THE WYSIWYG

TUESDAY April 6
Main Meeting
7:30 PM

Meeting Topic Not Finalized at the Time of Publication

Nominations will be taken for a special VP Election to be held at the April meeting.

Computer Memory
by Brian K. Lewis, Ph.D. Sarasota Personal Computer group. Inc. Florida

Occasionally the question arises as to how much memory can be put in a computer. The answer is "it depends". It depends on just what you mean by memory (RAM or hard disk), what operating system you are using and the capabilities of your computer's motherboard and its chipset. When I talk about memory I am not referring to the permanent storage of programs and data on the hard disk. Rather, I refer to the random-access memory or RAM. This is the memory provided by memory chips seated in slots on the motherboard of today's computers. Anything stored in RAM disappears when the power is turned off, so it is referred to as volatile, or temporary, memory.

If you want to upgrade the memory in your computer you have to be able to determine the memory type as well as the size, pins and speed, the number of slots available on your motherboard and the maximum amount of memory that your system can address. In general, this varies with the age of your computer. So let's look at these components in a little more detail. (Please note that although my remarks refer to Intel's Pentium series central processors, they also generally apply to the equivalent AMD processors.)

Early Pentium based computers had a CPU bus speed of 66 MHz (megahertz)

and a PCI I/O bus speed of 33 MHz. These values relate to the speed of data movement within the central processor and transmission to and from peripherals such as the memory bank. In some cases transfer to and from memory was at 50 MHz. Pentium computers generally had four slots which were arranged as two banks. This meant that memory had to be installed in units of two. The memory chips were 72 pin DRAM (dynamic RAM) or SIMM (single in-line memory modules) modules. Many of these computers could support four DRAM modules of 32 MB (megabytes) for a maximum of 128 MB of RAM. There were some motherboards built for Pentium 5 systems that had 2 or 3-168 bit DIMM slots in addition to the 72 pin slots. However, you could not use both the 72 pin and 168 pin slots, only one or the other. These systems would support either 128 or 256 MB of memory. However, at the time, many Pentium/Pentium II computers were sold with only 16 MB of RAM and Windows 95. Later, with Windows 98 the basic memory was 32 MB. In both cases, this is a less than optimum amount of memory for these operating systems. The first Pentium computers had a 32 bit address space which was theoretically capable of addressing 4 GB (gigabytes) of memory. However, none of the motherboards

Guests and visitors are welcome. People can attend any SHCC meetings during two consecutive months before deciding to become a member or not. Meetings include the main meeting and SIGs. July and August don't count since there is no main meeting. Membership includes admission to all SHCC functions and the newsletter. Membership is open to anyone. It is not limited to the residents of Sterling Heights.

DUES: $25/YEAR

CLUB ADDRESS: PO Box 385, Sterling Heights, MI 48311-0385
CLUB E-MAIL ADDRESS: Info@SterlingHeightsComputerClub.org
CLUB WEB PAGE: http://www.SterlingHeightsComputerClub.org

Resource People:

E-Mail Clients	-
Excel	Mike Greenen
Family Tree	Rick Schummer
FoxPro	Rick Schummer
Internet Explorer	-
MS Publisher	Rick Kucejko
Netscape	Don VanSyckel
Professional Write	Mike Greenen
Spreadsheets	Rick Schummer
Word	Rick Schummer

SHCC Coordinators:

Associate Editor	Rick Schummer
Net/Comm. SIG	Betty MacKenzie
Door prize	Open
Greeting table	Lindell Beck
Local Web Sites	Jim Golec
Newsletter publisher	Rick Kucejko
Novice SIG	Don VanSyckel
PC SIG	Jack Vander-Schrier
Publicity	Patrick Little
Resource People	Mike Greenen
Vendor Press Rel.	Jim Waldrop
Web Page	Rick Kucejko

2004 SHCC Officers

President: Don VanSyckel   V. President: Open
Secretary: Pat Little   Treasurer: Ed Trombley

Four Month Meeting Schedule:

APRIL 2004
6   - Main Meeting
7   - COMP meeting
11 - SEMCO meeting
12 - Net/Comm SIG
19 - Novice SIG
28 - PC SIG

