

New Style



Newsletter of the LaCrosse PC Users' Group

volume 22 number 5

May 2002

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Computer Upgrading and Maintenance

April 2002 Meeting

David Donskey, Secretary

Club Business

As most of you know by now, Don Atkinson, our newsletter editor and publisher is resigning his position after this newsletter. Also Carol Frank is resigning her positions as Secretary, newsletter and programs due to work schedule changes. Many thanks to both of them for their many years of dedication to the Club.

Marion Havlik, President therefore asked for volunteers to come forward to fill these positions and also to video tape the meeting. Dave Madson volunteered his video camera, he will bring it to the May meeting and we will test it out. Shane Lambert also suggested we might look into buying a used video camera for the group, he will check into getting one, and report back at next meeting. Marion volunteered VHS video tapes to be used.

Jack Storlie volunteered to take over programs for the rest the year, he had been helping Carol with programs. Anyone who would like to volunteer to help can contact Jack.

Robin Alexander volunteered to take over as editor of newsletter, starting with the next newsletter, the club will be getting him an upgrade for the Page Maker software used for the newsletter. Also in regard to the newsletter, Shane suggested we might consider having a newsletter meeting to get a few people together and work on the newsletter, as it is a lot of work for just one person.

David Donskey (foolish me!) volunteered to fill in as secretary, bear with me here.

Marion explained that we attempt to alternate programing, between beginner topics and more advanced topics, we would also

like to encourage members to ask question on our listserv (This is a member only listserv, for paid members) simply send an e-mail to membersonly@lcpconline.com, and it will go out to all members. Past newsletters are also available on our web site (www.lcpconline.com) they are in PDF format (You need to have Adobe Acrobat reader installed on your computer to read them, this is free software that can be downloaded)

We discussed publicity for the club, Shane volunteered to help, other volunteers? It was suggested that we put in smaller more frequent ads in the paper, cost is a factor here. Marion suggested a couple of larger ads and a couple smaller ones each year.

Marion suggested we offer a limit membership (listserv only for \$5.00/yr) to members of the Digital Duffers Club, we decided to have Jack make the offer to their club.

Question & Answer

A new member, Ken Birnbaum asked a question regarding monitors. He got a new computer and wants to use his old monitor on it, his old monitor is about 8 years old and 15", Chuck and Shane both suggested a new/refurbished monitor due to the age of the monitor, though it will work on the new system the graphics won't be very good. They recommend a 17"(19" if you have room as they are quite large) with a dot pitch of .25 min and a refresh rate of 72 Hz. Shane suggested he check out microexchange.com if he was interested in a refurbished monitor, he recently purchased a 17" ViewSonic for \$89 w/60 day warranty there. Also make sure to get a disk with the monitor (it should contain an ".inf" file)

This month's meeting

May 29, 7PM

Dr. Roger Grant from UWL will discuss digital photography. It will be held in our usual location, the beautiful Overholt Auditorium at the Lutheran Hospital.

Presentation

The presentation was given by Shane Lambert, club member, past president of Club, and Internet software developer. Shane discussed upgrading and maintaining of computers, he cautioned that when taking apart your computer you should remember/document what you unplug from where so you will be able to put it back together. He brought some of his collection of computer parts along for demonstration purposes, and discussed the many internal parts of computers cases, power supply, motherboard, modems, floppy drives, hard drives, CD, CD burner etc. He recommended getting a computer with cards for video, modem etc. as opposed to one with all these functions on the motherboard as it will make it easier to upgrade. Newer computers come with a limited amount of slots for memory, so Shane suggests, you get one larger vs 2 smaller sticks (i.e. one 256 Mb vs two 128 Mb), memory price is quite low now so the more the better (you can never have too much memory, within reason).

Getting access to the boards and other internal parts can be a big issue in upgrading, Shane recommend Dell computers for ease of access. With newer computers most upgrading is limited to adding memory, upgrading video cards, possibly replacing or adding a hard drive.

SCSI (Small computer system interface) vs IDE hard drives, the main advantage of SCSI is it has more channels for devices (7-15) vs two with IDE. SCSI is most often

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Digital Photography

Larry Horn, User Group of South New Jersey, via
Phoenix PC Users Group, Sept. & Oct., 2001

Purchasing a Digital Camera

Digital cameras are the latest "Must have" toys for gadget loving computer users and many others. The reason computer users love digital over regular film is the computer gives them the ability to make endless changes, corrections, and improvements to their pictures and use them in creative projects. This article will be my very opinionated list of what you should consider before purchasing a digital camera, or getting your new one with more features. Remember, technology in this field is advancing so fast with more resolution and features for less money on a monthly basis. Therefore any recommendation for a specific camera is obsolete before the article can be printed.

