MODEMS: M O D E M   W O R K S H O P

W H A T   I S   A   M O D E M ?

A modem is a device that allows a computer to communicate and transfer files with other computers over a telephone line. The word modem is an acronym. Modem stands for modulator-demodulator. When a modem sends data, it is acting as a digital to analog converter. That is, it takes data in digital form and converts it to sound (analog) to go over a telephone line. The modem on the receiving end acts as an analog to digital converter. It takes the sound (analog) it receives and translates it into data. If you want to have some fun, go to the largest super computer store that you can find. One with plenty of salespeople. Find a salesperson who looks eager. Tell him you are new to computers; however, a friend told you to get a modulator-demodulator for your computer. One salesperson will ask another and so on up the chain. If it gets to the top, you might be nice and give them a hint: "I believe he said it was also called a modem."

WHY MODEM?

The question is not, "Why modem?" but, "Why not Modem?" People are buying modems and learning how to use them for all kinds of reasons. Below are fifteen popular reasons to own and use a modem:

1. Download 1000's of software programs from online services and BBSs.
2. Use cheap electronic mail (e-mail) and thus avoid snail-mail (mail delivered by postmen).
3. Exchange files and e-mail with your work computer.
4. Get up to the minute weather, stock quotes, and sports information.
5. Send faxes.
6. Do research using the most up-to-date information from online databases.
7. Earn a college degree.
8. Work from your home and send your work to the computer at the office.
9. Play online games and download the latest shareware programs.
10. Do real detective work using electronic databases and "superbureaus."
11. Join a "CHAT" board or global "chat forum."
12. Subscribe to free electronic journals, newsletters, and access forums and newsgroups.
13. Use your modem to connect to your county records.
14. Connect to your local library using their "dial-up" service to search for books from the comfort of your own home. You can find out if the book you want is available or if it has been checked out. Many local libraries also have collections of CD-ROM databases like InfoTrak which can be accessed via modem. To find out about such services all you have to do is call your library and ask.
15. Connect to the Library of Congress and do an online search.

C O M M O N   E - M A I L   A C R O N Y M S

AFAIK	As Far As I Know	AOL	America Online
BBFN	Bye Bye For Now	BTA	But Then Again
BTW	By The Way	BWG	Big Wide Grin
CIS	CompuServe Information Service	CU L8R	See You Later
EOF	End Of File	FAQ	Frequently Asked Questions
FDROTFL	Falling Down Rolling On The Floor Laughing	FOAF	Friend Of A Friend
FOTCL	Falling Off The Chair Laughing	FWIW	For What It's Worth
FYEO	For Your Eyes Only	FYI	For Your Information
ICOCBW	I Could, Of Course, Be Wrong	IMO	In My Opinion
IMHO	In My Humble Opinion	IOW	In Other Words
KISS	Keep It Simple Stupid	LOL	Laughing Out Loud
NTYMI	Now That You Mention It	OTOH	On The Other Hand
PITA	Pain In The A__	PMJI	Pardon My Jumping In
ROFL	Rolling On Floor Laughing	ROTM	Right On The Money
RTFM	Read The Manual	SIG	Special Interest Group
TAFN	That's All For Now	TTBOMK	To The Best Of My Knowledge
TTFN	Ta Ta For Now	TTYL	Talk To You Later <g> Grin

B A S I C   A T   C O M M A N D S The standard AT command set is sometimes referred to as Hayes compatible modem commands. A modem that is Hayescompatible can use this standard Hayes command set. Don't buy a modem if it isn't Hayes compatible. Almost all modems sold today support these AT commands. The command letters AT wake up the modem and initialize it. The AT means ATTENTION modem. This list of commands is for reference only; please don't feel you need to memorize them! If you do, your cohorts will presume you're a nerd (and correctly so).

COMMAND   FUNCTION   A/   Repeats the last AT command (this command does not need to be preceded by the letters AT)   +++   Switches the modem from online mode to command mode (this command does not need to be preceded by the letters AT)   AT   Attention modem--(wakes up the modem)
The following commands require an AT to precede the command (such as ATA for the first one on the list):
A   Sets the modem in answer mode
     DT   Dials a touch-tone phone

DP   Dials a pulse (rotary) phone dial modifiers
R   Originate call in answer mode (to call originate only modems)
S=n   Dial the stored numbers where n= 0,1,2,3
W   Wait for dial tone prior to dialing--the time period of the pause is determined by an S register setting   ,   Pause 2 seconds before continuing to dial   /   Pause .125 second before continuing to dial   ;   Remain in command mode after connection !   Flash hook--hangs up then reconnects in .5   second   @   Wait for silence before continuing to dial--the time period of the pause is determined by an S register setting

COMMAND   FUNCTION
E or E0   Turns character echo off
E1   Turns character echo on
F or F0   Sets modem to half-duplex
F1   Sets modem to full-duplex
H or H0   Hangs up the phone
I or I0   Shows the modem product code
I1   ROM check
I2   ROM test
L1   Sets modem speaker volume to low
L2   Sets modem speaker volume to medium
L3   Sets modem speaker volume to high
M2   Turns modem speaker on for the entire connection (don't do it!) M0   Turns modem speaker off   M1 Turns modem speaker off when connection is established O0   Returns online after entering command mode   Q0 Turns on result code display Q1   Turns off result code display Sxn   Sets the S register x to the value of n; note that both x and n are variable numbers Sx?   Displays value of register Sx   V0   Sets modem to display numeric result codes V1   Sets modem to display verbose codes (words)   Xn   Modem response sets (note that n is a variable   number) X0=minium responses X1=minium responses--don't wait for dialtone before dialing X2=like X1 but do wait for dialtone before dialing X3=like X1 but adds call progress messages and tone detection X4=call progress messages--tone detection and wait for dialtone   Z   Resets modem & Advanced commands prefix (not all modems support these) &F Resets modem to factory   S REGISTERS   A Hayes compatible modem has special memory locations called S registers. A modem initialization string consists of AT commands which usually include S register settings. The list below gives some of the more important S register functions

FUNCTION
S0   Sets the number of rings to answer when in auto answer mode. S0=0 (which is usually the default setting) suppresses auto answer. S0=3 sets the modem to auto answer mode and tells the modem to answer the third ring.
S1   Counts the number of rings from an incoming call and stores it.
S2   Stores the ASCII escape code character.
S3   Stores the ASCII decimal code for a carriage return.
S4   Stores the ASCII decimal code for a line feed.
S5   Stores the ASCII decimal code for a backspace.
S6   Sets the time in seconds that a modem wait before dialing.
S7   Sets the time in seconds, that a modem waits for a carrier. If you desire to make an international call you might want to change this to a longer time period. S8   Sets the time in seconds, for a comma pause. The default for a (,) pause is usually set to 2 seconds. S9   Sets the time in 1/10 seconds for carrier detect response
S10   Sets the time in 1/10 seconds for lost carrier hang-up delay.
S11   Sets the touch-tone dialing duration and spacing   in milliseconds.
S12   Sets the time in 1/50 seconds for the Hayes escape code guard time.
S13   Bit-mapped register for UART.
S14   Bit-mapped option register.
S15   Bit-mapped option for flag register.
S16   Modem self-test.
S28   Sets the time in 1/10 seconds for V.32 answertones.

AT COMMAND SET USAGE   AT commands need to be issued in upper or lower case letters. You can't mix upper and lower case letters when issuing an AT command. When loaded, most telecommunications programs start in the command mode. This means you can issue AT commands from the keyboard as soon as you load your telecommunications program. Try loading yours. Then type: atz <ENTER> If your modem is connected to the serial port you designated when you set up your telecommunications software and it is working properly, you should see OK on your screen. OK Next, you can try dialing a BBS number using an AT command. If you have a touch-tone phone (most people do), try issuing a command while in the command mode of your telecommunications program: atdt845-8532 <ENTER> The dashes are optional. Suppose you were at a phone where you had to dial 9 before you got an outside line. Start up your telecommunications software, then from the command mode type: at dt 9 , 845-8532 <ENTER> In this example spaces were used. AT commands ignore spaces and dashes. The first AT command got the modem's attention. The following DT told it to dial using touch- tone dialing. The 9 is to get an outside line. A comma then instructs the modem to pause two seconds before continuing (see the dial modifiers in the basic AT commands). The 845-8532 is the phone number you want to dial. Note that you only need the AT (attention modem) at the beginning of an AT command statement and that AT commands can be strung together.Perhaps you have a burning desire to check the value of your S7 register. This will show the

number of seconds that your modem waits for a carrier before hanging up. Start up your telecommunications software, then from the command mode type: at s7? <ENTER> The above command will show you the value of your modem's S7 register.

Your telecommunications software manual will probably mention the modem initialization string. This is the string of commands that initializes your modem. The AT command section combined with the S registers section ould help you understand your modem's initialization string. See your particular modem manual for more details on AT commands and initialization strings. Different modems require different modem initialization strings. The better telecommunications software programs will have a modem pick-list feature. With such a feature, the software will automatically set your modem for optimum use with pre-defined setup initialization strings. When newer modems come out, telecommunications software manufactures have to keep adding the new modems to their pick-list. If your modem is not on their pick- list, you can often contact the company that makes the telecommunications program for a software update. For example, if you are using Telix, you would contact deltaComm Development, the company that makes Telix.   Many of these companies maintain a BBS where customers can download updates. You can also send AT commands to your modem from the DOS command line. Suppose you have your modem connected to COM2 (serial port) and a speaker phone connected to your modem. Go to the DOS prompt. With your modem on, you can dial a number by using the ECHO command. First, press the button to activate your speaker phone. Then, at the DOS prompt type: echo atdt845-8522 >com2 <ENTER> That's dialing from DOS!

C A L L   W A I T I N G   If you have call waiting service, it will cause your modem to disconnect if you get another call while you are online. If you do have call waiting, you will want to call your phone company and ask them how to disable this "feature." Some phone companies actually charge extra for the option of being able to disable call waiting! With many companies, you can disable call waiting on a touch- tone service by dialing *70 before the desired phone number. To dial such a phone from the dialing directory of your telecommunications program, you might enter the number like so: *70-1-813-845-8522.