JUNE 2004
1   - SHCC - Main Meeting
2   - COMP meeting
13 - SEMCO meeting
14 - Net/Comm SIG
21 - Novice SIG
23   - PC SIG

MAY 2004
4   - SHCC - Main Meeting
5   - COMP meeting
10 - Net/Comm SIG
16 - SEMCO meeting
17 - Novice SIG
26 - PC SIG

JULY 2004
**6   - No main meeting in
       July & August**
7   - COMP meeting
11 - SEMCO meeting
12 - Net/Comm SIG
19 - Novice SIG
28 - PC SIG

Special Interest Groups:

MS-DOS (Main)	IBM compatibles
Net/Com	Computers communicating with other computers
PC	Intermediate users discuss various topics
Novice	Those starting out

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Jim Waldrop	586-731-6481	jwaldrop@tir.com

Other Computer Clubs:

As a member of SHCC, you can attend meetings of other clubs where we have reciprocating membership agreements, at no charge.

Computer Club of Marysville and Port Huron (COMP)
Time: 1st Wednesday, 7:00PM
Place: Mackenzie Bldg, Room 201, St Clair Community College, Clara E McKenzie Library-Science Building, 323 Erie St.
Port Huron, (810) 982-1187
Web Page: http://www.bwcomp.org
Reciprocating: Yes

South Eastern Michigan Computer Organization (SEMCO)
Time: 2nd Sunday at 1:30PM
Place: Science & Engineering Building; Oakland University; 248-398-7560
Web page: http://www.semco.org
Reciprocating: Yes

The OPC (Older Persons Commission) Computer Club
Time: Every Tuesday at 10:00
Place: OPC in Rochester
       248-656-1403.
Web page: http://www.geocities.com/Heartland/Village/1904/

Newsletter submissions are due 10 days before the club meeting, but the earlier the better. They should be sent to :
    WYSIWYG Publisher
    5069 Fedora, Troy, MI 48098
OR at the e-mail addresses: newsletter@SterlingHeightsComputerClub.org

The WYSIWYG was printed by STERLING PRINTING AND GRAPHICS, located at 35976 Mound, Sterling Heights, MI 48312.

SIG Meetings

Net/Com SIG
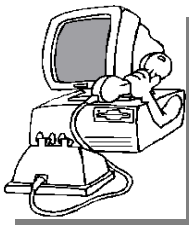
The next meeting of the Internet/Communications (Net/Comm.) SIG will be Monday, April 12, 2004, starting at 7:00PM, at the Macomb County Library. The SIG meeting days are generally the second Monday of the month.

Each month the members of the Net/Comm SIG discuss the Internet to help members of the SHCC learn more about this communications media.

For more information about the SIG, call or e-mail Betty MacKenzie (numbers are on page 2), or check the club web site.

Novice SIG

The next meeting of the Novice SIG will be Monday, April 19 2004, starting at 7:00PM, at the Macomb County Library. The SIG meeting days are generally the third Monday of the month.

A little more than half of the people attending the SIG use Windows 98 so the actual presentations will be done on Win98. The beginning concepts are applicable to WinME and WinXP directly. As we progress through the year and get to more advanced Novice topics a few items will vary between the different Windows versions, but we'll cover those differences at that time.

There is always a question and answer period at these meetings.

The computer training sessions are free to club members, but members will be advised to purchase the book in use by the class.

For more information about the SIG, call or e-mail Don VanSyckel (numbers are on page 2), or check the club web site.

PC SIG

The next meeting of the PC SIG is Wednesday, April 28, 2004. The SIG meeting is generally the last Wednesday of the month.

Intermediate level topics are discussed, aimed at users with some knowledge of computers. During this meeting, questions and answers regarding your computer will be discussed, and there will be some surprises.

For more information about the SIG, call or e-mail Jack Vander-Shrier (numbers are on page 2), or check the club web site.

Attend A SIG

If you do not attend SIG meetings, you are missing out on important club benefits available to you. These small groups get into more detail and question and answer sessions than is possible at the main meeting.

