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(membership includes monthly subscription)

The Digital

# Viking



## Twin Cities

PC USER GROUP

NEWSLETTER

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

**April 2014**

[Membership Information .2](#)

[Upcoming Meetings .....3](#)

[WAZE Travel and](#)

[Routing Information.....3](#)

[When You Need a Clear](#)

[Explanation .....5](#)

[Linux Magazines.....6](#)

[Nibblers .....7](#)

[SIG Information .....10](#)

[TC/PC Calendar.....11](#)

[Tiny Computers .....12](#)

[Membership Application....15](#)

[Maps to Events .....16](#)

## General Meeting

**Tuesday, April 8, 2014**

**7:00 PM**

### Social Media Part 2

**Presenter: Jonathan Freed**

**Location:**

**Summit Place**

**8505 Flying Cloud Drive**

**Eden Prairie, MN 55344**

Jonathan Freed, instructor at Edina and Hopkins Community Education and self-proclaimed “Social Media Addict” is back with us again to present a more in depth look at Facebook, Twitter, and, your neighborhood’s own social media network, NextDoor.org. Jonathan gave a presentation on the basics of social media at our October meeting and got rave reviews. He is able to get the audience excited about and comfortable with social media. He is also able to give practical advice on how best to protect your privacy and maintain the security of your computer while exploring all that social media has to offer.

Come with your questions and join in the discussion on this timely topic. ☺

TC/PC is a Member of



**24-Hour Information • [www.tpc.com](http://www.tpc.com)**

Application form inside back cover

## TC/PC Business Members

Friendship Village

Metro Sales

**Thank You!**

## The Digital Viking

The Digital Viking is the official monthly publication of the Twin Cities PC User Group, 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.

**Disclaimer:** All opinions are those of the authors and do not necessarily represent the opinions of the TC/PC, its Board of Directors, Officers, or newsletter staff. TC/PC does not endorse, rate, or otherwise officially comment on products available; therefore, readers are cautioned to rely on the opinions presented herein exclusively at their own risk. The Digital Viking, its contributors, and staff assume no liability for damages arising out of the publication or non-publication of any advertisement, article, or other item. All refunds in full or in partial, for advertising, membership or any other item shall be at the sole discretion of the Twin Cities PC User Group Board of Directors.

## Advertising

Full page (7½ x 9½)	\$100.00
Two-thirds page (7½ x 6)	80.00
Half page (7½ x 4¾)	65.00
One-third page (7½ x 3)	50.00
Quarter page (3½ x 4¾)	40.00
Member Bus. Card (2 x 3½)	10.00

**Multiple insertion discounts available.**

Contact Sharon Walbran at: SQWalbran@yahoo.com

Deadline for ad placement is the 1<sup>st</sup> of the month prior to publication. All rates are per issue and for digital or camera-ready ads. Typesetting and other services are extra and must be requested in advance of submission deadlines.

Payment must accompany order unless other arrangements are made in advance. Place make checks payable to: **Twin Cities PC User Group**

## TC/PC Member Benefits

Product previews  
and demonstrations

Special Interest Groups  
Monthly Newsletter

Discounts on products  
and services

Contests and prizes

## Business Member Benefits

All of the above PLUS:

FREE ½ page ad on  
payment of each renewal

20% discount on all ads  
Placed in the *Digital  
Viking* Newsletter

Up to 5 newsletters mailed to  
your site  
(only a nominal cost for each  
additional 5 mailed)

## TC/PC 2013-2014 Board of Directors

Meets second Thursday of each month at 7:00 PM. All members welcome to attend.

Call **Ross Held** (612-386-3172) for meeting details.

<b>President</b> — Jim Grotz	jim.grotz@raymondjames.com
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## Newsletter Staff

Editor Sharon Walbran

Contributors:

Jeannine Sloan

## Upcoming Meetings:

Tuesday, May 13, 7:00 PM– **What's New in Video Cameras. Presenter: Pete Anderson.**  
**Location: National Camera Exchange, Roseville Store** at 2401 Fairview Ave, , a few blocks north of Hwy 36.

**Tuesday, June 10, 7:00 PM 3D Printing.** TC/PC member, Bill Ryder, is currently building his own 3D printer from a kit and will bring it to our June meeting and demonstrate how it works. He will explain the process to us and tell us about his experience with the kit.

**Tuesday, July 8, 7:00 PM Social and Annual Meeting and Board Elections.** 

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## WAZE Travel and Routing Information on Your Smart Device

by Ira Wilsker, iwilsker(at)sbcglobal.net

WEBSITES:

<https://www.waze.com>

<https://play.google.com/store/apps/details?id=com.waze>

<https://itunes.apple.com/us/app/waze-social-gps-traffic/id323229106?mt=8>

<http://www.windowsphone.com/s?appid=f07f83eb-a8a4-49fd-8946-c67a9349e062>

<http://en.wikipedia.org/wiki/Waze>

<http://www.haaretz.com/business/.premium-1.529478>

Over the past several weeks, I have taken several out-of-town road trips. On these trips I used a novel free smart phone app for routing and traffic information called Waze (waze.com). There are an abundance of apps that function with the integral GPS built into almost all smart devices, including smart phones and tablets. Available for most smart devices with an appropriate wireless internet connection (cellular or Wi-Fi) running Android, iOS (Apple devices), Windows Mobile, Symbian, and Blackberry powered devices, Waze provides much more current routing and road related information than most other competitive apps.