An important point: No consumer level digital camera of today under \$3000 will equal 35MM film for absolute image qual-

ity! The structure of film is way beyond 3 or 4 MegaPixels (MP), and film has grain which softens the edges presenting a more natural picture to your eyes. Additionally, film cameras can be purchased, at a very reasonable cost, with interchangeable lenses which greatly increase the flexibility of the camera use. Yes, you can fake a telephoto lens in the camera but that kills your resolution. (I will get into that below.) You can also scan a photo, but that will also reduce the resolution and ultimate image quality. When you get your film developed and placed on a CD by the camera store, they actually scan the film (with a very good film scanner) and save the file to a disk.

First, why do you want to purchase a digital camera? Because they are fun to use and can actually save you a lot of money over time. It takes the Polaroid® concept of a picture in a minute and speeds that up. You

take the picture, preview it on the LCD screen and delete it if you don't like it or save it for future posterity - all at no additional cost for film or developing. Print out the pictures you like (paper quality does matter) or send them as e-mail attachments to friends and relatives.

Let's get down to the actual items to consider when buying a camera. These items are in my order of importance although many of the items are actually of equal ranking and personal preference has influenced it.

Resolution and Sensor Size

The heart of all digital cameras is the light sensitive electronic chip called a sensor. It takes incoming light and converts it to a digital file. This chip determines the maximum resolution and, ultimately, image quality. This sensor is made up of a number of individual photo receptors corresponding to pixels. When a digital camera says it has 1 MP resolution, the sensor actually has that number of photo-receptors the density of the sensor

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used in servers which need to have multiple devices, for home use IDE is most common. When upgrading hard drives make sure you computer's BIOS will support the new drive, also when connecting your IDE devices make sure you match up the red stripe (maybe be other colors) on the ribbon cable with pin one (some cables are keyed, one of the holes plugged to prevent it from being plugged in backward). Zip drives were not recommend do to their unreliability and the high price of the media, using a CD Burner was offered as an alternative. The power supply maybe the hardest part to replace because everything plugs into the power supply, be sure to document were everything is plugged. When replacing CMOS battery make sure to document your current CMOS settings first as you may have to reenter them after replacing the battery.

We had four new members: Ken Birnbaum, Eldora Hohlfeld, Jim Mayer, Jean Troyanek all of whom use their computer for internet browsing and e-mail. Jim also uses his for financial and photography applications.

From the editor

This is my final issue. The newsletter now returns to the competent hands of the previous editor, Robin Alexander. Goodbye.

La Crosse PC Users Group (LCPC) Treasurers and Membership Report April 2002

Dick Dahlby, ddahlby@cs.com, Treasurer

Income received in April was \$80.00 from four new memberships. They were Eldora Hohlfeld, Jean Troyanek, Jim Mayer, and Ken Birnbaum. Welcome to LCPC. We hope to have a brief "bio" from each of the new members in a future issue of the newsletter.

\$20.00 was received in May from one membership renewal (George Frisch). Thanks George for your continued interest and support.

Expenses paid in April were: \$9.50 for 30 photocopies of the April LCPC Newsletter, \$38.00 for annual renewal of our Post Office Box, and \$6.80 for postage.

The LCPC checking account balance as of 05/15/2002 is \$875.02.

We presently have 55 enrolled members in LCPC.

Members whose annual renewal fees (dues) are presently past due are: (Mar.) Jim and Sandy Wheat. (Apr.) Kevin Blum, Joseph Doucet, and Kathleen Ann Gallagher.

Membership renewals due in May are: Ernesto Brauer, Chuck Hosler, Stub Johnson, and Mike Larson.

Annual dues are \$20, and checks should be made payable to LaCrosse PC Users Group. Dues may be mailed to either of the following addresses, or may be paid to me in person at the May 29th meeting.

La Crosse PC Users Group
P.O. Box 2991
La Crosse, WI 54601-2991

or
Dick Dahlby
501 Olivet St
La Crosse, WI 54603-1318

Ken Birnbaum was the only visitor at the April meeting, and has subsequently joined as earlier reported.