C H O O S I N G   A   M O D E M   There are two kinds of modems--internal and external.
 1> INTERNAL MODEMS
An internal modem is actually a modem and a serial port (COM port) built on a printed circuit card. This printed circuit card fits in a slot inside your computer on what is known as the mother board and uses the computer's power supply. The **advantages** of an internal modem are: 1. They are usually less expensive to buy. 2. They fit inside the computer and, therefore, don't take up extra desk space. 3. They contain both a modem and a COM port, so you don't need to purchase another COM port (called a serial card) if your computer doesn't have one available. The **disadvantages** of internal modems are 1. They often are much harder to set up for the novice 2. You are more likely to have conflicts with internal modems My advice to beginners is to have a competent computer dealer (or local "guru") install an internal modem.

2> EXTERNAL MODEMS   External modems come housed in their own chassis and have their own power supply.   The **advantages** of an external modem are: 1. They are easy to set up. All you do is plug in some cables and connect the modem to an existing serial port using a modem cable. Usually, COM1 is set up for your mouse, and COM2 is a good port for plugging in an external modem. 2. They don't take up a slot on your computer. 3. They will work with all kinds of computers, including desktop computers and laptops. 4. They are easy to move from one computer to another. 5. External modems have status lights that inform the user what is going on (if you have   read your modem manual) 6. They have a speaker built-in, and most allow   you to easily control the volume.   You will need to know which COM port your modem uses when you install telecommunications software. Determining COM port usage is addressed later in this section.

MODEM COMPATIBILITY   Today, most modems are Hayes-compatible and this is what you will want. The majority of the almost outdated 2400 baud modems use a CCITT (Consultive Committee on International Telegraphy and Telephony) standard of V.22 bis. With a name like that you can see why they prefer to use an acronym. The faster 14,400 baud modems use V.32 bis/V.42 bis. The bis is a compression technology that packs data into a smaller space. MNP (Microcom Network Protocol) levels 1 through 4 and V.42 are error correction protocols   MNP 10 is an error correction protocol for use with cellular modems. For more about "V." terms, see the glossary of Telecommunication Terms.

MODEM SPEED If you plan to use your modem for downloading lots of files, you will want to look at the faster modems with a baud rating of 14,400 bps or more. If a file takes one minute to transfer at 14,400 bps, it will take at least six minutes to transfer at 2400 bps. Actually, a modem can achieve a greater throughput than it's rated speed when you consider data compression. Throughput is the rate of useful data sent--considering data compression.   A modem with data compression (V.42 or V.42 bis) should be set for a terminal speed of four times the modem's rated connect speed. That means a 14,400 bps modem should be set to 57,600 baud. A 14,400 bps modem under ideal circumstances can achieve a throughput rate of 57,600 bps, resulting in much greater efficiency. To achieve this, the auto-baud option must be turned off in your modem software. Turning the auto-baud feature off effectively locks the port speed to what you set it for in the modem software. This is sometimes referred to as "locking the port speed." The prices on faster modems have fallen dramatically in the last year. You can now buy a 14,400 bps modem with built-in fax capability for considerably less than $70.00 (at discount stores). Some of the new modems can be upgraded using software If you buy a high speed modem and want to transfer data faster than 19,200 bps, you will need a special 16550- compatible UART chip in your serial port. A fast internal modem will already have such a chip built-in. If you have a fast external modem, you can purchase a serial card with a buffered 16550 UART chip for around $50.00 from your favorite super computer store. The latest in fast modems are called V.34. These modems support a baud rate of 28,800 bps. Many of these faster modems support a built-in fax, caller ID, and voice mail! The newer V.34 modems require a specially equipped serial card to handle the high speed data flow. An internal modem already has such

features built in. Hayes is offering an Enhanced Serial Port card, equipped with a buffered UART 16550 chip, a coprocessor, and more memory, to handle their new line of super fast external modems.

TIP   If your modem has MNP 5, you may want to turn it off when downloading a compressed file. MNP 5 is a data compression protocol. The MNP 5 protocol does not recognize data that is compressed (for example a .ZIPped file), so it wastes time trying to compress data that is already compressed. This can really slow down a download. To turn off MNP 5, you will need to consult your modem manual. The V.42 bis does recognize compressed data, so there is no need to turn V.42 bis off.

W H A T   C O M   P O R T S ?
A COM port is a serial port which has a connector on the outside of the computer where you can plug in mice and modems and other serial devices. Internal modems have their own COM port. On an internal modem, the COM port is located on the modem card. A modem card plugs into an empty slot inside your PC. Such modem cards usually have two phone jacks--one for the phone line and the other to plug in a phone. Most modern computers have two COM ports--COM1 and COM2.

DETERMING COM PORT USAGE WITH MSD   You can often determine which COM ports (serial ports) your machine is using by running the DOS MSD (MicroSoft Diagnostic Utility) program. The MSD program comes with DOS 6.0 and later versions of DOS and with Microsoft Windows 3.1. So, if you have DOS 6.0 or later and/or Windows 3.1, you will have MSD. The SETUP installation program for any of the above mentioned programs will place the MSD program in your computer's path. To run the MSD program, at the DOS prompt type msd <ENTER> When the MSD menu is shown on your screen, press the highlighted letter C for COM port information. You will then see a screen showing what COM ports your machine is using. If you have a mouse installed, you can press the highlighted letter U for more information concerning your mouse. With the MSD menu showing on your screen, press: u

MSD will then show you if your mouse is using a COM port. With MSD, you can press the highlighted letter Q to take a look at your IRQ (InterRrupt reQuest) addresses. With the MSD menu showing on your screen, press q

TIPS   MSD sometimes does not correctly show COM port usage (especially COM4). However, a shareware program called Modem Doctor will correctly show COM port usage. If you are having modem problems, the shareware program Modem Doctor can really help. See the section on shareware for more information. Also, see the section on AT command set usage.

DETERMINING COM PORT USE WITH MODE   MODE.COM is a utility that comes with MS-DOS. If you have an older system and don't have the MSD program, you can often use the MODE command to see which COM ports are being used. To test for COM2, issue the following command at the DOS prompt: mode com2 <ENTER> COM2 is being used if you get a report like STATUS FOR DEVICE COM2 RETRY=NONE If you get a report like the above, it means that the COM port for which you tested is being used. Just follow the MODE command with the COM port you want to test. However, if you get a report like: ILLEGAL DEVICE NAME - COM2 This means that the COM port for which you tested is not being used. If you have an internal modem, you may wish to set your modem to use that COM port. If you still have doubts about which COM ports are being used I would recommend that you obtain the Modem Doctor shareware program. Before you install an internal modem, be sure to read the next section on IRQs.

DETERMINING COM PORT USAGE WITH DEBUG   Another way to determine which COM ports are active on an MS-DOS computer is to use a utility that comes with DOS called DEBUG. This technique works with MOST machines. At the DOS prompt type: debug <ENTER> Then, when you have the hyphen prompt type: d40:00 <ENTER> The screen will show rows and columns with numbers. ON THE FIRST LINE, there are four sets of paired numbers that appear to the right of 0040:0000. These represent COM1, COM2, COM3, and COM4. You do not need to be concerned with the other seven rows of numbers. A zeroed pair of numbers indicates that the COM port is not being used. For example, suppose you see: -d40:00 0040:0000 F8 03 F8 02 00 00 00 00- 78 03 00 00 00 00 00 00 Look to the right of the numbers 0040:0000. The F8 03 indicates that COM1 is being used. The next set of F8 02 shows that COM2 is being used. The next pair of numbers (four zeros) tell us that COM3 is not being used. The following pair (of four zeros) indicate that COM4 is not being used and is available for a serial device such as a modem. Here is a key to the following possible hexadecimal numbers (note that COM3 and COM4 do not appear in the above example): F8 03 = COM1 F8 02 = COM2 E8 03 = COM3 E8 02 = COM4 To get out of DEBUG and go back to the DOS prompt type:q <ENTER>

C O M P R E S S E D   A R C H I V E D   F I L E S   Below are some of the most frequent archived file types you are likely to run into on BBSs. The program to uncompress these files can also be found on BBSs. Today, the vast majority of Bulletin Board System Operators (SYSOPs) use PKZIP to ZIP their IBM files. See the next section for "How to Unzip Zipped Files." .
ARC   A compressed archived file. You can usually uncompress these by using PKUNPAK.EXE, by PKWARE, Inc
ARJ A compressed archived file. You can extract these files using ARJ.EXE, by Robert K. Jung. is a shareware program.
ICE   A file compressed by LHice.
LZH   A compressed archived file. To uncompress this type of file, you need LHA.EXE, This is freeware.
PAK   A compressed archived file. To uncompress, you need a shareware program called PAK.EXE
SDN   A compressed archived file distributed by SDN international. This is Fidonet's Shareware Distribution Network. To
    uncompress .SDN files dated 1993 and later use ARJ.EXE version 2.41 or later.
ARJ.EXE is a shareware program. .SDN files prior to 1993 require PAK.EXE, by NoGateConsulting, to uncompress.
ZIP   A compressed archived file. You need PKUNZIP.EXE to uncompress and use these files. This is a shareware program.
    PKUNZIP is by PKWARE, Inc. You will want the latest version to insure complete unzipping. It changes periodically

.ZOO   A compressed archived file. Requires ZOO.EXE to uncompress.

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<u>E - M A I L</u>   E-mail is Electronic mail and is widely available on online services and BBSs. The actual workings of the e- mail operation vary from system to system. Private e-mail systems are very similar to some message bases. In fact, the differences become blurry on some BBSs. Many BBSs use the QWK off-line mail handling standard. If the BBS you are calling uses this standard, you can btain QWK off-line mail reader software that will automate the task of mail handling. It will automatically upload and download your mail. Then, you can read and compose new mail off-line on your own time. There are many QWK-compatible mail-reader programs offered as shareware. Ask the sysop (system operator) of a BBS for recommendations. Most of the online services and many BBSs now offer Internet e-mail. This means you can send and receive Internet mail from almost any commercial online service and a growing number of BBSs. Such e-mail offers an instant and inexpensive way to communicate with others anywhere in the world. Try pricing an overnight letter to a foreign country. You can send e-mail twenty-four hours a day seven days a week. It provides a cheap substitute for long-distance phone calls.