For those who may drive outside the U.S., Waze is multinational in scope, and offers real-time traffic information on an international scale. According to Wikipedia, "As of 2013 Waze has a complete base map for the United States, Canada, United Kingdom, France, Germany, Italy, Netherlands, Belgium, Israel (claimed to be the best map for that country), South Africa, Colombia, Ecuador, Chile and Panama, but the company has plans to complete maps for other countries in Europe and elsewhere."

With the motto, "Waze. Outsmarting Traffic, Together", Waze describes itself as, "Get the best route, every day, with real-time help from other drivers. Waze is the world's largest community-based traffic and navigation app. Join other drivers in your area who share real-time traffic and road info, saving everyone time and gas money on their daily commute." With millions of users (Yahoo! reported over 50 million users in mid-2013), Waze utilizes real-time information from users who have opened the Waze app on their smart devices. Waze anonymously, continuously, and transparently reports location, speed, and other information to a centralized server, which in turn almost instantly compiles and displays this shared information on other Waze equipped smart devices in the same user selected area. For privacy and security reasons, by default, the Waze configuration utilizes a user chosen screen name and avatar on the remote screens, and does not publically display any other personally identifiable user information.

While several other route mapping apps simply display traffic conditions as a colored line on a map, typically green indicating that traffic is moving fast, yellow indicates slowed traffic, and red indicating major traffic slowdowns or stoppage, Waze utilizes a different approach. Since the Waze app on the users' devices are continuously reporting speed and location, based on GPS information, accurate traffic information is displayed along with a wide assortment of other helpful and useful information. According to the Waze website, this difference between Waze and the other GPS based routing apps is, "Get alerted before you approach police, accidents, road hazards or traffic jams, all shared by other drivers in real-time. It's like a personal heads-up from a few million of your friends on the road."

For safety reasons, if Waze is used by the driver of a vehicle, the text input function is disabled once a destination is entered or selected off of a saved list. The driver can still be informed of upcoming traffic, hazards, and other reports, as well as audio turn-by-turn directions, without having to physically handle the device. There is an option button displayed where a passenger can enable the text based data entry process while the vehicle is in motion. In addition to the passive information on speed and other road information provided by the app itself, a passenger can actively contribute to the community of Waze users by using a simple icon based method of sharing road reports. These passenger entered road reports take the current location, as automatically provided by the GPS, along with manually entered information on accidents, traffic congestion and delays, disabled vehicles, speed traps, and other road hazards, which immediately show up on all other Waze connected devices in the area. In addition to road related information, users can also enter gas station prices observed on their route, which will be displayed to others driving through the same area. Waze says on its website, "By working together to report prices at the pump, Waze drivers can always save some gas money."

Too many of us have had to deal with outdated maps on our GPS or smart devices. While some newer free-standing GPS devices offer free quarterly updating of maps, many still charge substantial fees to purchase map updates. When using an internet based mapping service, it is often difficult (or impossible) for the user to either determine the age of the map displayed, or to enter map corrections, both of which may undermine the confidence of the user in the accuracy of the maps displayed. What is unusual about the maps displayed on Waze is that they are community edited; Waze has an active community of map editors who work continuously to improve and update the maps displayed by the Waze app. Map corrections and updates are constantly incorporated in the Waze display, down to the neighborhood level. These same community map editors also continuously improve the routing utility incorporated into the Waze app. Waze has made it as easy for any of the millions of users to submit suspected map errors or better routing information to the editors as it is to enter a road hazard; a single click on the appropriate icon, along with an appropriate comment, immediately sends the information to the map editors. For example, earlier today, while returning from Houston (my wife was driving), I submitted two suggested changes: the first was a suggested routing correction to my home address, submitting a shorter and faster route; the second was the location of a newly opened gas station.

While the information from users is anonymously displayed on the Waze display, using a moniker rather than a real name, users can also optionally select to send Waze information to selected individuals, or to post it on social networks, such as Facebook. On a recent out of town trip to visit a daughter and her family, I chose to provide her with a real-time web link that would display my current location and "ETA" (Estimated Time of Arrival). Since my wife was at the wheel at the time, it was safe for me to do the appropriate messaging. Clicking on the icon on the bottom-left corner of my screen, I selected the "notify" function, which presented me with a comprehensive list of messaging utilities; text messaging, email, Facebook, and several other modes were displayed. I selected to send my daughter a private text message which included a Waze generated unique URL, which when opened in her browser, displayed my real-time location and ETA, which was continuously updated in her browser. This same function can also serve to notify someone who is going to be met or picked up by the Waze user of the expected time of arrival.

The posting of travel information to Facebook can be useful if a group is trying to arrange a get-together of some type, and all of the participants can be kept apprised of the others' locations and arrival times. While Waze supports posting of current location information to social networking services, such as

Facebook, for security reasons, I cannot recommend this practice. Even if the social media post is only directed to friends, not all friends may be honest and trustworthy. Posting that a user is a distance away from home, and will not be returning for a lengthy period of time, opens that user's home to possible break-in and burglary, as the perpetrators will know that no one is home and no one is likely to be home for a foreseeable time.

The Waze app has a most interesting history; originally invented in Israel in 2008 by a small group of developers as, "a GPS-based geographical navigation application program for smart phones with GPS support and display screens which provides turn-by-turn information and user-submitted travel times and route details, downloading location-dependent information over the mobile telephone network." Waze was recognized by the 2013 Mobile World Congress as the "Best Overall Mobile App", beating out several better known apps such as Dropbox. The original company, Waze Mobile, was acquired by Google in mid-2013 for the princely sum of \$1.3 billion, after being approached by other prominent internet giants, including Facebook. According to contemporary news accounts, "As part of the deal signed, each of Waze's 100 employees will receive an average of about \$1.2 million, which represents the largest payout to employees in the history of Israeli high tech." (source: haaretz.com, June 13, 2013).