Reminder to all members:

If you change your email address, it is very important to inform LCPC of the change, so that the Membership ListServ (membersonly@lcpconline.com) can be changed accordingly. To do so, please send me an email with your new email address and I will see that the ListServ is changed. If you haven't received an email from the ListServ within the last two weeks, please let me know that also, so that I can check on it. Thank you.

determines a camera's overall picture quality.

Using a loose analogy to relate it to your computer screen's resolution, the original default VGA resolution of Windows on a computer monitor was 640x480 which means it has 640 dots or pixels across by 480 down or .3 million pixels making up the screen image. A digital camera with this same resolution would have .3 million image sensors each representing a pixel or .3 MegaPixels (MP). Cameras in the mid-price range (\$150-300) now have 1MP, or 2MP. In the \$400-\$1,000 price range you will get 3MP or 4 MP. This directly impacts the size of a picture you can print as more pixels translate into a larger picture that still looks good.

The camera has captured more detail and doesn't have to "guess" or interpolate at the missing dots or expand the existing ones causing a blotchy print.

I have seen two kind of sensors: a charge coupled device (CCD) which is usually found in high-quality cameras and a complementary metal-oxide semiconductor (CMOS) which is more common in the low-cost "entry-level" cameras. Most of the reviews I have seen favor CCD chips.

'What resolution do you need'? That depends on how you will be using the final output. Yes, more is always better, but as a rule of thumb related to final use:

- .3 MP (640x480)=Onscreen viewing,
Web sites, sending as e-mail attachment,
prints up to 3"x5"
- .8 MP (1024x768)all of the above and
prints between 3"x5" and 4"x6"
- 1 MP (1152x864)=3"x5" to 5"x7" prints
- 1.3 MP (1280x1024)=4"x6" to 5"x7"
prints
- 2 MP (1600x1200)=5"x7" to 6"x9"
prints
- 3 MP prints up to 8"x10" to 11"x14"
- 4 MP 9"x12"

The above listing was the consensus of several sources but was plagiarized from the April 2001 issue of PC Photo, an excellent magazine for anyone starting out with digital photography. PC Photo generally used the more conservative -smaller sizes.

One last point on resolution: Many people will want to eventually crop their pictures

for a better composition. 'When you crop it down, you effectively throw out the resolution in the area you delete. A 3MP image could quickly reduce to a 1MP with cropping, so if you like to work on your images and make relatively large prints, start with and shoot at the highest resolution you can afford.

The Lens

There are two main points to consider here, lens material and zoom capability. Lenses can be made of glass or plastic. Glass is the hands down winner for quality.

The stated Zoom range is a bit more complex. You can have Optical Zoom and Digital Zoom. Optical Zoom uses the actual optics of the lens to magnify or zoom in on the image. There is no loss of resolution/quality, but it is more expensive to manufacture. Digital Zooms take the original image from only the center part (how much depends on the degree of magnification) of the sensor and use the camera's internal computer to interpolate or guess at the "missing" pixels between the real ones. It is like cropping the picture and then stretching the image back up and filling in the blank spaces. Image quality is degraded and the greater the magnification, the more you lose. A 3MP sensor might actually be using only 1 MP at the center and "filling in" the other 2MP. Don't get me wrong, I have seen cameras guess very well and produce good quality images at high digital zoom magnifications but optical is always better than digital. The most common range I have seen in optical zooms is 3X or three times magnification.

Also, be aware that the sensor is not the same size as a piece of 35MM film, so when you see the focal length stated in mm like 38-115mm (3X) this is actually a more telephoto angle lens than you would get in a 35MM camera. PC Photo Magazine list the conversion at approximately 5X. My Olympus camera has a lens of 5.4mm - 16.2mm which they state is equivalent to 35mm-105mm on a 35MM camera which equals slightly wide angle to short (Portrait) telephoto for those not familiar with 35MM cameras.

Framing the Picture

You can frame the picture in either an optical, ideally through the lens, viewfinder or with an LCD display panel on the back of the camera. I feel a digital camera should

have both! Being a long-time photo enthusiast I am accustomed to an optical viewfinder. LCDs also have the bad tendency to "wash out" or become too light to be viewable. I also find it awkward to hold a camera away from my face while trying to frame the image. Another disadvantage is LCDs consume a lot of battery power. You can shoot all day on one set of batteries with an optical viewfinder, but you had better have extras if you use an LCD. I would not purchase a camera without an optical viewfinder. (Our VP, Elliot Glantz, feels just the opposite, and although his camera has both, he always uses the LCD over the optical viewfinder.) I will also admit an LCD is more accurate in framing the subject, especially close-ups, unless your optical viewfinder is "through the lens," something generally found only on top-of-the-line digital cameras.