Selling Your Used Computer Equipment or Software

If you have some computer equipment or software to sell, you can either place a free ad in the WYSIWYG, or bring the article to the club meeting. You can set up at the back of the room before the meeting, and sell your items to people at the meeting interested in buying them. Members are responsible for any damage to the table tops, so bring a pad to prevent damage.

Directions To The Macomb Library

The Macomb County Library is located at 16480 Hall Road, in Clinton Township, between Hayes and Garfield, close to the light at Garfield, on the south side of Hall Road. A large red sign says "Macomb County Library". The phone number is (586) 286-6660.

SHCC Emergency Shutdown

The Sterling Heights Computer Club will utilize radio station WWJ - 950 on the AM dial to notify members that a meeting is canceled because of bad weather or for other reasons. The announcement will happen along with the school closings and other events. Please remember to listen to the radio when there is bad weather.

If your e-mail or mail address changes, please e-mail: secretary@SterlingHeights ComputerClub.org

SHCC Business

Door Prizes

The SHCC offers door prizes at most regularly scheduled club meetings. The door prizes for the April meeting were not known at the time of publication.

March's coveted winner's circle included:

Paul Baecker won a package of Jewel cases
Mike Greenen won MS Money 2004
Jack Knirk won a FaxModem
Jerry Hess won a MS T-shirt
Regina Locke won an Info Pad Evaluation Kit
James Waldrop won a package of Jewel cases
Ron Frederick won an MS Office 2003 Evaluation Kit
Bruce Honeck won a One Note Evaluation Kit
Jan Cook won an MS Office 2003 Evaluation Kit

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Door Prize Coordinator

There is a need for a Door Prize Coordinator. This person does the very important task of getting the door prizes that are raffled off at the end of the meeting.

A letter of introduction will be provided. This person would go around to various places, and get contributions of items for door prizes.

For more information, or to volunteer for this important club activity, see Don VanSyckel.

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Member Classified Ads

Send any classifieds to the WYSIWYG Publisher at the club's PO Box, or to his e-mail address posted on page 2 of the newsletter.

Ads are available to SHCC members and are limited to computer related items for non-commercial purposes. There is no charge for members classified ads.

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Revised World Wide Web Column on the Club Web Site

Check out the Improved section on the web site. You can see past web sites reviewed in the column on our club web page. They are arranged into various topics to help locate a specific site.

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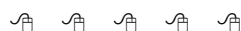
Presenters Wanted

The officers invite any member to make a presentation at the main meeting.
If there is some software you have been using and think others may be interested as well, or there is a computer topic you would like to present to other members, please call or e-mail Don VanSyckel. Making presentations is not that difficult. The hour goes by before you know it and there is always enough material to cover in a software package so that the hour is easy to fill.

If there is a topic you are interested in or something you would like demonstrated, please see any of the officers. They are always interested in what the members would like to see.

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Electronic WYSIWYG

You have the choice of receiving either the paper or the electronic version of the WYSIWYG. Contact the SHCC secretary to request the electronic version, since it will only be sent to those requesting it.

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New SHCC Members
Please welcome the following new members:

Padraic Mulen
Dianne Stickney

Ergonomic Gizmos
by John R. Chait D.C., drchait@hotmail.com

How do you use your laptop? Are you an occasional user who works on your laptop for short periods of time, or are you a full-time user with the laptop as your main computer? Occasional users will have less ergonomic risk of problems developing than full-time users.

Laptop Posture - laptops violate basic ergonomic design requirements, so using a laptop is a tradeoff between poor neck/head posture and poor hand/wrist posture.

Occasional Users- Find a chair that is comfortable and that you can sit back in. Position your laptop in your lap for the most neutral wrist posture that you can achieve. Angle the laptop screen so that you can see it with the least amount of neck deviation.

Full-time Users- Position the laptop on your desk in front of you so that you can see the screen without bending your neck. This may require that you elevate the laptop off the desk surface using a stable support surface, such as a computer monitor pedestal. Use a separate keyboard and mouse. You should be able to connect a keyboard and mouse directly to the back of the laptop or to a docking station.