While the Waze app is totally free to download and use, its business model is funded in a variety of ways. Waze offers advertisers an opportunity to place a very small, unobtrusive icon on a given location, which may encourage Waze users to patronize that location. Waze also sells its aggregate traffic conditions and reports to media outlets, mostly TV stations, for their use in broadcasting current local traffic information. Utilized by several New York and New Jersey TV stations, the Waze feed is also employed (as of June 2013) by over 25 other U.S. TV stations, as well as foreign TV stations, including one in Rio de Janeiro.

Provided that a driver is not distracted by its use, the free Waze app is an outstanding resource. Waze also asks that the app be used to monitor daily commutes, in addition to longer trips, so that others may get the enhanced benefit of a greater knowledge base of road information. Over the past several weeks, I have used Waze on my smart phone rather than Google Maps and the other road routing apps that I have installed. Waze uses the device's GPS to determine the current location, and then offers a simple search function to ascertain the destination. In using Waze I have entered, street addresses, the names of restaurants, and hotel names, with the integral search function rapidly calculating a route to the chosen destination. While on the road I used Waze to find the best gas prices, avoid major traffic congestion, and other road hazards.

Since Waze is free, and will run on almost any appropriately equipped smart device, regardless of operating system, I can wholeheartedly recommend it to travelers for both local and long distance driving.



[Go to Page 1](#)

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## When You Need a Clear, Simple Explanation of a Complicated Topic . .

You may or may not be aware of the controversy surrounding the proposed Southwest Light Rail project in the Twin Cities which has normally well-behaved citizens acting out at neighborhood meetings. The battle over whether the rail can run through the Kenilworth area of Kenwood has gone on for so long that people may have even forgotten what started it all and what the issues are. So bring in the puppet to explain. In this video Choo Choo Bob, who owns a fun "everything train" shop on Marshall and Cleveland in St. Paul, does a great job of clarifying the issues for everyone to understand. This may be the answer dealing with Putin and the Ukraine, North Korea, Syria, Obamacare, who knows? Worth a look.

<http://www.mprnews.org/story/2014/03/28/choo-choo-bob-explains-the-southwest-light-rail-line>



[Go to Page 1](#)

# Linux Magazines

By Cal Esneault, Former President and leader of many Open Source Workshops & SIGS, Cajun Clickers Computer Club, LA, November 2013 issue, Cajun Clickers Computer News, [www.clickers.org](http://www.clickers.org), ccnewsletter (at)cox.net

Since Linux is not as commonly used as some other computer operating systems, users frequently resort to online sources for instructional information. Although easy to find, typical research often ends with information having a question and answer format focusing on isolated issues. A magazine format can give a broader view without being long or technically complicated. Two suggestions for free, online magazines for users are PCLinuxOS Magazine and Full Circle Magazine.

PCLinuxOS is a PC operating system with a KDE 4 desktop environment that was started by Bill Reynolds ("Texstar") in Houston, TX. It has an open-source "community" operation that publishes its own magazine. There is a lot of emphasis for new users transitioning from other operating systems. Many technical articles stick to a moderate length, and there is a lot of "fun" content (such as food recipes, screen shots of customized desktops, reader feedback, etc.).

Below are a few of the article topics covered in the last three issues of the PCLinuxOS magazine:


- Xfce User Tips and Tweaks (Parts 1,2, & 3)
- Password Security Revisited
- OpenVPN: Other VPN Services
- LibreOffice Tips & Tricks (Parts 1,2, & 3)
- Inkscape: Holiday Tree; Torn Paper Effect
- Undo Gmail's Latest "Enhancements"
- Backup Your Gmail Account With getmail
- GIMP Tutorial: Masks Explained
- Game Zone: Sacred Citadel
- Linux vs. Windows
- Testimonials from veteran PCLinuxOS users
- Gramps genealogy program
- Screenshot Showcase

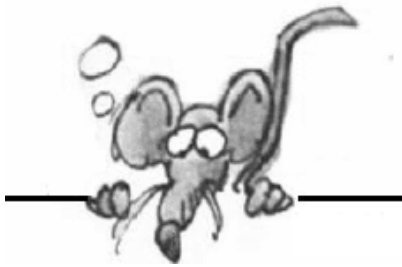
Full Circle Magazine covers Ubuntu and its derivatives (Xubuntu, Lubuntu, Edubuntu, etc.), but it is not associated with Canonical Ltd, the commercial sponsors of Ubuntu. It has many recurring feature topics (news, ask the new guy, software reviews, command line skills, etc.) and usually has more than 50 pages of content. For the most part, it relies on volunteer writers, There is also an associated podcast available. Note: the title Full Circle is in reference to the Ubuntu logo.

This magazine also carries well detailed multi-part articles about a few of the more popular software titles. Examples include LibreOffice, Inkscape, Blender, Python, and GIMP. There are sometimes special editions of concentrated compilations of these articles.

Examples of special issues are three special issues for LibreOffice, two special issues for Inkscape, and 6 special issues for Python (see the September 2013 main magazine issue for details). Since most of the software with multi-article coverage is cross-platform and can run on most operating systems (Linux, Mac OS, Windows OS), these articles should be of interest to almost any computer user.