If I am so partial to an optical viewfinder, why do I want a digital camera to have an LCD panel? Because it is invaluable for previewing your pictures to make sure you really got a good shot. If it didn't turn out, you know it instantly and can reshoot it. The bad picture is simply deleted, making room for another shot and with no waste of film. It is also great being able to show off your pictures while still at the party, etc. and see the reaction. One neat feature I saw on a Sony camera was an LCD panel which swiveled so you could still see it if you put the camera over your head or were using the self-timer to take your own picture.

Focus

Simple, inexpensive, digital and film cameras have a single fixed or two zone focus. It is a compromise or zone guess. This is OK as a quick point-and-shoot camera but will not give you the best Shots. Most better (\$250+) digital cameras have autofocus lenses. This will give you far better, sharper images. An added feature is a focus lock. This feature allows you to lock the focus on the main subject and then re-frame the picture to a more pleasing composition. 'When you get up to the professional level (\$2,000+) cameras, you can even get optional full manual focus for real creative effects.

Memory-Storage Cards

Digital cameras store their images in non-volatile memory cards; they save the memory even when the camera is off. Some very inexpensive have only internal memory which

will hold 25-30 pictures before you have to get to a computer to download them. This is OK around the house but would require you to lug a laptop with you on a trip if you wanted to take any additional pictures. A better solution is removable memory cards so you can take several with you and when one is full, just change it like you would film, and keep shooting. There are several, unfortunately non-compatible, options available. These are Smart Media (SM), Compact Flash (CF), Sony's Memory Sticks, Multimedia Cards, Click Disk, the new IBM MicroDrive, and just released CD-R. The 2000 Fall Comdex in Las Vegas also saw the introduction of additional formats but these are not yet available. SM and CF are the most popular at this time. They are all small cards, about the size of a matchbook, which slide into the camera. You purchase them by memory size, in Megabytes, which range from 4Mb to 64Mb with the MicroDrive going up to 340Mb. These capacities are increasing as I write this. Some Sony cameras still use a standard 3 " floppy disk. These are cheap but are limited to 1.4Mb so they can't hold many pictures as the resolution increases. The number of images you can save per Megabyte is directly related to the resolution and the amount of image compression you use.

Image Compression-File type

A non-compressed high resolution picture would take up multiple megabytes of storage space so most cameras store the images in a compressed format. The most common formats are TIFF and JPEG. TIFF uses minimal compression and produces the largest file sizes but also the best pictures. JPEG is a "Lossy" compression algorithm. This means that some information is thrown away forever when the file is compressed-so if you compared the "uncompressed" image with the original, you would find some differences. You can, on some cameras, set the amount of compression so you can determine the amount of data you are willing to lose (and reduce file size) before the image becomes pixelated and looks unacceptable. Setting the camera to Fine, Normal or Basic determines the amount of compression. Some brands use different terms but the concept is the same. I discourage the use of the Basic - highest compression - setting as it gives the lowest quality. A good quality camera will give you a choice of file type as well as degree of compression.

So how many pictures do I get on a memory card? A basic camera my neighbor has includes only 2Mb of memory and at 640x480 resolution with what it calls fine compression they can take 16 pictures or 32 pictures at the basic setting. The average camera with removable memory comes with a 8Mb card. using that as a guide I will reproduce part of a table (with their terms) from the camera I own:

Resolution	Compression	# of pictures
1600x1200	TIFF Minimum	1
1600x1200	JPEG Minimum	5
1600x1200	JPEG Std	16*
640x480	JPEG Fine	32
640x480	JPEG Normal	82

* This is the setting I use most often but I have to go back and Save-As with a higher level of compression if I am sending the files over e-mail to keep the size at a reasonable level for a dial-up download.

The Feel of the Camera

Even with the best specs in the world, if a camera does not "feel right" you will not use it. This is very subjective but also very important. Getting the size, weight, design, location and operation of the controls, and the general Ergonomic Fit comfortable to you are important. There are some necessary compromises in size and weight if you want every bell & whistle. You might be carrying the camera all day on vacation so don't overbuy on size just to get a feature you may never use.

The box of my still camera says it will take video clips also. But when you look at the spec sheet you find out the video is low resolution and limited to only several seconds, even with a relatively large media card. My camera only gives you 96 seconds with a 32Mb memory card at 320X240 resolution. No very practical

Viewing and getting the pictures out of the camera.