<u>INTERNET E-MAIL</u>   When you address mail to an Internet address, it consists of two parts: 1. The name of the person to whom you are sending the mail (or ID number) followed by the "@" symbol. 2. The Internet host name of the system which your destination mail recipient is using. To send mail to a CompuServe user, you would use their CompuServe number followed by the "@" symbol and compuserve.com which is the Internet host (domain) name given to CompuServe. Note that you substitute a period for the comma in the CompuServe member's ID number. So, if the mail recipient's CompuServe ID number is 12233,4455, their Internet address would be: 12233.4455@compuserve.com Note that NO SPACES APPEAR IN AN INTERNET ADDRESS. This is very important. The .com suffix that appears after CompuServe describes the organization. Here, the .com means commercial. Other Internet host suffixes are .edu for educational institutions, .gov for government offices, .mil for military sites, and .org for organizations. Suppose someone went by the user name of JohnBee on Delphi. To send him Internet mail you would address it like so:johnbee@delphi.com Note that delphi.com is the Internet host (domain) name of Delphi. If you send Internet mail on Delphi, you will need to place quotes around the Internet address. Because of such differences, it is essential that you read the instructions that come with your online service or, better yet, get a good third-party book about the particular online service you are using. When you send Internet Mail once, make a note of how you did it. The next time it will be much easier. To send Internet mail to an America Online member, you might use an address like   stevennpr@aol.com
The aol.com is the Internet host name of America Online.   Other Internet host (domain) names are as follows:

AT&T Easylink	attmail.com	FidoNet	fidonet.org	Genie
genie.geis.com		MCI MAIL	mcimail.com	Prodigy prodigy.com

<u>DIFFERENCES IN INTERNET MAIL ADDRESSING</u>
Each online service has its own way of addressing mail. For example, suppose you were on Delphi and wanted to send Internet mail to Mary Moneypenny on Compuserve. Suppose Miss Moneypenny had a CompuServe ID number of 11223,4455. On Delphi, when you get the TO: prompt, you would type: internet"11223.4455@compuserve.com"

Then press <CTRL> Z to send the mail. Note that there are no spaces in the above Internet address. Also, note that Delphi requires quotes to be placed at the beginning and at the end of the Internet address. Addressing Internet mail on CompuServe is a little different. Suppose you were on CompuServe and wanted to send Internet mail to Jack Horner at Delphi. You would send CompuServe Internet mail like so: >internet:jackhorner@delphi.com Note that a CompuServe Internet address required a greater than sign before the word internet, a colon after the word internet, and did not use quotes like were required on Delphi. Because of such subtle differences, it is essential that you read the instructions that come with your online service or get a good third-party book about the particular online service you are using. You can usually ask for help and most online services will respond quickly. The Studio PC BBS has a FidoNet address of 1:3619/1. The first 1 is the zone, 3619 the network, and the last 1 the node. To send Internet mail to a FidoNet address, you need to reverse the Fidonet address numbers and add the letters f, n, and z and place periods to separate these items. Yes, it is a bit peculiar, but keep reading! These   letters will be explained below. Note that a period separates the first and last name. To send me Internet mail, my FidoNet Internet address is steven.woas@f1.n3619.z1.fidonet.org In the example above the f signifies the node number n signifies the network number z signifies the zone number Some BBSs assign individuals a point number for their FidoNet address. If an individual has a point number, it is at the end of the fidoNet address. Suppose John Doe had a point number of 9 in his FidoNet address at the Studio PC BBS. His FidoNet address would be 1:3619/1.9. However, to send him Internet mail at his FidoNet address, you would address it like so:John.Doe@p9.f1.n3619.z1.fidonet.org Note that in the above example there is an extra p number. This is only for FidoNet addresses that use a point number. The p signifies the individual's point number, and it goes right after the @ character in this Internet Fidonet address. It can take a couple of days to move FidoNet mail because it is often transferred to a number of BBSs along the way. You should realize that others may read your messages. However, most sysops have better things to do. You can also send Internet mail from a FidoNet BBS. With so many FidoNet BBSs around the world, chances are there is a FidoNet BBS near you. Since BBSs run many different BBS software packages, it is best to ask the sysop (system operator) how to send Internet mail on his FidoNet BBS. Most BBS sysops are eager to help members

E M O T I C O N S   Some modern modemeers use symbols to indicate emotions when leaving e-mail. These symbols are called emoticons (or smileys). Emoticons are viewed sideways.

:-)   common smiley
    ;-)   winking or leering smiley
    :>)=   beard
    :-{   mustache
    :-o   shouting
    :-#   lips are sealed / user wears braces
    :-(unhappy
    :-J   tongue-in-cheek
    :-8   talking from both sides of mouth
    &:-)   curly hair
    B-)   sunglasses
    B :-)   sunglasses on head
    (:-(very sad
    :-x   a big wet kiss
    :-[pouting
    :^D   I like what you said
    :-r   tongue out
    :-)X   formal smiley with bow tie
    {:-)   hair parted in middle or toupee
    =:-)   punk rocker
    C=:-)   chef
    :-Q   smoker
    :-?   pipe smoker
    :/i   no smoking
    <:-I   dunce
    :-/   skeptical
    :O   yelling
    :-)~   drooling
    <:>==   turkey
    #:-)   bushy hair
    (:I   egghead
    ;-(crying

G L O S S A R Y   O F   F I L E   N A M E   E X T E N S I O N S   Extensions give valuable clues to help identify file types. In fact, I believe that they are the key to computing success. However, these extensions are not written in stone. For example, on an MS-DOS system, a person can easily name or rename a file anything so long as the name is no more than eight characters in length, and the extension can't be more than three characters in length.

Nevertheless, the file name extensions below are conventional and should help you identify file types. When I say "conventional," I mean that these extensions are used by the computer community at large to instantly communicate information.A person, who is knowledgeable about file name extensions, can take an unlabeled diskette and do a directory--DIR <ENTER>. From the directory, he or she can determine what programs are on the diskette and which files contain the manual, then proceed to sucessfully run the program--most of the time. So can you!

.$$$ A temporary work file. Any file name extension that starts with a .$-- is probably a temporary work file. These are often erased (or should be) by the program which created them.
.1ST   Usually a text file with the name README.1ST. These often contain instructions for running software.
AFM   An Adobe PostScript font support file.
ALL   A WordPerfect file containing printer and font definitions.
ANS   An ANSI graphics file.
ARC   A compressed archived file. You can usually uncompress these by using PKUNPAK.EXE, by PKWARE, Inc., which is a shareware program.
ARJ   A compressed archived file. You can extract these files using ARJ.EXE, by Robert K. Jung. This is a shareware program
ART   A graphics file for First Publisher.
ASC   An ASCII text file.
ASM   A file that is in assembly language source code.
ASP   A script file used by Procomm.
AU   Audio data file.
BAK   A backup file. A backup file may save the day.
BAS   Indicates the program is written in BASIC language. You need to load a BASIC language program to run these.
BAT   A batch file. These can be run by just typing the file name.
BIN   A binary file.
BIT   A LOTUS Manuscript graphics file.
BLD   A BSAVEd BASIC binary file. These are loaded with BLOAD.

BMP   Wallpaper" graphics file for Microsoft Windows.
C   Indicates the source code for a program written in C language.
CAL   A calendar file.
CAT   A master catalog file used with MSBACKUP (DOS 6).
CDR   A graphics file for Corel Draw.
CFG   A configuration file. Sometimes it is necessary to modify these with your text editor.
CFN   A configuration file.
CGM   Computer Graphics Metafile.
CHK   A file produced by DOS CHKDSK command. These files are written to root directory when you convert lost chains to files.
CLP   A Windows file that has been saved to the clipboard.
COB   A source code for COBOL language.
COD   An object code file used by compilers.
COM   A command file. These can be run by just typing the file name and pressing <ENTER>.
CPI   Code page information files for foreign character sets.
CPL   A Windows control panel file.
CRD   A card file for Windows.
CRF   A cross reference file.
CUT   Halo I, II, III graphics file. Used by Dr. Halo program.
DAT   A file containing data.
DB   A Paradox data file.
DB2   A dBASE II file.
DB3   A dBASE III file.
DB4   A dBASE IV file.
DBF   A database file. Used with dBASE or compatible programs.
DCT   A dictionary file.
DEV   A device driver file.
DHP   A Dr. Halo PIC graphics format file.
DIB   A device-independent bitmap graphics file.
DIC   A dictionary file.
DIF Data Interchange Format. ASCII files used by spreadsheets. Or a differential backup catalog file used with MSBACKUP (DOS 6).
DIZ   A text file found in shareware that describes the software.
DJP   An HP softfont file for a Deskjet printer.
DLL   Windows Dynamic Link Library file.
DOC   Documentation text file. DOC files are often the manual for programs. It is IMPORTANT TO READ THESE FIRST. Use the DOS TYPE command, or you can use a text editor or most word processors. Just to keep you on your toes, Microsoft Word uses a .DOC extension for files it creates.
DRV   Hardware driver. These interface your hardware.
DRW   A graphics file used by Corel Draw.
DVP   A DESQview configuration file.
DVR   A device driver file.
DWG   Autocad drawing file.
DXF   An Autocad graphics file.
EPS   Encapsulated PostScript file used by desktop publishing programs.
EXE   Executable file. To run these, just type the file name and press <ENTER>. Look for these when you do a directory.
FMT   A formatting file used by dBASE III.
FNT   A font file.
FON   A font file.
FOR   A FORTRAN language source code file.
FOT   A Windows file for a TrueType scalable outline font.
FOX   A FoxBASE database file.
FRM   A form file.
FUL   A full backup catalog file used with DOS 6 MSBACKUP.
GDI   A GEM Metafile.
GIF   A CompuServe graphics file. Graphics Interchange Format.
GRP   A Windows Group data file.
GX1   Show Partner graphics file.
H   A C language header file.
HLP   A help file. Sometimes these are text files.
HNT   A file containing hints. Usually a game.
HPF   HP/PCL printer Bitstream soft Fonts.
HPG   A Hewlett Packard Graphics language file.
HST   Often a text file showing the history of a particular program.
HYC   A hyphenation list file for WordPerfect.
ICE   A file compressed by LHice.