Both magazines are published monthly. PCLinuxOS Magazine started in September of 2006 and is now at issue 80. Full Circle Magazine started in May of 2007 and is now at issue 77. Both can keep you up to date on news, software, and hardware related to Linux. In addition, you can get any of the past issues in PDF format from their archives without cost. These archives provide a huge resource of detailed information written in a style friendly to the average user.

These magazines are excellent examples of the way the open-source community works to share the knowledge about free computer software. Even if you do not currently use a Linux OS, browsing these magazines will give you a quick view of what open source software is all about.  [Go to Page 1](#)



# NIBBLERS

By Jeannine Sloan

## Chromebook Myth

Myth: Chromebook is useless unless connected to the internet.

In terms of basic productivity, the Chromebook is just as useful without an Internet connection as another brand. Google's office suite (Google Docs, Sheets, Slides and Drawings) can all be set up for offline use – thus enabling you to view, edit, and create files when you're on-the-go. The offline setup is both fast and easy, and can be done entirely through Google Drive by clicking on 'Offline' in the 'More' menu.

<http://www.makeuseof.com/tag/chromebooks-dont-work-offline-debunking-myths/>

## Two-Factor Authentication

Two-factor authentication is the smart way to protect your online accounts using something you know (like a password) and something you have (like a smartphone). Find out what sites offer it and how to use it:

<http://www.makeuseof.com/tag/lock-services-now-two-factor-authentication/>

## Do You Know When and How to Wash Your Hands?

Follow the NIH's advice for hand-washing:

[http://www.cc.nih.gov/ccc/patient\\_education/pepubs/bladder/handwash5\\_8.pdf](http://www.cc.nih.gov/ccc/patient_education/pepubs/bladder/handwash5_8.pdf)

## What Options Trump Security Concerns

Security concerns are outpaced by the ease of use, flexibility, and productivity of mobile devices. -

See more at: [http://ghacks.tradepub.com/free/w\\_hp374/?p=w\\_hp374#sthash.tBoXdaCF.dpuf](http://ghacks.tradepub.com/free/w_hp374/?p=w_hp374#sthash.tBoXdaCF.dpuf)

## Add Day Of Week To Taskbar *In* Windows 8

1. Press Win+X to bring up the WinX Menu.
2. From it, choose 'Control Panel' and then, select 'Region'.
3. From the 'Region' window select 'Additional Settings' button.
4. Next, from the 'Customize Format' window, choose the 'Date' tab.
5. Under Short date type in ddd-dd-MM-yy OR ddd-MM-dd-yy
6. If you prefer the full day displayed, then use dddd-dd-MM-yy.

Using a comma instead of the hyphen, will make a comma display. Play around and see what suits you the best. Click Apply / OK and exit. From the Windows Club site

## Microsoft Maps New York's Complainers

*HereHere?* NYC enables neighborhoods to generate opinions based on public data.

We sum up how NYC neighborhoods are doing via daily email digest, neighborhood-specific Twitter feeds, and status updates on a map. This is an experimental project being tested in NYC but will probably come to other cities soon. <http://herehere.co/about>

And Mpls <http://www.ci.minneapolis.mn.us/311/>

## Nomophobia

Nomophobia is the fear of being out of mobile phone contact. The term is an abbreviation for "no-mobile-phone phobia."

Contributed by Sharon Walbran

## Going to Keep Running XP After April? Turn ON the Administrator Account

In Windows XP the main administrators account comes default with no password at all. Turn it on for added security. Read this article completely to learn how to do that as well as other XP security hints:

<http://tips4pc.com/forums/topic/login-to-the-hidden-admin-account-in-windows-xp>

## Awesome Video on TechMix

"...how the Web and social media took an obscure photographer with a good idea to incredible heights of art and influence." David Pogue talking to the Brandon Stanton. Please watch this and enjoy it!

<https://www.yahoo.com/tech/austin-brandon-stanton-the-amazing-photographer-79195425205.html>

## Pwn2Own, Oracle Java Alone not Hacked

"Pwn2Own, run by HP's Zero Day Initiative, is a hacking contest which challenges security researchers to demonstrate flaws in popular consumer and enterprise software platforms." The 2014 products were: Google Chrome, Internet Explorer 11, Mozilla Firefox, Apple Safari (OS X Mavericks), Adobe Reader, Adobe Flash, Oracle Java. Read the article here:

<http://www.pwn2own.com/>

Pwn2Own results and security news video: <http://www.youtube.com/watch?v=VdDYHYazIXA>

## Create A Photo Book With My Kodak Moments On Facebook

To begin Log in to your Facebook account and in the search box, type in my Kodak moments

<http://tinyurl.com/ojfc2r>

## Trivia

Behind the serenity of your phone, laptop or tablet's screen there is an endless conveyor belt of lawsuits and counter-lawsuits between the world's leading technology companies. Quote from MakeUseOf site

## Google Glass in Medicine

**Here's how:** A QR code is placed outside an emergency department room, which a clinician can scan using Google Glass. After scanning, Glass shows the clinician everything there is to know about the patient in the room, such as vital signs, lab results, problems, and other data. Read more: <http://tinyurl.com/ng8syjt>

## New Hyundai Car Runs on Free Fuel From LA's Sewage

With hydrogen supplied by Orange County's sewage treatment plant and paid for by the car manufacturer, a new fuel cell vehicle is actually hitting the market in Los Angeles.