Use the keyboard on a negative-tilt keyboard tray to ensure a wrist neutral posture. Use the mouse on an adjustable position mouse platform. The design of laptops violates a basic ergonomic requirement for a computer, namely that the keyboard and screen are separated. In the early days of personal computing, desktop devices integrated the screen and keyboard into a single unit, and this resulted in widespread complaints of musculoskeletal discomfort. By the late 1970's a number of ergonomics design guidelines were written and all called for the separation of screen and keyboard. The reason is simple, if the keyboard is in an optimal position for the user, the screen isn't, and if the screen is optimal the keyboard isn't. Consequently, laptops are excluded from current ergonomic design requirements because none of the designs satisfy this basic need. This means that you need to pay special attention to how you use your laptop because it can cause you problems.

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The Editorial Committee of the Association of Personal Computer User Groups (APCUG), an international organization of which this group is a member, brings this article to you.

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Cooking on the Web
by Ira Wilsker

No, this is not about using the Internet to cook your food, but instead as a resource for culinary information. Whether you are looking for some novel way to re-serve your leftovers, or some novel new meal, the internet may be a valuable resource.

A quick review of the Yahoo cooking directory at dir.yahoo.com/Society_and_Culture/Food_and_Drink/Cooking reveals over 3000 websites with recipes, and thousands of other websites with related topics. The directory is divided into subdirectories with headings such as "By Ingredient", Cookbooks, Cooking Methods, Drinks, Ethnic and Regional, Holidays and Occasions, Humor, Name Brands, Special Dietary Needs, Specific Courses and Dishes, and Web Directories. My oldest daughter recently called asking for help for a housewarming she was hosting at her new condo in Miami. She had special requests for vegetarian, low carbohydrate, Kosher, and other specialty dishes. Not being a gourmand herself, she needed help. This Yahoo directory provided the resources that she needed to meet the needs of all of her guests.

A brief review of the ten most popular recipe sites as determined by Yahoo show the diversity of tastes that can be satisfied by using the web as a resource. The most popular recipe site, according to Yahoo, is allrecipes.com. This site is self-described as "Your home for great recipes, meal ideas and cooking advice." At this single website, in addition to thousands of recipes being directly available are recipes and links to other well known resources and brands, such as Hershey, Borden, Keebler, Kellogg, McCormick, Nestle, Crisco, Herb-Ox, and Smuckers. Recipes from popular magazines including Southern Living, Cooking Light, Sunset, and other magazines and periodicals are also available or linked directly from this site. Additional resources are also available for special dietary needs. With the information available here, one could feed a family for years without duplicating a menu.

The website topsecretrecipes.com has a secret recipe of the week, which is only on the site for a week, with a new "secret recipe" appearing every Monday. As I type this, the weekly secret recipe is Olive Garden's excellent Tiramisu, described on the site as, "A delicious combination of mascarpone cheese, cream cheese, lady fingers, espresso and Kahlua". I am getting hungry just reading the page.

Where would our kitchens be today if it were not for the ubiquitous Betty Crocker? Bettycrocker.com has an outstanding and large selection of recipes for every taste. Recipes can be easily browsed by categories such as appetizers and snacks, breakfast and brunch, lunches, dinners, desserts, beverages, breads, side dishes, and other scrumptious and delectable choices. For those interested in what others are cooking, there is also an updated list of the most popular dishes selected from the site. Bettycrocker.com also offers a convenient free online service (registration required), "Your recipe Clippings", and an electronic file of individually selected recipes. By using this service, a customized web based cookbook can be created. Buried deep in my kitchen are several small file boxes with rough edged clippings from a variety of sources collected over decades. With the online clippings service, these old boxes are approaching obsolescence.

I have frequently been at a restaurant, and liked what I had to eat. I had wondered if these dishes could be easily duplicated at home. A site copyKat.com, which proclaims on its banner "You've tried it in the restaurant; now make it at home" offers this opportunity. As I opened up this site I was greeted with the recipe of the day, "Cracker Barrel Old Country Store Hash Brown Casserole". One of my coworkers is a faithful Luby's patron, and frequently brags about the fine meals she and her family has at Luby's. CopyKat.com has several Luby's recipes, including Hawaiian Pie, Butternut Brownie Pie, Italian Chicken Breast, Macaroni and Cheese, and many others. Nearby in the list under "L" are Luther's BBQ sauce, and Lindy's Famous Cheesecake. A quick look at the "O" category revealed a multitude of recipes from Olive Garden, Outback, Otis Spunkmeyer, and other highly recognizable names. The site is easy to navigate, and a pleasure to browse, except for the popup ads which I found annoying.