ICO   Icon graphics file used by PROGMAN in Microsoft Windows.
IDX   A FoxBASE database index file.
IFF   A Deluxe Paint II graphics file.
IMG   A GEM Paint graphics file which can often be used by desktop publishing programs.
INC   An incremental backup file used with the DOS 6 MSBACKUP.
INF   An INFormation file, usually a text file. Read it first.
INI   A Windows initialization file.
ISF   An IBM image support facility file.
JPG   JPEG-   -Joint Picture Experts Group compressed graphics image file.
KEY   KEYboard macro definition files.
LBM   An IFF graphics file used by Deluxe Paint and others.
LIB   A Library file used by a computer language compiler.
LST   A text file consisting of a list of files.
LTR   A letter file.
LZH   A compressed archived file. To uncompress this type of file, you need LHA.EXE, by Haruyasu Yoshizaki. This is
freeware.
MAC   A MacPaint graphics file or a MACRO file.
MAN   A file that contains the manual for a program. This is usually in the form of a text file.
ME   Usually a text file with the name READ.ME. These can be read with the DOS TYPE command. You can also use an editor
        or word processor to view and print these files.
MID   A MIDI audio file.
MNU   A menu file or a mouse control file.
MOD   A file to support data exchange between DOS and Windows.
MPG   MPEG (Moving Pictures Expert Group) movie files. You need an .MPG viewer like VMPEG by Stefan Eckhart for viewing.
MSP   Microsoft Windows graphics file.
NAM   A Print Shop "name file."
NDX   A dBASE database index file.
NG   A database file for Norton Guides.
NTX   A dBASE index file.
OBJ   An object code file.
OLD   A file that has been backed-up by renaming the file.
OVL   An overlay file.
OVR   An overlay file.
P   A text file that indicates Pascal language source code.
PAK   A compressed archived file. To uncompress, you need a shareware program called PAK.EXE, by NoGate Consulting.
PAS   A PASCAL programming file. The source code file.
PCC   A graphics file used by Z-Soft. HINTþRename these with a
PCX   extension, and you can often use them in other programs.
PCD   Kodak Photo-CD graphics files used for their CD-ROM format.
PCX   A PC Paintbrush (Z-Soft) graphics file. These can often be used by desktop publishing programs.
PDF   A Printer Definition File.
PDV   A Microsoft Paintbrush device driver file.
PDX   A Paradox file.
PGM   A program binary file.
PIC   A LOTUS graphics file, or graphics file used by PC Paint +, Grasp, and others.
PIF   A Windows Program Information File
PIM   A permanent image file used by some graphics programs.
PNM   A New Print Shop "name file."
POG   A New Print Shop graphics file.
PRD   A printer definition file used by Microsoft Word, etc.
PRG   A programming source file.
PRN   Usually a text file that should be printed.
PRS   A WordPerfect printer definition file.
PRT   A file to be printed. Sometimes these are text files and contain the documentation or manual.
PSO   PostScript PDL printer Bitstream softfonts file.
REC   A Windows macro recorder file.
RLE   A Run-Length-Encoded graphics file.
SAV   A file that has been backed-up or a saved position in a game.
.SCR   A script file used by a telecommunications program or a screen file.
SCT   A Lotus Manuscript screen capture text file.
SCX   Graphics file for RIX/EGA and ColoRix programs.
SDN   A compressed archived file distributed by SDN International. This is Fidonet's Shareware Distribution Network. To
        uncompress .SDN files dated 1993 and later, use ARJ.EXE version 2.41 or later. ARJ.EXE is a shareware program. SDN
        files prior to 1993 require PAK.EXE, by NoGate Consulting, to uncompress.
SDR   A Printmaster "name file."

SET   A backup set used with MSBACKUP.
SFL   An HP PCL 4 bitmapped SoftFont file (Landscape orientation).
SFP   An HP PCL 4 bitmapped SoftFont file (Portrait orientation).
SFS   A SoftFont file indicating a Screen font.
SHP   A Printmaster graphics file.
SK   A SideKick Plus utility file.
STY   Style files for WordPerfect.
SYS   A device driver file. Usually you need to add a line to the CONFIG.SYS file to install these. The CONFIG.SYS file resides
        in the root directory of the boot disk.
TGA   A file used by Targa 16.
THS   A thesaurus file for WordPerfect.
TIF   A graphics file called Tagged Image Format. Used by Aldus Pagemaker and other desktop publishing programs.
TMP   A temporary file.
.TST   A test file.
TTF   A Windows header file for a TrueType scalable outline font.
TUT   A tutorial file.
TXT   A text file. These often contain the directions for how to run a program. ASCII text files can be viewed using the DOS
        TYPE command or loaded into most editors and word processors.
UC2   A compressed file archived using UltraCompressor II from Ad Infinitum Programs (The Netherlands). You should obtain
        the self-extracting shareware program called UC2R2.EXE which contains the file to uncompress .UC2 files.
UPD   An updated text file usually containing history.
VBX   A Visual Basic control file.
VOC   A Soundblaster sound file.
WAV   A Windows sound file.
WK1   A LOTUS spreadsheet file for version 2.0.
WKE   A LOTUS educational worksheet file.
WKQ   A QUATTRO spreadsheet file.
WKS   A LOTUS spreadsheet file for version 1A.
WMF   A Windows Metafile graphics format file.
WPG   A WordPerfect Graphics file for version 5.0 and later.
WPK   A WordPerfect keyboard macro file.
WPM   A WordPerfect Macro file.
WQ1   A spreadsheet file for Quattro 1.0.
WRI   A text file for Windows Write.
WRK   A Symphony spreadsheet file.
XLS   An Excel spreadsheet file.
XLT   A file containing translation tables.
XTP   An Xtree overlay file.
ZIP   A compressed archived file. You need PKUNZIP.EXE to uncompress and use these files. This is a shareware program.
        PKUNZIP is by PKWARE, Inc. You will want to obtain the latest version. At this writing it is PKZIP204G.EXE ZOO   A
        compressed archived file. Requires ZOO.EXE to uncompress.

Note* Those on the Internet need to know about dozens of other file name extensions. "Steve's Essential Internet Tips" will show
how to get information on these and more!

F E D W O R L D 703-487-4608 (voice help desk)   703-321-8020 (BBS modem)   fedworld.gov (Internet Telnet address)
Although it sounds like an amusement park, FedWorld is actually an impressive online system set up by the National Technical
Information Service (NTIS). It acts as a gateway to more than 130 U.S. government BBS systems. You can access Fedworld just like
you would any other BBS. If you have a modem, dial the modem number above (if you are on the Internet, use the Internet telnet
address); and the FedWorld system can transfer you to any of the desired BBSs on their system. FedWorld represents a tremendous
amount of valuable information (and downloadable files). They add new BBS systems frequently. The following government online
systems can be accessed using FedWorld. First, use your modem to log onto their system using the FedWorld BBS phone number; or
if you are on the Internet, just Telnet to fedworld.gov. When you get into the menu system, select the gateway service and use the
number (by the name below) to select the online service desired.

Name	Description	Name	Description
2:ALF (USDA)	National Agriculture Library BBS	3:ALIX (LC)	Automated Library Information
4:BOM-BBN (DOI)	Bureau of Mines-Bulletin Board	5:ISM-SIS (IRS)	ISM Support Info System
6:CIC-BBS (GSA)	Consumer Information Center	7:CLU-IN (EPA)	Superfund Data and Information
8:CPO-BBS (Census)	Lists open jobs at the Census Dept	9:ADA-BBS (DOJ)	Amer. With Disabilities Act Info
10:Computer Sec (NIST)	Computer Sys Lab Computer Security	11:DCBBS (DC Govt)	DC Government Information
12:DMIE (NIST/CSL)	NIST/CSL Data Management	13:EBB (DOC)	Economic data and information
14:ELISA System (DOD)	DoD Export License Tracking System	15:GSA/IRM BBS (GSA)	Information Resources Management
16:EPUB (DOE)	Energy information and data	18:FDA/DMMS (FDA)	PMA, IDE, 510k & guidance documents
19:FERC-CIPS (DOE)	Fed Energy Regulatory Commission	20:FEBBS (FHWA)	FHWA information and data