<http://www.fastcoexist.com/3027144/>

## Instagram Photos Of Abandoned Bikes Create A Map To Clean Them Up

See a derelict bike? Snap a photo, add a hipster filter if you must, and hashtag it #deadpedalNY to join a crowdsourcing project to free up much-needed bike parking space in NYC.

<http://www.fastcoexist.com/3027509/>

## Droidian Slip

**Droidian Slip (n. phrase) 'droy-dee-an slip** The contemporary predicament of confusing which electronic device does what; leading you to, for example, answer the AC remote instead of the cell phone, or to try to turn off the TV with the garage-door clicker. For example: *Marina pulled her finger across the image to enlarge it, got mad when it stayed small, then realized she'd made a droidian slip—she was reading a regular magazine, not a tablet.*

<http://www.rd.com/slideshows/funny-words-21st-century/#ixzz2wyq0VhsZ>

## Modem vs. Router vs. Access Point

**Modem** - Box from your ISP that connects to the internet via whatever physical line you have.

**Router** - Box that connects to the modem and allows multiple devices to use that internet connection at the same time. It also lets the devices talk to each other (so you can transfer files in your house or whatever). Can be wired, wireless, or both.

**Wireless Access Point** - Attaches to a router and allows wifi connections to the network.

Modern home networks often have all 3 enclosed in one box. Confusingly, that box can be called by any one of the terms.

## System Restore

When the system is working well a good practice is to create a restore point. Then if something goes wrong it can be restored to a good configuration. Having a schedule to do periodic maintenance and create a restore point once a month or more often, after checking for malware is good computer hygiene.

[Go to Page 1](#)



# 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.tpc.com](http://www.tpc.com)

## Board of Directors\*

All members are welcome! Call for location.

### Selected Saturday mornings

Ross Held RHeld83745@aol.com

## Community Outreach\*

To request services or volunteer to help  
Contact:

Ross Held RHeld83745@aol.com

## Linux on Saturday

This is for the Linux newbie and those trying to come over from Microsoft to a different operating system.

First Saturday @ 9 AM-Noon

Note: No Meetings June-August

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

## Picture Perfect

Explore how to use your digital camera and learn how to use a variety of software for editing, organizing, and sharing images and video.

Second Tuesday 6:00—7:00 PM

Every other month

Right before the general meeting

Sharon Walbran SQWalbran@yahoo.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 Kuhlmeier 952/934-8492  
steve@kuhlmeysystems.com

## Microsoft Office

Addresses the use, integration, and nuances of the Microsoft Office applications.

Combined with Systems on Saturday

Third Saturday of the Month

Note: No Meetings June-August

Steve Kuhlmeier 952/934-8492  
steve@kuhlmeysystems.com

## Web Page Design

Discussion and demonstration of HTML, web publishing software and page design.

Second Tuesday @ 6:00-7:00 PM

Every other month

Right before the general meeting.

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

## Microsoft Word for PC & Mac

Any level user can be proficient and efficient in basics and advanced features of Word..

Combined with Systems on

Third Saturday 9:00 AM—Noon

Note: No Meetings June-August

Tom Ostertag 612/951-5520 w  
651/488-9979 h

Curt Trout 651/484-4569 h  
ctrout@troutreach.com

## Systems on Saturday

For all levels of computer challenges and any type of computer-related question. Incl. Q&A

Meets 3rd Saturdays 9:00 AM-Noon

Note: No Meetings June-August

Curt Trout 651/484-4569 h  
ctrout@troutreach.com

### Directions to Summit Place for General Meetings:

Proceed to Eden Prairie Center Flying Cloud Drive . [Flying Cloud Drive runs along the West side of the Eden Prairie Center.] Once you have driven past Eden Prairie Center (on the left) along Flying Cloud Drive you will come to a stop light at Prairie Center Drive. The next intersection with a stop light and left turn lane is Fountain Place. Turn left at Fountain Place and go straight into the parking lot. Turn left again to the first covered entry way of Summit Place. There is plenty of parking in the large parking lot in front of the first Summit Place covered entry way. When you enter the door at the first covered entry way, ask to be directed to the Performance Room for the TC/PC meeting. For a map of more detailed directions and *info on Web SIG and Board meeting*, check the TC/PC website.

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.tpc.com](http://www.tpc.com)

Meetings start at 7:00 PM (9:00 AM on Saturday) unless otherwise noted. \*Meets at Edina Executive Plaza.

**April**  
**May**

SUN	MON	TUES	WED	THU	FRI	SAT
		1	2	3	4	5 Linux and Open Source on Saturdays 9:00—Noon
6	7	8 Gen Mtg: Social Media Pt2—Jonathan Freed 7:00 PM 6:00PM Web SIG	9	10	11	12
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[Go to Page 1](#)