A most interesting and comprehensive site is www.recipesource.com, where there is an outstanding collection of ethnic and national foods listed both by region and by type of dish. I have traveled extensively, both domestically and internationally, and it is on this site that I found many of the unusual dishes that I enjoyed. Persian, Indian, and Vietnamese dishes are but a few of the many listed. With Chinese food being very popular, this site has 899 recipes for both authentic and Americanized Chinese foods. French, Greek, Swiss, Mexican, and Italian are but a few of the nationality based directories on recipesource.com. In addition to the ethnic listings, this site also offers a cross-reference based on the type of dish. What I found especially interesting was the section for restricted and specialty diets, including baby food, diabetic, gluten free, and vegetarian.

Of the many websites I reviewed for this column, this one was my personal favorite.

I think I gained 10 pounds just fantasizing about the delights I found. *bon appetite!*

Ira Wilsker is the Advisor for Region 8, APCUG Representative & Bylaws Chair for the Golden Triangle PC Club, a columnist for The Examiner in Beaumont, Texas, and has two radio shows. He also graciously shares his articles with the APCUG editors.

The Editorial Committee of the Association of Personal Computer User Groups (APCUG), an international organization of which this group is a member, brings this article to you.

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PCI Express: Say Goodbye to AGP and PCI Slots
by Timothy Everingham, TUGNET

Those of you who have been around personal computers for a while might remember plug in cards slots referred to as ISA, EISA, Microchannel, and VESA Local Bus. ISA, EISA, and Microchannel were replaced by PCI. VESA Local bus was primarily for video cards, which was replaced by PCI, then AGP slots. It was a fun time during these card slot transitions because many times you could not use the plug in cards from your old machine in your new computer or motherboard. If you did it could slow down the entire system. Well guess what, its time to do it all over again. Intel has come up with a new slot standard PCI Express, which will start to show up in computers/motherboards this spring.

PCI came out in 1992. Today these slots and its data bus technology are used for things not envisioned when it was under development over 12 years ago. PCI has its limitations and the PCI pro slots never became popular. The limitations are coming to the forefront in delivering multimedia content and Gigabit Ethernet. Of course getting higher frame rates at higher resolution and quality for video games also is an issue. PCI has been evolving over time increasing its speed to five times the original, but it has reached its limits of development. Many say that stretching out the AGP to 8x speed might be pushing at its limit too.

First let us look at the current PCI architecture you will find on most motherboards. The CPU/Microprocessor communicates with the first of two data bridges, normally referred to as the Memory Bridge or Northbridge. The Northbridge not only communicates with the CPU, but also communicates to the AGP port, which is where your main graphics card is (usually the only graphics card).

It also communicates with your RAM. The fourth thing it communicates with is the second data bridge, known as the Input/Output (I/O) Bridge or Southbridge. The Southbridge also communicates to your plug in slots/ cards, drive controllers, and USB, Fireware/1394, parallel. serial, game, keyboard and mouse ports. The theoretical speed limit of the Southbridge communication to I/O including the PCI slots is 133 MB/second. All of the communications in the system are parallel with none of the data having any priority over any other. Blocks of data have to be sent one at a time and cannot be done concurrently. Therefore the data is transferred from one section of the motherboard to the next section based on the order received, not the importance or whether a piece of data arriving by a certain time to its destination is critical.

PCI Express, instead of using a parallel bus architecture, uses serial networking typology with only two wires for each direction. At higher speeds, it allows concurrent transfer of data while having a similar look and the same type of Northbridge/Southbridge architecture as currently in desktops and laptops.