Name	Description	Name	Description
21:VA Vendor BBS (VA)	Learn about business opps at the VA	22:FEDERAL BBS (GPO)	GPO and Govt Data (Fee Based)
23:OSS-BBS (GSA)	GSA On-line Schedules System	24:Eximbank BBS	Export/Import Bank data and info.
25:JAG-NET (USN)	Navy Judge Advocate General	26:Labor News (DOL)	Dept of Labor information and files
29:RIBBS (USPS)	US Postal Service Rapid Information	30:EHSC-DDS	Army Engineering & Housing
31:NDB-BBS(USDA)	Human Nutrition Information Service	32:NSSDC\NASA\Goddard	The NASA NODIS Locator System.
33:1040 BBS (IRS)	Electronic Tax Filing Information	34:SBB-BB (Treasury)	Surety Bond Branch, Circular 570
35:OIS	US Bureau of Prison employees	36:SBIR-BBS (NASA)	NASA Small Bus. Innovation Research
37:WTIE-BBS (EPA)	:Wastewater Treatment Info Exchange	38:QED-BBS (USGS)	Quick Epicenter Determ and EQ data
39:SALEMDUG-BBS (FEMA)	State and local FEMA user groups	40:SBA On Line (SBA)	SBA Information & Data
41:GAO WATCHDOG (GAO)	:Identify Waste Fraud and Abuse	42:SBAI-BBS (SBA)	Small Bus. Admin internal BBS
43:Sample Weather Data	Sample data from Fee Based System	44:OPM Mainstreet (OPM)	OPM - Job Info, Personnel Guidance
45:TELENEWS (DOE)	Data and info on Fossil fuels	46:USA-GPCS BBS (USA)	Army Info System Software
47:USCS-BBS (USCS)	:Customs and Exchange Rate Data	48:USGS-BBS (USGS)	Geological Survey BBS/CD-ROM Info
Name	Description	Name	Description
49:NLPBB (USN)	CNO's Navy Leadership Policy BB	50:FMS-BBS (Treasury)	Financial Management Information
51:OASH-BBS (HHS)	Health & AIDS Information & Reports	52:FEDIX	Links Fed Data to Higher Education
54:GPSIC (USCG)	GPS, Loran & Omega Info/status	55:NGCR-BBS (USN)	Next Generation Computer Resources
57:Gulfline (EPA&NOAA)	Gulf Coast Environmental Inf.	58:FAA Safety Exchange	Small Plane Safety Reports & info
59:NTIS QuikSERVICE	Order NTIS Documents Online	61:STIS (NSF)	Science & Technology Inf. System
62:MI-BBS (DOE)	DoE Minority Impact Bulletin Board	63:TECH SPECS (NRC)	Technical Specs/ NRC Information
64:Census-BEA (Census)	Census BEA Electronic Forum	65:IHS-BBS (HHS)	:Indian Health Service BBS
66:NOAA-ESDD (NOAA)	NOAA Environmental Services Data	67:Offshore-BBs (DOI)	:Off Shore Oil & Gas Data
68:TQM-BBS (T. Glenn)	Total Quality Management	69:NIDR Online (NIH)	Nat. Institute of Dental Research
70:NIHGL (NIH)	Nat. Inst. of Health Grant Line BBS	71:PayPerNet #1 (OPM)	Fed. Pay & Performance Man. BBS
72:MARlinespike (DOT)	Maritime Admin. Press Releases, Etc	73:CASUCOM (GSA)	Interagency Shared Serv/Resources
74:ATTIC (EPA)	Alternative Treatment Tech Info	75:NCJRS-BBS (DOJ)	National Criminal Justice
76:DRIPSS (EPA)	Drinking Water Info Processing	77:PI BBS (EPA)	Pesticide Information Network
78:CIM-BBS (DoD)	Center for Info Management BBS	79:NPS-BBS (EPA)	Nonpoint Source Program
80:OEPC BBS (DOI)	Interior's Off of Environment.	81:DWIE-BBS (EPA)	Drinking Water Information Exchange
82:CABB (Dof State)	Passport Info/ Travel Alerts	83:BUPERS Access (USN)	Navy Personnel Information
84:FCC-State Link (FCC)	FCC daily digest & carrier rept.	85:HUD-N&E BB (HUD)	HUD News & Events BB.
87:FREND #1 (NARA)	Fed. Register Electronic News	88:FREND #2 (NARA)	Fed. Register Electronic News
89:NHS-BBS (HHS)	National Head Start BBS	90WSCA-BBS (DOL)	Board of Wage & Serv Cont. Appeal
91:TEBBS (OGE)	Office of Government Ethics BBS	9:HSETC MD (USN)	Naval Health Sci Edu & Training
93:PPCUG/RDAMIS (DOD)	Pentagon Users Group BBS	95:CBEE (USCG)	Coast Guard On-Line Magazine & News
96:ATD BBS (FAA)	Air Transport Div. BBS	97:TOS-BBS (FAA)	Air Traffic Operations Service BBS
98:AEE BBS (FAA)	FAA Office of Environment & Energy	99:OCA BBS (PRC)	Postal Rate Commission/Consumer Adv
100:GEMI (GSA)	GSA Electronic Management Info	101:Airports BBS #1	Airport operators and designers
102:EnviroNET (NASA)	Space Environment Info Service	103:FAA HQ BBS (FAA)	FAA Headquarters BBS
104:IRS-SOI (IRS)	Public Taxpayer Statistical Info	105:ARA-BBS (FAA)	Aviation Rulemaking Advisory BBS
106:IMA BBS (USA)	:Integration & Analysis Center BBS	108:ACF-BBS (HHS)	Admin. for Children and Families
109:NTIA-BBS (DOC)	Radio Freq. Management Issues	110:ED Board (DOEdu)	Dept of Ed Grant & Contract Info
111:BHPr-BBS (HHS)	Medical & Health Services Info	112:Marine Data (NOAA)	Marine Databases & Files
113:Call-ERS BBS (USDA)	Agriculture Economic Research Info	114:Call ERS (USDA)	Economic Research Line Serv Line 2
115:ABLE INFORM (DOEdu)	Disability & Rehab Data & Info	116:PTO-BBS (PTO)	Patent and Trademark Office BBS
117:PerManNet (Dof State)	US Agency for International Dev	118:Quick Facts	Alcohol Abuse & Alcoholism Info
119:IITF-BBS (NTIA)	Info. Infrastructure Task Force BBS	123:IBNS/OMPAT BBS (DOD)	:Military Performance Assessement
124:EDOS (DC Crt Appeals)	US Court of Appeals, Dist of Columb	125:RSA-BBS (RSA)	Rehabilitation Services Admin
126:FRESBB (GSA)	Federal Real Estate Sales Bulletin	127:NIH Info Center (NIH)	NIH Information, Files, Pubs
128:NCUA BBS (NCUA)	National Credit Union Admin	129:NBCI-BBS (USDA)	Natl Biological Control Institute
130:OECI-BBS (DOC&DOD)	Defense Conversion Information	132:AVADS-BBS (DOI)	Dept of Interior Job Announcements
133:NRCDR-BB (NRC)	NRC Decommisioning Rulemaking BBS	134:CSO BBS (EPA)	Cleanup Standards Outreach BBS
135:GAO-Policy (GAO)	GAO Office of Policy's BBS	137:PREVline (CSAP/HHS)	Alcohol & Drug Information - NCADI
138:BPHC ACCESS (HHS)	Primary health care information		

F I N D I N G   B B S s   T O   C A L L   If you want to locate local BBSs, your best bet is to ask at your neighborhood computer store. Say, "What are some of the best local boards in the area?" Another source for BBS phone numbers is the Computer Shopper Magazine. Each issue of the Computer Shopper Magazine has a huge list of phone numbers (and other relevant information) for BBSs around the country. The list of BBSs is current and the list is so big that they publish half the alphabet one month and the next half the next month. Boardwatch Magazine has plenty of good BBS numbers. Once you get online to one BBS, they usually list others in the area. Many BBSs specialize in certain kinds of information and files. Some are known as a "chat board" where people talk (type) to one another in real time. Other boards specialize in graphics, Windows files, etc.; and almost any other topic.

This short list represents some of the best BBSs in the USA.
Aquila BBS   1700 N. Farnsworth Ave.   Aurora, IL 60505   708-820-0480 (voice)   708-820-8344 (modem)
Channel 1   P.O. Box 338   Cambridge, MA 02238   617-354-5776 (modem)
Exec PC   P.O. Box 57   Elm Grove, WI 53122   414-789-4200 (voice)   414-789-4210 (modem) Exec PC is
   the largest BBS in the world with 280 phone lines and 650,000 files. It has the best and fastest search capabilities that I have
   seen. The fantastic search capabilities make Exec PC a joy for file hunters.

PC-Ohio Cleveland, OH   216-381-3320 (modem)   PC-Ohio was voted the best BBS in America. They have over 100,000 files available. Studio PC Suite 231 7143 State Road 54   New Port Richey, FL 34653 813-862-8850 (modem) Studio PC has over 60,000 files and is approved by The Association of Shareware Professionals. Ralph LoBianco is the system administrator. He goes out of his way to help new modem users. There are a number of toll-free BBSs around the country. For example, you can log onto the FREE Small Business Administration (SBA) BBS by having your modem dial:
SBA BBS 1-800-697-4636 (9600 baud modem) 1-800-859-4636 (2400 baud modem) The SBA BBS has some downloadable files. They have general files as well as files relating to small businesses.

H E L P !   Turn your <NUMLOCK> key off. Use your arrow keys to make a menu selection. You can move through a section by pressing <PG UP> or <PG DN> and <HOME> or <END>.   Press the function key labeled <F1> if you need HELP. Press <ESC> to quit or get back to the main menu. Press S to SEARCH for a key word in the section you are viewing. Press G to perform a GLOBAL SEARCH of the entire disk for a key word or phrase. Note that you must be viewing a section in order to use this feature. Press T to turn the sound on or off.   When you are in a section and you want to print it, turn your printer on by whispering sweet nothings near the ribbon or toner cartridge. Then flip the power switch to "on." Press the letter P to print. Then press Y for "yes."

IBM COMPATIBLE SHAREWARE TELECOMMUNICATIONS SOFTWARE
The following shareware and freeware telecommunications products may be downloaded from many BBSs and online services. You will likely have to unzip the programs because most BBSs and online services zip programs to save space. The beauty of shareware is that it allows you to "try before you buy." Sometimes the telecommunications software programs that come bundled with inexpensive modems are really inadequate and are a waste of your time. Do yourself a favor and try one of the excellent programs mentioned below. If you obtain one of these shareware or freeware programs, make sure that you print out (and read) the manual. The manual is usually included as a text file. The MICROLINK manual (see MICROLINK below) is in the form of a Windows Write file. The others can be loaded and printed with an editor such as EDIT (which comes with DOS 5.0 and greater) or a word processor. The nice thing about these communications programs is that most use the same commands to perform the same functions. For example, <ALT> D is the usual command to bring up the dialing menu on the DOS-based communications programs. <ALT> X is often used to exit communications programs.

MICROLINK   MicroWerks   P.O. Box 768273   Roswell, GA 30076-8273   MICROLINK is a good Windows shareware telecommunications   program. It has all the needed features plus a Lights   Bar, a Session Window, and a Status Bar. Another fine   feature in the registered version, is the ability to record scripts. Scripts make your life online easier.