I consider it important, but not critical, to have a TV out on the camera. The small LCD screen on the back of the camera makes a poor screen if you want several people to view the pictures. Being able to plug the camera into the TV, especially if the camera has a slide show feature, is very nice.

There are several way you can get the pictures into your computer. The oldest and slowest is with a serial connection. All PCs have a serial port so you "guaranteed" a connection. The preferred way is with USB. It is many times faster, almost every computer now supports USB, and you can "hot-sinc" with USB, you don't have reboot to connect the camera as you probably do with a serial connection. Even if your camera only has a direct serial connection, you can still use USB by purchasing a media card reader. Plug the reader into a USB port, remove the memory card from the camera, place it in the reader and your computer now has an additional drive letter, making it fast and easy to copy your pictures. They even make adapters that look like 3 " floppies that you can put the memory card into.

Part 2

Last month, I tried to cover the more important considerations in purchasing and using a digital camera. I will repeat it here that you should first decide how you will use the camera before drawing up your spec sheet. It is very easy to be seduced by features that sound great but you may never use. Also, be aware that just like computers, technology advances daily (or is that hourly?) and the prices generally are headed downward. The maker of my brand camera just last week came out with the new model number that has a 10X optical zoom for less than I paid with a 3X Optical zoom. Don't overbuy! Start out with a starter camera, see how you like it and keep track of the features you love or wished you had. Then move up to a camera with those features, which will probably cost less at that time than what you paid for the starter camera.

My starter camera for general use would be 1 Megapixel, removable media (not floppy), and flash. A 3X zoom, TV out, USB and a LCD and optical viewfinder are next on the list. Eliminate the zoom and the Olympus Brio 100 or Hp 215 are good choices for \$200-250. If you are really unsure and just want to test the waters, try a JamCam or one of the \$50 to \$100 cameras as a starting point and then give it to the kids as you move up.

It is also important to remember that despite whether the camera uses film or digital media, you are still taking pictures, so a good photography book or magazine, (I like PC Photo) will be helpful.

Now that we have the basics, what are the other features you will want to consider? The technical term for most of these are the bells and whistles.

Exposure Control

This touches on several different features. The first one is 'White Balance. White balance is equivalent to adding a filter to make the whites look white, not blue or yellow as you get under fluorescent or incandescent lighting, respectively.

Another related feature is exposure compensation. When you take a picture in a high contrast situation, like a person in a dark room with a bright light or window behind them or outside with the sun behind the person, the camera's exposure automatic controls maybe be fooled, resulting in a dark/under-exposed subject with a properly exposed background. When shooting in this type of situation, a look at the picture on your LCD will tell you if it is OK or needs to be deleted and retaken with fill-in flash or an adjustment to the exposure. An exposure lock feature is useful here.

Remember, if you are using an flash, an on-camera flash has a very limited range, usually 8-10 feet. To increase the range you will probably need a "hot shoe" on the camera to add a second inure powerful one or a sinc outlet. (These are found only on high end - expensive Pro-sumer cameras. If you've never used one with your film camera, you're unlikely to need one on a digital model.) Also, red eye reduction flash or slow sinec features are desirable as you get more experienced i creative photography.

Speed of taking pictures

Many digital cameras take several seconds to one minute to get ready for the first shot. This seems like an eternity when you are trying to get that quick spontaneous shot. Next be aware that there is usually a delay between pressing the shutter release and actually capturing the picture. Waiting for that

perfect moment in the action or expression will result in disappointing missed shots. Anticipation is critical. lastly, the camera may need time to record the picture on the media so rapid fire sequence shots may be difficult. Some new cameras overcome this by having internal memory that captures the pictures quickly and them writes it to the slower removable media.

PowerBatteries

First—digital cameras eat batteries. Most cameras use standard AA batteries. These are preferable to proprietary ones which may cost more, be harder to find, or not be removable so you have to tie up the camera to recharge them. When it comes to AA batteries you have a choice of several kinds. Single-use alkaline batteries tend to die quickly, especially if you must use that LCD screen to shoot the picture. However, the upside of them is that they can be found anyplace and are a good back-up. Rechargeable batteries can be nickel-cadmium (NiCad) or nickel metal hydride (NiMH). I recommend the NiMH as they last longer without the memory effect of NiCads and despite their higher initial cost, will save you money in the long run. To recharge them, just put them in a charger and plug it in. I recommend two sets if you plan a full day of shooting, like on vacation, as they do take time (hours) to recharge. Some cameras will also work off AC wall outlets which is good for showing the pictures on your TV without depleting the batteries

In-camera Special Effects

As competition gets going, many camera companies are starting to add in-camera features. These include Close-up/Macro capabilities, Slide Show display of the pictures on the camera's LCD or a connected TV, multiple images at once on the LCD- good for quickly finding a specific picture, and Magnification of the image on the LCD - the small size if an LCD screen makes this valuable feature in order to get a better look.

