRST CLASS MAIL***