Qmodem test drive: mustang Software, Inc. P.O. Box 2264 Bakersfield, CA 93303   800-999-9619 805-395-9223 FAX 805-395-0713 BBS 805-395-0650

QMODEM TEST DRIVE is a full-featured shareware telecommunications program. Unlike most shareware products, this one can be used by individuals forpersonal use and evaluation for an unlimited time period. Because of the many features, Qmodem is a favorite among sysops. You can download the shareware version from most BBSs, including the one run by Mustang Software, Inc. See the phone number above. They also have commercial versions called Qmodem Pro for DOS and Qmodem Pro for Windows. These have even more features than the shareware version. The folks at Mustang Software have excellent products.

RIPTERM   TeleGrafix Communications, Inc. 16458 Bolsa Chica #15   Huntington Beach, CA 92649
RIPTERM is a graphics-based communications program with mouse support and is a freeware program. The authors are not requesting any money at all. A freeware program is copyrighted and has copyright restrictions; however, the author is not requesting a registration fee. RIPTERM shows Rip graphics which are the latest rage on BBSs. RIPTERM is easy to set up and does a nice job. It may not have all the features, but the price is right.
TELEMATE   White River Software P.O. Box 73031 Limeridge Mall Postal Outlet Hamilton, Ont., Canada L9A 5H7
TELEMATE is a shareware telecommunications full-featured program that has many extras like internal multi-tasking. TELEMATE has many strong supporters and is yet another example of how some of the best programs are shareware.

TELIX   deltaComm Development P.O. Box 1185   Cary, NC 27512   LIX is a full-featured communications program and is this writer's favorite shareware modem software. It is both easy to use and easy to set up. It has a modem setup program (MODEMCFG) that offers you a pick list of hundreds of modems. After choosing the appropriate modem, it will automatically customize the program to support your modem (setting your modem initialization strings, tc.). TELIX has sophisticated transfer protocols, two script languages, an advanced host mode and is very powerful. Dos/win ver

HOW TO USE INTERLINK TO CONNECT TWO COMPUTERS
Microsoft's DOS 6.0 and later come with a program called INTERLINK, and it is one of the best kept secrets around. INTERLINK provides a fast and efficient way to exchange data between IBM-compatible computers. You do not even use a modem when you use INTERLINK. All you need is an inexpensive cable. This can be a serial null modem cable or a bi-directional parallel cable (a Laplink type of cable). You can find such a cable at your local super computer store. You can also purchase a cable. A bi-directional parallel cable (Laplink type) will be your best selection because it will transfer data faster. Both computers need to be IBM-compatible. Choose a computer with DOS 6 or later to be the "client" computer.

The CLIENT computer is the computer at which you type commands from the keyboard. The other computer is called the "SERVER" computer   so, the server computer is the computer connected to the client computer via the cable, and its purpose is to serve the

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client. When connected with INTERLINK, you use he client computer to control both the client's disk drives and printers and also the server's disk drives and printers. This is all done from the keyboard of the client computer. It really doesn't matter which computer you designate as client or server as long as you keep a few rules in mind:
*   You need DOS 6 or later on the client computer.
*   The server computer must have DOS 3.0 or later.
*   You will need at least 16K of free memory on the client computer.
*   You will need 130K of free memory on the server computer.
*   You will need either a null modem cable or a bi-directional parallel cable (a Laplink type).
*   The computers need to have a free serial port on each computer or a free parallel port on each computer. You will use the cable to connect the two computers. Check the above list to make sure both computers will meet the requirements.

PREPARING THE CLIENT FOR INTERLINK
On the client computer, change to the C:\DOS directory by typing at the C prompt: cd \dos <ENTER>
Do a directory to make sure that INTERLINK is on the client computer. dir inter*.* <ENTER>
In order to use the INTERLINK program, you will need to modify the CONFIG.SYS file on the client computer. To be safe, you should make a backup of your AUTOEXEC.BAT and CONFIG.SYS files on the client computer and have a boot diskette. The boot diskette can provide a way to boot the computer should you find your machine will not start up on the C drive.

*   Make a boot diskette. Place a blank diskette in drive A and issue format a:/s <ENTER> This can be used to start the computer in an emergency. To use it, start the computer with this diskette in your A drive.

*   Use another diskette and copy the AUTOEXEC.BAT and CONFIG.SYS files to it. Here is how: Place a blank formatted diskette in drive A and type: copy c:\autoexec.bat a: <ENTER>   copy c:\config.sys a: <ENTER> The INTERLINK program (INTERLINK.EXE) should be located in the C:\DOS directory. Use the DOS EDIT program to change the client computer's CONFIG.SYS file. Before you modify a CONFIG.SYS or AUTOEXEC.BAT file, always have a boot diskette (for safety), and save copies of the CONFIG.SYS and AUTOEXEC.BAT files on a diskette. These can be used in an emergency Next, you need to add a line to the client computer's CONFIG.SYS file like device=c:\dos\interlnk.exe /drives:5 To figure out the number for the /drives switch, you need to add up the number of drives on the server computer. The default for the /drives switch is 3. So, if the server does not have over 3 drives, then you do not even have to specify a drive number. Then the device line would look like so: device=c:\dos\interlink.exe The drives on the server will be reassigned new drive letters. Suppose you had two drives on the client computer and six drives on the server computer. Then the /drives switch should be set at 6. In that case you could add a line to the client computer's CONFIG.SYS file like: device=c:\dos\interlnk.exe /drives:6 Let's use an example that calls for 6 drives on the "server." Suppose you issued the command: edit c:\config.sys <ENTER> And you observed that the client computer's CONFIG.SYS file looked like: DEVICE=C:\DOS\HIMEM.SYS   DOS=HIGH,UMB DEVICE=C:\DOS\EMM386.EXE NOEMS   DEVICEHIGH=C:\MOUSE\ MOUSE.SYS FILES=30   BUFFERS=20   STACKS=9,256   NUMLOCK=OFF To add the INTERLINK device line, you may insert it near the other device line. The modified CONFIG.SYS file would   look like: DEVICE=C:\DOS\HIMEM.SYS DOS=HIGH,UMB   DEVICE=C:\DOS\EMM386.EXE   NOEMS   DEVICE=C:\DOS\INTERLNK.EXE   /DRIVES:6 DEVICEHIGH=C:\MOUSE\MOUSE.SYS FILES=30 BUFFERS=20   STACKS=9,256   NUMLOCK=OFF

If you are using EDIT and you have the CONFIG.SYS file the way you want it, you can save the changes like so: <ALT>   f   s Then restart the computer so the changes in the CONFIG.SYS file will take effect. TIPS Another option is to use a Query command in the CONFIG.SYS file like: DEVICE?=C:\DOS\INTERLNK.EXE /DRIVES:6 Note the question mark after DEVICE. This results in the computer prompting you each time you re-start the computer, giving you the option to select INTERLINK. The prompt will look like so: DEVICE=C:\DOS\INTERLNK.EXE /DRIVES:6 [Y/N]? Then answer Y to load INTERLINK or N to not load it. If you want to load the DEVICE line into high memory (and the client computer has this capability), you will save about 9K of RAM. To accomplish this, you insert the line using a DEVICEHIGH statement like this: DEVICEHIGH=C:\DOS\INTERLNK.EXE /DRIVES:6 PREPARING THE SERVER COMPUTER

If the computer that you plan to use as the server has DOS 6 or later, you will not have to do anything special to prepare it for use with INTERLINK. In such a case all you do is, at the C prompt type:intersvr <ENTER>
This assumes that the file INTERSVR.EXE is in the C:\DOS directory of the server computer and that the C:\DOS directory is in the PATH. (With DOS 6.0 and later, this is the way DOS installs itself.)
If you are using a computer with an earlier DOS, you can copy the INTERSVR.EXE file to a floppy disk, then copy it to a directory that is in the PATH of the server computer. The C:\DOS directory would be a good choice to copy the file to, as this directory should be in the computer's PATH. To see what directories are in the computer's PATH, at the C prompt type: path <ENTER>   You can also copy the INTERSVR files to another computer using the cable: 1. Connect the two computers with the cable you plan to use for INTERLINK. This can be either a null modem cable or a bi-directional parallel cable (Laplink cable).
2. On the computer that does not have INTERSVR, change to the directory where you want to copy the files. A good choice would be the C:\DOS directory.
3. If you are using the serial ports and not COM1, you may have to disable the SHARE command in the AUTOEXEC.BAT or CONFIG.SYS file. You do this with the DOS EDIT program using a REM statement.
4. At the DOS prompt on the computer where you have INTERLINK files, type:intersvr /rcopy <ENTER>
5. Then just follow the prompts to copy the INTERSVR files onto the other computer. They will be copied to the current directory on the other computer.