However, in servers the Southbridge is eliminated producing greater data throughput. The PCI slots initially have a 250 MB/second throughput, but the scalable width technology (increasing the number of wire pairs) enables slots and cards to communicate at 32 times that speed in later implementations using longer slots. But the typology can also use network switching type technology, giving data priority and quality of service functions. Hot plug/swap of components is a native part of the architecture.

The PCI Express Graphics Port, replacing the AGP Port, will have a 4GB/ second transfer rate in its initial configuration, double that of the current 8x AGP ports. For laptops units there

will be a new plug-in card to replace PCMCIA called ExpressCard. It will come in two forms, one that more looks like a PCMCIA card refereed to at the 34 module form factor (34 x 75 x 5 mm) and a more oversized L looking card called the 54 module form factor (54 x 75 x 5 mm). This new architecture is compatible with existing operating systems. Also the new PCI Express slot is capable of being placed alongside current type PCI slots so a choice can be made which type of card can be used in a motherboard just like was done with ISA slots and current PCI slots. The standard PCI Express slots being put in motherboards this spring (1x) will be a lot shorter than the standard PCI slots.

All of this will mean that a lot of issues having to do with multimedia on desktop and laptop computers will have been solved. It also opens wider use of Gigabit Ethernet on local area networks. It also enables the prospects of new motherboard form factors and computer case designs. As the transition from ISA to PCI was an interesting transition with computer buyers

having to do more research and planning on their purchases, the move from PCI to PCI Express will do the same. However, as was with the previous transition, the performance and capability increases of computers will be profound. Further information on PCI Express can be found at www.express-lane.org.

Timothy Everingham is CEO of Timothy Everingham Consulting in Azusa, California. He is also Vice Chair of the Los Angeles Chapter of ACM SIGGRAPHand is also on the Management Information Systems Program Advisory Board of California State University, Fullerton. He had articles published throughout the United States and Canada plus Australia, England, & Japan. Further information can be found at http:// home.earthlink.net/~teveringham

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Computer Memory

manufactured for these computers carried any such memory capacity.

The next generation of computers carried faster CPUs and chipsets along with faster bus speeds. For example the Intel 440 series chipsets were capable of working with CPUs with speed of 233 - 333 MHz at a bus speed of 66 MHz or with 350-450 MHz processors at a bus speed of 100 MHz. These motherboards generally had 3- 168 pin slots and would support a maximum of 384 MB of RAM. As the address space of the CPU was increased to 36 bit, the maximum addressable memory was 64 GB. However, in practice some computers running Win98 would not recognize more than 256 or 384 MB of RAM. This problem has been ascribed

to the chipset design and problem with the L-2 cache. So some caution is recommended if you intend to upgrade the memory in a Pentium II or older system With some of the Pentium III class computers there was an additional increment in bus speed to 133 MHz. The motherboards had 2 to 4 168-pin memory slots. The maximum usable memory of such systems ranges from 512 MB to 1 GB. These motherboards for this CPU class are generally able to use 100 - 133 MHz DIMMs. The 133 MHz DIMMS are capable of working at the 100 MHz speed. The Pentium 4 motherboards came with a whole new array of chipsets and memory chip types and speeds. The maximum memory now ranges up to 4 GB. Intel's initial Pentium 4 motherboards required the use of RDRAM or Rambus DRAM memory chips. RDRAM is

a serial memory technology that arrived in three speeds, PC600, PC700, and PC800. RDRAM designs with multiple channels, such as those in Pentium 4 motherboards, are currently the fastest in memory throughput, especially when paired with the newer PC1066 RDRAM memory. A Rambus channel is 2-bytes wide, so we get a maximum 1.6GB/s transfer rate for a single RDRAM channel using PC800 RDRAM or 2.1GB/s for PC1066. The other form of memory chip is the double data rate DRAM. Intel and other manufacturers now have motherboards and chipsets that can utilize these memory modules. They are less expensive than the RDRAM. DDR memory modules are named after their peak bandwidth - the maximum amount of data they can deliver per second - rather than their clock rates. This is calculated by multiplying the amount of data a module can send at once (called the data path or bandwidth) by the speed of the front side bus (FSB). The bandwidth is measured in bits, and the FSB in MHz. Note that the RDRAM bandwidth is in bytes. One byte is equal to 8 bits.