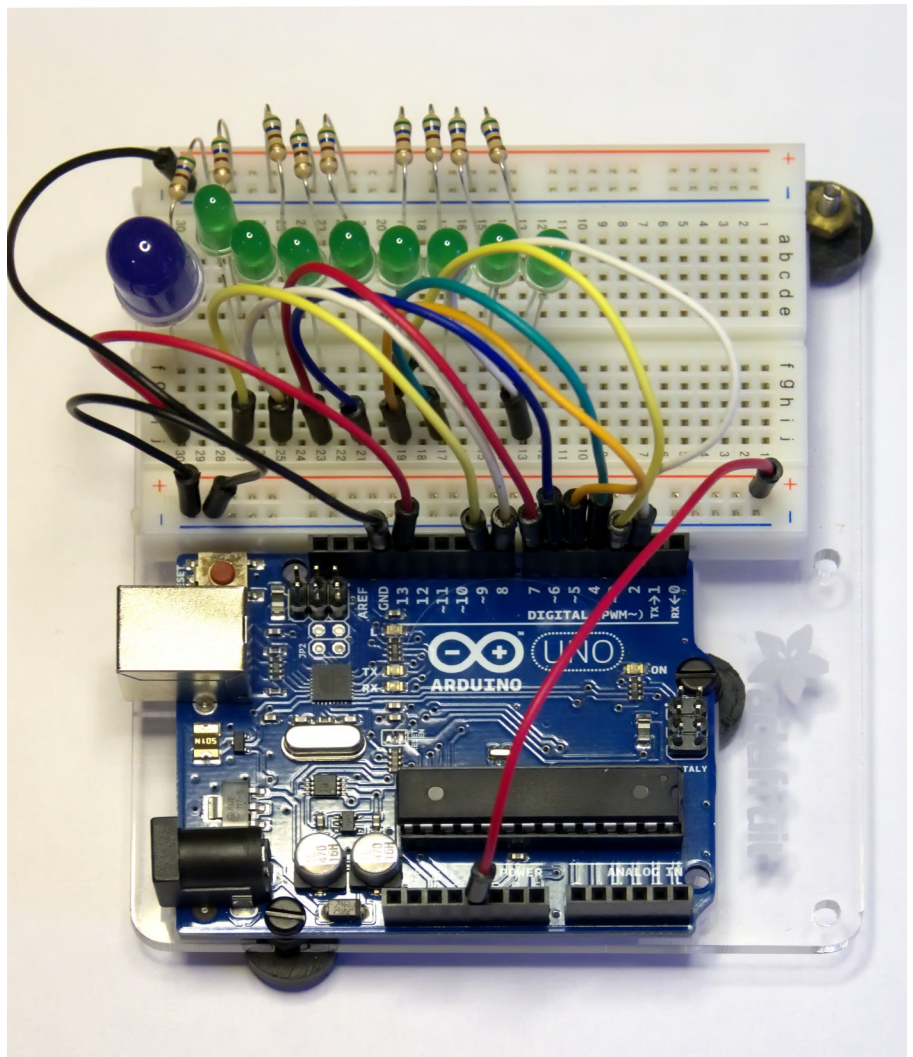
## Tiny Computers

By Dick Maybach, Member, Brookdale Computer Users' Group, NJ, November 2013 issue, BUG Bytes, [www.bcug.com](http://www.bcug.com), n2nd (@) att.net

Personal computers are vital appliances for most of us. We use them to balance our checkbooks, calculate our taxes, communicate with friends and family, store our memories, and keep us informed. This is much different than when they were first introduced, when we felt free to perform experiments using them that today are unthinkable because of the risk of losing valuable data. As a result, we have the ironic situation that as our PCs become more and more complex, we know less and less about them. A solution is to acquire a smaller and simpler computer just to play with. Ideally, it won't take up much space on our crowded computer desk and will be cheap to replace if something goes horribly (or wonderfully, if you're adventuresome) wrong.

There are dozens of these tiny computers, but here I'll talk about just two, the Arduino and the Raspberry Pi. Both are supported by active on-line communities, both are described in several books, both are open source, which means you are free to make any changes you like to their software, and both are cheap – less than \$50. (Although you will probably pay more for a complete starter or experimenter's kit.) Both were developed by educators, the Arduino in Italy and the Raspberry Pi in the UK, for the purpose of helping people learn about computers and computing. However, the two are quite different. The Arduino is really a controller, about as smart as your washing machine, and its inputs and outputs are Voltages on its pins. It runs only one program at a time, and once started, runs it forever. As you use an Arduino, you'll be learning programming and electronics. The Raspberry Pi is a real computer that runs Linux and comes with a full complement of PC software, including a Web browser. Its inputs and outputs are a keyboard, mouse, graphical display, and Ethernet and USB ports. As you use the Raspberry Pi, you'll learn programming, networking, and operating system operation and configuration.

The Arduino (<http://www.arduino.cc/>), like the Raspberry Pi, is about the size of a credit card. In the photo below, the Arduino is the blue card in the foreground. Normally, it's programmed and powered through the USB connector at the rear of the left edge. Once, a program has been loaded, it can be powered via the black connector at the front of the left edge (for example by a 9-volt battery). This unit illustrated is mated to a solder less breadboard, on which you can build circuits just by pushing component leads into its holes. Jumpers connect the breadboard with the Arduino's input/output pins along its front and rear edges. The Arduino is almost always used as a circuit element, and many experimenter's kits are available to get you started. These usually include an Arduino, a breadboard, and a collection of jumpers and electronic parts, e.g., LEDs, switches, motors, and sensors. Make an Internet search, and you will certainly find many interesting products and projects. My favorite



```

Blink | Arduino 1.0.3
File Edit Sketch Tools Help

Blink
/*
  Blink
  Turns on an LED on for one second, then off for one second, repeatedly.

  This example code is in the public domain.
  */

// Pin 13 has an LED connected on most Arduino boards.
// give it a name:
int led = 13;

// the setup routine runs once when you press reset:
void setup() {
  // initialize the digital pin as an output.
  pinMode(led, OUTPUT);
}

// the loop routine runs over and over again forever:
void loop() {
  digitalWrite(led, HIGH);   // turn the LED on (HIGH is the voltage level)
  delay(1000);              // wait for a second
  digitalWrite(led, LOW);   // turn the LED off by making the voltage LOW
  delay(1000);              // wait for a second
}

```

vendor is Adafruit, but it has many fine competitors.