USING INTERLINK   Once you have prepared the client and server computers, you are ready to test INTERLINK. With the cable installed   and connecting both computers, do the following   1. On the server computer, at the DOS prompt type: intersvr <ENTER>2. Restart the client computer. INTERLINK will   run on start up as the DEVICE line is executed   on startup.3. On the client computer change to the drive of yourchoice, making one of the redirected drives the active one. ith everything working properly, INTERLINK will detect the cable connection, and you will be presented with a screen of information on the server computer. This screen will show which drives are assigned different drive letters. To get familiar with the different drives, you can change to various drives and issue DIR commands for your confirmation. You can then use standard DOS commands or a "shell" program to copy files from one machine to another

BREAKING THE INTERLINK CONNECTION To break the connection between the two computers, use the server computer and press: <ALT> <F4> INTERLINK is very easy to use once you have it installed.The next time you use it, you can just connect the cable   and type the INTERSVR command on the server computer.
TIP   For more INTERLINK options and information, at the DOS prompt type   help interlnk <ENTER>

W H A T ' S A N I R Q ? IRQs (Interrupt ReQuests) refer to a mechanism within your computer that allows your computer's central processor to communicate with COM ports and other hardware devices. Each serial port is given a COM port address (expressed in hexadecimal numbers) and an IRQ value. However, only one device can use an IRQ value at a time. This is complicated by the fact that COM1 and COM3 use IRQ4 by default. Also, COM2 and COM4 use IRQ 3 by default. Some hardware devices allow you to change an IRQ setting

SOLVING IRQ CONFLICTS   If you have the Microsoft MSD program, run it. The MSD program comes with DOS 6 and later versions and also Microsoft Windows 3.1. It will often show you which IRQs are used--and will help you avoid conflicts. If you are installing an external modem, you should not have any trouble. However, if you are trying to install an internal modem, you should read the modem manual carefully. You may have to set special dip switches or jumpers to configure an internal modem to avoid an IRQ conflict. The job of installing an internal modem is best left to a computer dealer or local GURU. It is not unusual for such individuals to charge $20.00 for installing a modem. Only a very bold beginner should attempt an internal modem installation. The main thing is to avoid an IRQ conflict. See the section on shareware for information about Modem Doctor and other useful shareware programs. COM1 and COM3 use IRQ4. COM2 and COM4 use IRQ3. If you have a mouse using COM1, then IRQ 4 is already taken, so you will probably not want to set your modem for COM3 You will either have to disable the mouse driver (usually found in the AUTOEXEC.BAT or CONFIG.SYS file) or set your modem for COM2 or COM4 which use IRQ3. Many people have success with setting an internal modem   to use COM4 and don't plug anything into COM2. If you are   using DOS 3.3 or later, your operating system will support four COM ports.   The most important thing to remember about IRQs is that only one device can use an IRQ address at a time.

L O G G I N G O N A B B S   When you first have your modem dial a BBS (often started with the command <ALT> D on a DOS-based telecommunications program), you will hear rapid dial tones (touch-tone phone) and high pitched squeals (like a stuck pig). The modems then attempt to connect (handshake). The ghastly noise is the unmistakable "Call of the Modem." The awful noise stops when the modems connect. The SYSOP (SYStem OPerator) who runs the BBS may not give you full access. Normally, you will be asked to supply your name, address, and phone number. You will also be asked to provide a password. Be sure to write down this password and keep it in a safe place. People tend to forget their passwords. It is wise to keep your password secret. Don't even tell your mother.Some SYSOPs will call you in a couple of days to verify that you are at the phone number you gave them. Many of the better BBSs charge a yearly fee to access their board. This helps them defray operating costs. When you first log on a BBS, it is a good idea to turn on the screen capture which is often called a CAPTURE LOG. This should be a feature of your communications software. If the telecommunications software you are using doesn't have this feature, it is time to switch. Sometimes this capture feature is called a capture log file. This captures the text that appears on your screen and eventually sends it to a file. For example, if you are using TELIX software, you press <ALT> L to invoke screen capture. When you press <ALT> L again, it turns off the screen capturing and saves the captured screens to a file. For example, TELIX, by default, saves captured screens to a file called TELIX.CAP which is found in the same directory as the main TELIX program. Later, you can use an editor, word processor, or LIST to view or print portions of this text file. It is helpful to read the bulletins when you first log onto a BBS. These usuallycontain lots of information about the BBS. Often BBSs have a bulletin containing information about other BBSs in the area. If you have your capture log turned on, you will be able to review such bulletins later, on your own time.

M A C S O F T W A R E   If you have an Apple Macintosh computer, you can purchase commercial telecommunications software such as MICROPHONE II by Software Ventures Corporation, 2907 Claremont Avenue, #220, Berkeley, CA 94705. It is an excellent program with all the needed features. They also make a Windows version for IBM PC and compatibles. There are a   number of shareware modem programs for the Macintosh. One of the most popular shareware Mac modem programs is called ZTERM. You can write for information on ZTERM: David P. Alverson, 5635 Cross Creek Court, Mason, OH 45040. Zterm can be downloaded from many BBSs and online systems.

L O G G I N G O F F
When you are online to a BBS and want to get off, you should exit gracefully. Many BBSs use G (for goodbye) or BYE to get off line. Look for the command to exit at the main menu. Other BBSs use QUIT or EXIT to get off-line. Often, you will be asked if you want to leave a message to the sysop before being disconnected.

O N L I N E S E R V I C E S

Some of the best and most popular online services are listed below. To find out much more about them, call the appropriate toll-free 800 number and ask them to send you free information. Some of the information you can receive is quite amazing. For example, Dialog has a wonderful catalog of all their databases with excellent descriptions. CompuServe has a really good catalog of IQuest databases that they will sell to you for $4.00 plus shipping. You may want to send for these catalogs just to be aware of the vast information accessible to modem users. Who wants to get on an information highway without a road map?

America Online   8619 Westwood Center Dr. #200 Vienna, VA 22182-2285 800-827-6364 703-448-8700 FAX 703-883-1509

PACKET-SWITCHING NETWORKS
Packet-switching networks allow you to dial a local phone number to connect to BBSs and online services around the world. However, not every telephone in the U.S. has local access to a packet-switching network. Below are some of the best known packet-switching networks. Call them to determine if they have a local number for your area and for instructions on how to use their service. If you intend to do lengthy (over 100K) file transfers (upload or download), then packet-switching networks may have some drawbacks. File transfers are often slowed down on packet-switching networks. For lengthy file transfers, regular long-distance telephone carrier lines are often superior. However, if most of your online activity doesn't include lengthy file transfers, then packet-switching networks offer considerable savings. GLOBAL ACCESS 1-800-377-3282   704-334-3282   Use Global Access to connect to some of the best BBSs SPRINTNET 800-736-1130 (Customer Service) 713-589-5700 (Information) TYMNET   800-937-2862 (Customer Service) 408-942-5254 (Information) DIALNET (for Dialog) 800-334-2564 (Customer Service) 416-387-2689 (Information)

HOW TO UNZIP ZIPPED FILES
A zipped file is a file or a collection of files compressed into a smaller space. So, a zipped file is a compressed file, and people zip files to save hard drive space. Files that have a .ZIP extension are usually zipped using a program called PKZIP. Files with the .ZIP extension are unusable until you unzip them with a shareware program called PKUNZIP.EXE. In other words, you can't get to the goodies unless you unzip'em. It is usually best to unzip zipped files on the hard drive where they will have plenty of room to expand. It is not unusual for a zipped file to be one-half to one-third the size of the original file. When using a modem, you will find that most Bulletin Board Systems (BBSs) store their files in zipped format. If you obtain the unzipping program from a shareware vendor, it may be in the form of a self-extracting file. A self-extracting file is also a compressed file. When a self-extracting file is run, other files pop out (or emerge) from it. It is best to run a self-extracting file from the hard drive, so it will have plenty of space to expand. Sometimes, if you try to run a self-extracting file from a floppy disk, the disk fills up before all the files can pop out. New computer users often make this mistake. If you make this mistake and do a directory on the disk, you will see that there is not enough space left on the floppy disk. If you order PKUNZIP from a shareware vendor and do a directory on the disk, you may see only one file called PKZ204G.EXE. The version number changes periodically. You will want the latest version to insure compatibility. This is a self-extracting file, so you will want to copy it to your hard drive before you run it. When you run the self-extracting program PKZ204G.EXE, a file called PKUNZIP.EXE will pop out of it, and other files, too. For our example you will want to have a copy of PKUNZIP.EXE on a floppy disk. For this example make a temporary directory on your hard drive called C:\TEMP. At the C> type: cd \<ENTER> This takes you to the root directory of the C drive. Then make a directory using the MD command: md \temp <ENTER> Now place a disk that contains PKUNZIP.EXE in the floppy drive A and type: copy a:pkunzip.exe c:\temp <ENTER> PKUNZIP.EXE will be copied from the A drive to the TEMP subdirectory on the C drive. Next, copy the file or files that need to be unzipped to that directory. Put the disk which has the zipped file that you want to unzip in drive A and type: copy a:filename.zip c:\ temp <ENTER> In the above example filename is the name of the zipped file, and ZIP will be the extension. If there are numerous zipped files on the A drive that you wanted to unzip, you could copy them all to C:\TEMP by issuing the   following command: COPY A:*.ZIP C:\TEMP <ENTER>. Note that PKUNZIP.EXE and the file or files that need to be   unzipped are now in the same subdirectory (C:\TEMP) on the hard drive. Now switch over to C:\TEMP to unzip the   file(s) with a .ZIP extension At the C> type: cd \temp <ENTER dir <ENTER> When you issue the DIR command, you should see PKUNZIP.EXE and the file or files with the ZIP extension that you are going to unzip. Then type: pkunzip filename <ENTER> In this example, filename is the name of the zipped file If the file was named PINBALL.ZIP, you would have typed: PKUNZIP PINBALL <ENTER>. A file or files will pop out of the zipped file. ZIP-ITY-DO-DA! It's like popcorn. Those files explode out of the original file! Don't be alarmed if you see EXPLODING... or INFLATING... on your screen when you unzip. This is normal. You can then run the files that appear in the usual manner. You will not have to unzip them again. If you have room, you can copy the files to a floppy disk or somewhere else on your hard drive. You may want to delete the file with the .ZIP extension in C:\TEMP at this time to save room on your hard drive.

SUMMARY   HOW TO UNZIP ZIPPED FILES
1.   Make a directory on your hard drive using the MD command. 2.   Copy the file with the .ZIP extension (the file you want to unzip) to the directory you just made in Step 1.   3. Copy PKUNZIP.EXE to the directory you made in Step 1. 4.   Change to the directory you made in Step 1. This makes it the active directory. It should now contain PKUNZIP.EXE and the file you want to unzip. .   Type: pkunzip filename <ENTER> Note that filename is the name of the file that you want to unzip. This file will have a .ZIP extension. For example, if you had a file called CHESS.ZIP, you would type: PKUNZIP CHESS <ENTER>

TIP   You can unzip zipped files from any directory when PKUNZIP.EXE is in a directory that is in your computer's PATH. Then you can eliminate Step 3 above. Why not make directory called C:\UTILS and copy PKUNZIP.EXE to it? For help on how to set your PATH, get my book, Learning DOS for the Complete Novice, 2nd edition, by Steven Woas, published by Celestial Press.