A PC1600 DDR memory module can deliver bandwidth of 1600Mbps. PC2100 (the DDR version of PC133 SDRAM) has a bandwidth of 2100Mbps. PC2700 modules use DDR333 chips to deliver 2700Mbps of bandwidth and PC3200 - the fastest widely used form in late 2003 uses DDR400 chips to deliver 3200Mbps (3.2 Gbps) of bandwidth. You may see the term "dual channel" applied to memory. When properly used, the term refers to a DDR motherboard's chipset that's designed with two memory channels instead of one. The two channels handle memory-processing more efficiently by utilizing the theoretical bandwidth of the two modules, thus reducing system latencies, the timing delays that inherently occur with one memory module. For example, one controller reads and writes data while the second controller

prepares for the next access, hence, eliminating the reset and setup delays that occur before one memory module can begin the read/write process all over again.

Consider a model in which data is filled into a container (memory), which then directs the data to the CPU. Single channel memory would feed the data to the processor via a single pathway at a maximum rate of 64 bits at a time. Dualchannel memory, on the other hand, utilizes two pathways, thereby having the capability to deliver data twice as fast or up to 128 bits at a time. The process works the same way when data is transferred from the processor by reversing the flow of data. A "memory controller" chip is responsible for handling all data transfers involving the memory modules and the processor. This controls the flow of data through the pathways, preventing them from being over-filled with data. Now that you are totally confused by all this memory type and speed terminology, let's look at the next question.

How much memory should you have in your computer? The answer is: probably as much as your motherboard and chipset can handle. For the newest motherboards, that may be excessive unless you are involved in digital video editing or graphic design. For most home users running WinXP or Win2K I would recommend 512MB up to 1GB. So why those figures? I have found that WinXP uses over 200 MB of RAM for its own files, if that much is available. So on a 256 MB system that leaves very little for other applications and data. The net result is a lot of swapping with the virtual memory space on the hard drive. That slows everything down. In WinXP the Windows Task Manager (bring up by pressing CTRLALT-DEL) shows your current performance and the amount of memory available in real time. With 512 MB and several programs running, I have over 300 MB of real RAM available. That greatly increases the

responsiveness (speed) of the system as moving data to and from RAM is many times faster than using a hard disk. The Page File window shows you the virtual memory swapping your system is doing. At the moment, mine is zero.

You can do similar analyses on Win98/WinMe systems. The System Monitor application that comes with Windows can supply this information.

However, you may need to modify it to get the memory info you want. Go to Start-Programs-Accessories-System Tools and select System Monitor. If this selection is not available on your menu, then you need to install the program from your original Windows disk or from \WindowsOptions\Cabs file. You do that from the Control Panel (Add/ Remove Software) and Windows Setup. Once you have the system monitor you can ADD memory information by clicking on Edit, then add item. Select Memory Manager. The individual items that will be the most helpful are: allocated memory, unused physical memory, page files in/ out, swapfile in use or swappable memory. The kernel reading tells you how much of your CPU capacity is being used. Generally, Win98/WinME will do very well with 256 MB - 384 MB of RAM. You just have to be certain that your motherboard and chipset can support this much RAM. Most of the home computers I have worked on really don't have enough RAM for the most efficient operation. Does Yours?

Dr. Lewis is a former university & medical school professor. He has been working with personal computers for more than thirty years. He can be reached via e-mail at bwsail@yahoo.com or voice mail at 941/925-3047.

The Editorial Committee of the Association of Personal Computer User Groups (APCUG), an international organization of which this group is a member, brings this article to you.

WYSIWYG WEB WATCH (www)
By Paul Baecker

webwatch@sterlingheightscomputer club.org

This column attempts to locate sites containing valuable, amusing and free content, with no overbearing pressure to purchase anything. Send your favorite (entertaining, helpful or just plain useless) sites, with brief site descriptions, to the e-address noted above, for inclusion in a future WYSIWYG issue. Also check the SHCC web site ("Web Page Reviews") for previous gems.