Getting started with the Arduino is quite easy. Go to their home page, <http://www.arduino.cc/>, and download the Integrated Development Environment (IDE), which is available for Linux, Mac OS X, and Windows. (Linux users can also find it in their repositories.) Connect an Arduino board to a USB port and start the IDE.

As you may be able to tell from the screenshot, the Arduino uses a variant of the C programming language. The example here is the program blink, which just cycles an LED on and off. This is the equivalent of the classic “Hello World” program that is almost every C programmer’s first effort.

The Arduino’s capabilities are quite modest – typically the processor runs at 16 MHz, has about 20 I/O pins (some

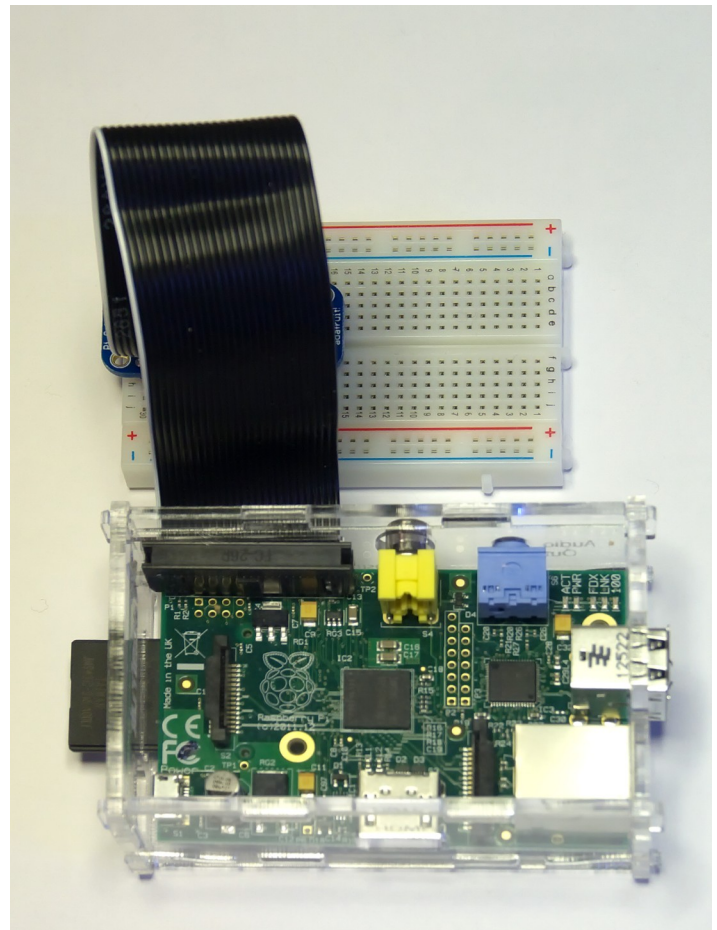
analog, some digital), and is equipped with 32 kbytes of EEPROM (for programs) and 2 kbytes of RAM (for data).

Normally, you would use the Arduino just to control the hardware and send any data it collects to a PC for analysis. To make this easier, consider using the Processing language on your computer, available at <http://processing.org/>. It’s very close to what the Arduino uses and has an almost identical IDE.

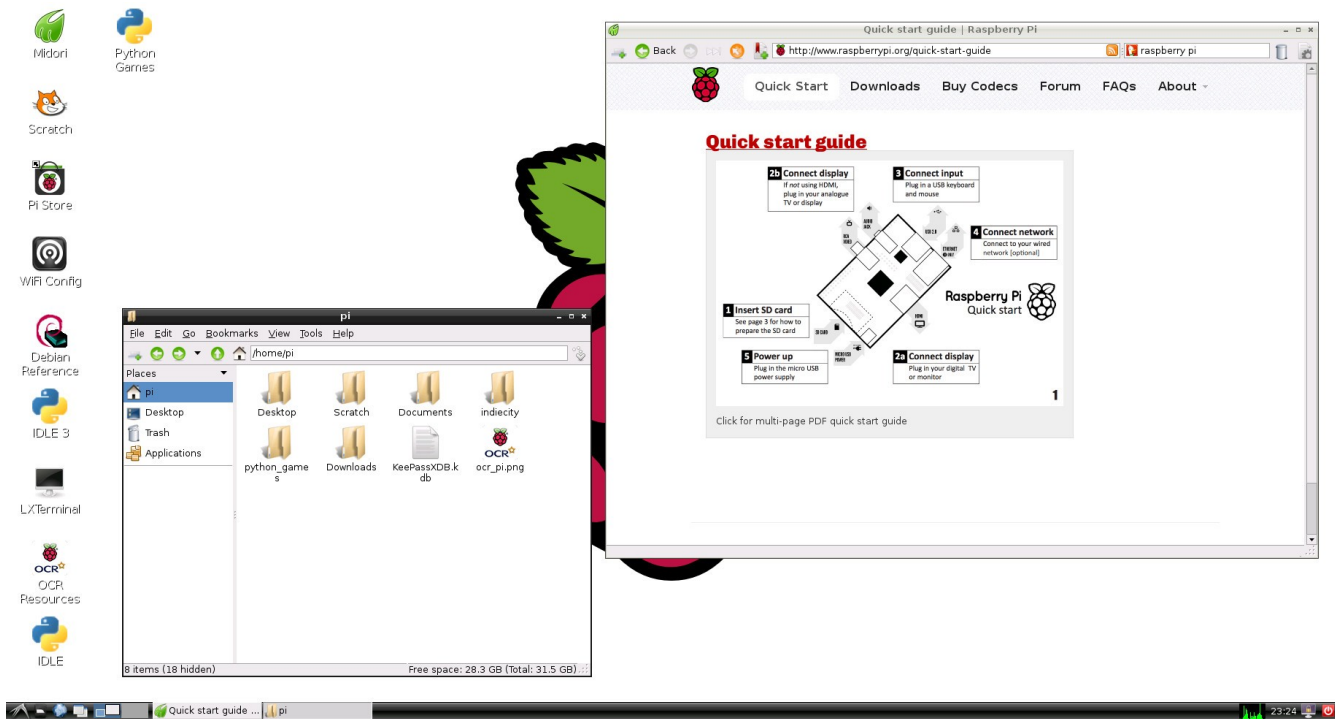
You should be able to get started using only information available from the Internet, but if you prefer a book, look at *Getting Started with Arduino* by Massimo Banzì. Many others are available, some for the beginner and others describing advanced projects.