I have even seen in-camera effects like sepia toning and special borders for some cameras. I would not personally use them as I prefer a straight original that I can modify on the computer.

Software

Almost every camera comes with software. While the TWAIN drivers are necessary to have the camera communicate with the computer, the photo editing software is generally underpowered. You will quickly want to upgrade to a full-featured program like Adobe Photo Elements, MGI Photo Suite, Microsoft Picture It! or Ulead PhotoImpact. These programs are generally easier to use and give you better control than the free software in the box. It is nice to get

started with, but don't judge the camera by the software.

Other Features

Some cameras are adding features that do not make much sense to me. These include MP3 playback, Video and Audio recording. MP3 steals memory so you can't take as many pictures and Video recording is very brief and of poor quality. Audio makes some sense to add short notes on the picture but also occupies memory so it cuts down on the number of pictures.

Education

I mentioned it before, but it is worth repeating. No camera will make you a great photographer. Get some photography training. Even the major film companies like Kodak are into digital today. They even have the Kodak Digital learning Center. You can also try to ask for their guides.

My Camera

OK, I promised to tell you what I purchased. Remember, that was last year, and while I am still very satisfied with the camera, newer models might change my purchase decision. I have an Olympus D-490. It is a 2.1 MP camera with both 3X optical Zoom plus 2X Digital Zoom, an optical view finder and a LCD, Removable media (Smart Media), Preview/review with Multiple & Magnify as well as a slide show feature, small (pocketable) size, exposure compensation, focus lock, macro (close-up) capability, self timer, tripod mount, Li5C5 AA batteries (standard alkaline or NiMH rechargeable), and has a TV out. (Current street price about \$400.) This has be superseded with the model D-510 which added a longer digital zoom and USB as well as a burst mode to take 2 frames per second -all for less than I paid for the D-490. They have also come out with aC-700UZ which added a 10X optical zoom that looks very attractive (around \$500). My son uses an Olympus D-460 which is almost identical to my D-490 but is only a 1.3 MP camera and he is very satisfied with it. I purchased mine, in part, because I had used and liked his.

Don't be overly influenced by what I purchased. Go out and try them and see what you like within your budget.

LCPC Board

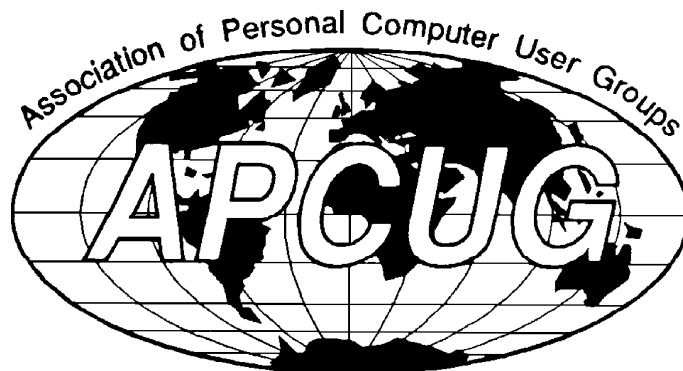
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LCPC is a member of APCUG

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General meetings are held the last Wednesday of Jan-Oct in the Overholt Auditorium at the Lutheran Hospital. The combined November-December meeting is held the second Wednesday in December.

Thank you, Gundersen-Lutheran, for making this wonderful facility available.

Meetings begin around 7:00 PM. Everyone is welcome, attend a meeting or two with no obligation to join.

Dues are \$20 for one year following payment. Membership entitles you to attend meetings, tap into the corporate wisdom, receive special user group discounts from publishers and others, receive (and contribute to) this newsletter. You may also obtain software provided by publishers for review of the product. Unsigned articles are by the editor.

Other user groups are welcome to reprint with proper credit.

The newsletter is printed the Wednesday before the meeting, please submit articles by the 13th of the month. Upload to:
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Commercial advertising rates: \$50 per page, \$25 for half, etc. Member's personal ads are free.

LCPC

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