Edmunds hired an investigative reporter to go underground and get first-hand experience living the life of a car salesman. Learn sales tricks used to increase profit, and how to avoid overpaying.
http://edmunds.com/advice/buying/articles/42962/article.html

The Micropolitan Museum exhibits the often-overlooked works of art that are only visible through a microscope. The "museum floor plan" link is a good place to start.
http://www.microscopy-uk.net/micropolitan/index.html

This site offers understandable and accessible info about CD-R and CD-RW technology, including labeling, handling, storage, plus recording hard/software and file system standards.
http://www.osta.org/technology/cdqa.htm

Let the Online Physician rate your physical condition.
http://www.rtideas.com/flash/onlinedoc.html

The File Extension Resource offers searchable alphabetical listing of file extensions. Also check FAQ link for answers to common basic Windows confusions.
http://filext.com

This site is difficult to describe, but must be seen. View complicated stick-drawn constructions. Alter their shapes using direction, force, and gravity settings. Drag intersection points to create unusual movement. Change the date to see hundreds of contraptions. Sound is available. Broadband recommended!
http://www.sodaplay.com/zoo/index.htm

View the timeline for various computing languages. Click on the timeline diagram to enlarge it and follow their creations and how they feed into each other. Also similar diagrams of Windows and Unix histories.
http://www.levenez.com/lang/
http://www.levenez.com/windows/
http://www.levenez.com/unix/

Lots of free printable posters. Educational, inspirational, for the work place, and just for fun.
http://print-a-poster.p-rposters.com

Free on-line bowling with live players.
http://www.candystand.com/Games/cs_shock_csmb.htm

Visit the Post-It Note Theater.
http://www.bigempire.com/postittheater/

This site supplies science fiction fans with true scale impressions of their favorite science fiction spacecraft by comparing ships across genres, as well as with familiar contemporary objects.
http://mirror.wolffelaar.nl/zardalu.sytes.net/index.html

Quick facts about the crisis in the Middle East.
http://www.iraqometer.com

Troubleshooting and resource guides for Win95/98/ME/XP. Lots of suggestions and explanations to help keep your system running smooth and fast.
http://www.toejumper.net
http://www.windows-help.net/WindowsXP/howto-idx.html

Say it in binary. Play with encoding and decoding ASCII text.
http://nickciske.com/tools/binary.php

Honda's Collection Hall houses hundreds of their vintage passenger and racing automobiles and motorcycles. Many pics and descriptions.
http://world.honda.com/collection-hall/search/index.html

The Flash animations on this Vodafone site are rather interesting, as is their vision for the future of communication.
http://www.vodafone.com/flash/futures/

April fools family pranks and tricks.
http://www.familyfun.com/aprilfools

Watch short movies, while waiting for a backup to finish. Broadband recommended.
http://atomfilms.shockwave.com/af/home/

Drag this guy carefully through the maze. Watch those blue lines, they can be electrifying
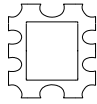http://kmb.com.hk/chi/wonder/finaleasy0110.swf
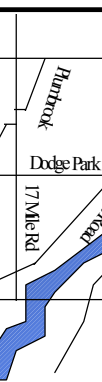
Stress relief aquarium.
http://thewax.com/currents/fishtank_02/
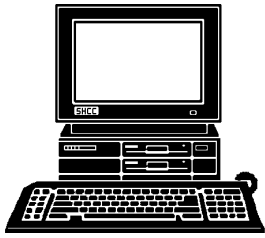
**STERLING HEIGHTS
COMPUTER CLUB**

PO Box 385
Sterling Heights, MI 48311-0385

APRIL AT SHCC:

**TUESDAY April 6
Main Meeting.
7:30PM at
Carpathia Club.**
38000 Utica Road
Sterling Heights

Meeting Topic Not
Finalized at the
Time of Publication

SIGs

MONDAY **April 12**
Net/Com SIG
7:00PM at the Macomb County Library.

MONDAY **April 19**
NOVICE SIG
7:00PM at the Macomb County Library.

WEDNESDAY **April 28**
PC SIG
7:00PM at the Macomb County Library.

16 Mile Road

17 Mile Rd

Hamrock

Dodge Park