While the Arduino is a simple controller, the Raspberry Pi, <http://www.raspberrypi.org/>, is a real computer that uses the Linux operating system. The kit I purchased (from Adafruit) included a clear plastic case and a solderless breadboard, but many projects won’t need the latter. The Pi has two USB ports (silver connectors on the center right), an Ethernet port (silver connector on the front right), a HDMI port for the display (silver connector on the center front), a power connector (micro USB connector on the front left), a SD connector for storage (a SD card protrudes from the case on the left), a collection of ports (connected to the breadboard by a black ribbon cable at the left rear), an analog video port (yellow connector at the rear), and a stereo audio jack (blue connector at the rear).

The Raspberry Pi is more powerful than the Arduino, with a 700-MHz ARM CPU and 512 Mbytes of RAM. (These specs are for the model B. The model A is much



less capable and costs only a few Dollars less.) The processor is not Intel compatible; however, its overall performance is similar to a 300MHz Pentium 2, but with much better graphics. Clearly, it isn't an acceptable replacement for any modern home computer. However, it does act like a (slow) PC, as you can see from the screen-shot below, which shows the desktop with windows open for the Internet browser and file manager.



Getting a Raspberry Pi running is more involved than with the Arduino. Although it's powered through a USB port, PC USB ports can't supply enough current; you will need either a cell phone recharger or a powered USB hub. Be careful of cell phone rechargers though; many cheap units can't supply the current they claim. The safe approach is to purchase one from the vendor from whom you buy your Pi. You will need a USB keyboard and mouse; if you don't have an extra set, they are quite cheap. Hopefully, you have a HDMI display, either for your PC or a flat-screen TV; if not, you could try an old analog TV set, but its resolution will be poor. Finally, connect any USB peripherals through a powered hub, rather than ask the Pi to power them. I bought a no-name 10-port hub that had good user reports on Amazon, and it can also power the Pi. Finally, unlike the Arduino, which comes with its control software installed, you must supply the SD card for the Raspberry Pi and install Linux and its applications on it. This requires a SD card burner, and unfortunately many on the market aren't up to the job. Again, purchasing one from your Pi supplier is the safe approach.

As with the Arduino, you can probably get started with the Pi using only what you learn on the Internet, but there are also numerous books. The project has published *Raspberry Pi User Guide* by Eben Upton. There are numerous others, as well as magazine and Internet articles. I've seen descriptions of a media center, an Internet radio, a time-lapse camera control, a network file server, a firewall, and a wireless access point. (Many of these don't require a keyboard, mouse, or display once they are running, so you could disconnect these for use elsewhere once the project is on line.) You could even connect an Arduino to a Raspberry to obtain a portable sophisticated hardware control and data processing system.

Both these devices are ideal for experimenting. No matter how badly you screw up the software, you can just download a new program to your Arduino or reburn the SD card on your Raspberry Pi. Even if you manage to fry the electronics, you can replace either card for less than \$50. Both are wonderful platforms for introducing electronics and computers to young people. There are many Arduino projects that can be completed in less than an hour, including building the circuit and writing the program. The Raspberry Pi software includes Scratch, a programming language for children that builds animated graphics with sound, and Python, a more sophisticated language for older kids and adults. [Go to Page 1](#)



## You have just read an issue of *The Digital Viking*.

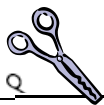
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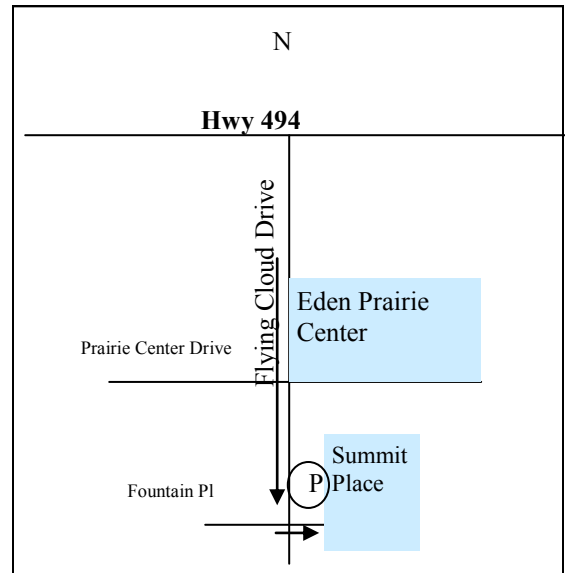
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