SENDING AND RECEIVING FILES   Suppose you are calling a BBS to download or upload files. Once you are connected and make the decision to download a file, you need to tell the host computer that you want to download a file.

Often, it is as simple as pressing D (for download) from a menu. Then you will be prompted for the complete file name you want to download. Next, the host computer may prompt you for a download protocol. If ZMODEM is given as a choice, select it if your communications software is set for ZMODEM. For a successful download, both your computer and the host computer MUST use the same download protocol. When you are finished, you may need to press <PG DN> to start the download process. Those using a Windows telecommunications program may need to click the mouse on the proper icon to start the download.

After the download is finished, the file will then be transferred to your computer in the user specified download directory. When you are off-line, change to your download directory to see the downloaded file.

S E N D I N G   A N D   R E C E I V I N G   F I L E S   Suppose you are calling a BBS to download or upload files. Once you are connected and make the decision to download a file, you need to tell the host computer that you want to download a file. Often, it is as simple as pressing D (for download) from a menu. Then you will be prompted for the complete file name you want to download. Next, the host computer may prompt you for a download protocol.

If ZMODEM is given as a choice, select it if your communications software is set for ZMODEM. For a successful download, both your computer and the host computer MUST use the same download protocol. When you are finished, you may need to press <PG DN> to start the download process. Those using a Windows telecommunications program may need to click the mouse on the proper icon to start the download.

After the download is finished, the file will then be transferred to your computer in the user specified download directory. When you are off-line, change to your download directory to see the downloaded file. If you wanted to upload a file (send a file to the host computer), first you would select UPLOAD on the host computer's menu. Then, with most DOS-based communications software, you would press <PG UP> to start the process. Before you called the host computer, you would have copied the file that you wanted to send to your specified UPLOAD DIRECTORY on your computer. Then, your communications software can find the file to send to the host computer when you give the commands. A Windows-based communications program may require that you click (the mouse) on an upload icon to start the upload process.

S E T T I N G   U P   T H E   M O D E M   S O F T W A R E
The first thing to do is to read the manual. If you are using a shareware telecommunications program, you should print the manual. It is usually in the form of a text file. For example, the manual for TELIX is a text file called TELIX.DOC. You will need to set up your software for your particular modem. If you have a 2400 baud modem, you can set the baud to 2400. Most BBSs require a setting of 8,N,1. That is, a typical BBS requires the following settings: 8 data bits   N for no parity 1 stop bit If you are calling a BBS, use the above setting. If that doesn't work, use 7,E,1 which is explained below. These   are the two main settings for personal communications. You need to set your settings to match the computer you are calling.

Some commercial online services (like CompuServe) require a setting of 7,E,1 or:7 data bits E even parity   1 stop bit If you are not sure, call the commercial online service on their voice line and ask them. Most of the commercial online services have toll-free information numbers. See the section on "Getting Online" for phone numbers.

TIPS   If your modem uses data compression (V.42 or V.42 bis), you can increase performance by setting the baud on the telecommunications software to four times the baud rate of your modem. For example, if you have a 14,400 baud modem, you should set the baud for 57,600. A modem with compression technology can receive data at a faster speed than its rated speed. Effective throughput can be considerably greater than the modems rated speed. If your modem software has an auto-baud option, be sure to turn it off if your modem uses V.42 or V.42 bis. If you don't turn the auto-baud option off, you will not get the advantage of this much more efficient throughput.

TERMINAL EMULATION Your terminal setting should match the computer you are calling (the host). If you are going to call a BBS, start off with ANSI terminal emulation. You will probably find that your telecommunications software defaults to an ANSI setting. This is what most BBSs expect. Some other common terminal emulation choices are TTY and DEC VT100/102. You may find that a terminal setting of DEC VT100 or VT102 works better when calling an online service. Most computers on the Internet want a terminal emulation of VT100. If you connect to a computer where you need to emulate VT100 and your telecommunications program doesn't support it, try VT102 or ANSI terminal emulation.

LOCAL ECHO   Set local echo OFF when setting up your telecommunications software. If you set it to on when you call a BBS, you will see double letters because they will echo what you type back to you. If that is the case, it will likely look "lliikkee tthhiiss." If you are receiving double letters, you will know that you need to turn local echo off. LINE FEEDS Set line feeds to OFF. Most BBSs add line feeds for you. However, if you receive characters on your screen that overwrite the preceding line, you will know that you need to turn your line feeds on. This is done through the modem software. If the computer you are calling and your modem software are both sending line feeds, the lines on your screen will appear double-spaced. Then you will know   that you need to set line feeds to off.

FLOW CONTROL   The way modems tell each other to stop sending or restart sending data is called flow control. Incoming data is held in a block of memory called a buffer. If the buffer gets too full, it is up to flow control to temporarily stop the flow of incoming data to allow the receiving modem time to empty the data in the buffer. There are two types of flow control. The first is software flow control known as XON/XOFF. This stands for transmit on (XON) and transmit off (XOFF). Software flow control is

controlled by your communications software. The second type of flow control is hardware flow control (RTS/CTS). A modem equipped with hardware flow control can use wires in the modem to start and stop data transmission. One wire controls the RTS (Request To Send) signal, the other wire controls the CTS (Clear To Send) signal. Software flow control is not as efficient as hardware flow control. You will need to read your modem manual to determine if your modem supports hardware flow control. Most modems that have a baud rating of 9600 or more support hardware flow control. If your modem supports hardware flow control (RTS/CTS), you should use it and turn your software flow control off. You will need to read your communications software manual to see how to set yoursoftware flow control If you have both hardware and software flow control on, it can cause your modem to operate inefficiently and may cause problems with data transmission. Some systems may even "crash" or abort! Many of the better communications software programs have a feature that you can use to automate modem setup. For example, if you are using TELIX, you can run a program called MODEMCFG.EXE. Then select your modem from the pick-list. The software will automatically configure both your modem and the communications software for flow control and other settings. It has pre-defined modem initialization strings for over 200 different modems. If your modem software does not set the initalization string, you will want to look in the manual that came with you modem for help on selecting an initalization string.

SETTING YOUR PROTOCOL   Before you can download (receive) or upload (send) a file, you have to choose what is called a transfer protocol. Your communications software will support a number of built-in file transfer protocols, and probably external protocols as well. BOTH the calling computer and the host MUST support the chosen transfer protocol. Also, both the calling computer and the computer you are calling MUST be set to use the same transfer protocol. If the computer you are calling (the host) supports Zmodem, then you should use Zmodem. Zmodem is fast, has excellent error checking, and can even resume an interrupted transfer if you select this option on your communications software. This ability is sometimes referred to as "crash recovery."   If the computer you are calling does not support Zmodem, then Ymodem-batch would be a good choice. Other transfer protocols include: Xmodem, Xmodem-1K, and ASCII. Avoid using ASCII if possible, as it is only for plain text files and does not use any error correction scheme. See the section on Telecommunications Terms for more complete descriptions of these different protocols. Most communications software today come using Zmodem as the default protocol. If ZMODEM is the default protocol, it means that you won't even have to change a setting to select ZMODEM.Some commercial online services have special file transfer protocols. CompuServe has a protocol called CompuServe Quick B.

SETTING YOUR DOWNLOAD DIRECTORY You should create special directories on your hard drive for downloading and uploading files. In DOS, you can use the MD command to create a directory such as C:\DOWNLOAD. To do so, at the C prompt type: md c:\download <ENTER> This will create a directory called C:\DOWNLOAD on your C drive. When you select options on your communications program, you can then specify this C:\DOWNLOAD directoryas the one you will use for your download directory. For example, if you are using the TELIX communications software, you would press <ALT> O for options. Then select FILENAMES AND PATHS. Next, select the DOWNLOAD DIRECTORY and type: c:\download

Next, make an upload directory (C:\UPLOAD) in the same fashion that you made the C:\DOWNLOAD directory. Then go into your telecommunications program and save the changes to disk. In TELIX, when you are finished, make sure you select WRITE SETUP TO DISK, so your changes will be saved. For more information, read the manual that comes with your communications software. If you are using TELIX, look for a text file called TELIX.DOC. You can read and print this file using an editor (such as DOS   EDIT) or a word processor. Also, the shareware program LIST is excellent for viewing and printing text files.

W H A T I S S H A R E W A R E ?   Shareware, or user-supported software, is a way of marketing software for the program's author. The manual for shareware is usually found on the disk, often in the form of a text file. Shareware software is copyrighted. The authors encourage you to copy their software and share it with friends. You can obtain shareware programs from shareware vendors, BBSs, online services, and friends. When you buy from a shareware vendor, the distribution charge does not cover the cost of the program. If you continue to use the software, you must send in the "registration fee." You can find out how to register the program by reading the manual. If you try it and don't wish to continue using the software, you owe the author nothing. This lets the user try the program first. hen you register shareware software, you often get additional beneifits. With shareware, you get to "TRY BEFORE YOU BUY!" Those who register MODEM WORKSHOP receive the latest version of MODEM WORKSHOP and "Steve's Essential Internet Tips" as abonus. See "Other Products" and the "Order Form" at the main menu for details. Registered users of MODEM WORKSHOP also receive telephone support for 90 days (813-845-8522). Please do not callthe Orders Only number if you want telephone support.

ASP Ombudsman Statement:This program is produced by a member of the Association of Shareware Professionals (ASP). ASP wants to make sure that the shareware principle works for you. If you are unable to resolve a shareware-related problem with an ASP member by contacting the member directly, ASP may be able to help. The ASP Ombudsman can help you resolve a dispute or problem with an ASP member, but does not provide technical support for members' products. Please write to the ASP Ombudsman at: ASP Ombudsman 545 Grover Road, Muskegon, MI 49442 Or send a CompuServe message via CompuServe Mail to ASP Ombudsman 70007,3536.

S H A R E W A R E J E W E L S   Shareware software has been mentioned throughout this book. For recommended modem shareware software, see the section on modem software. This section on "Shareware Jewels" will mention some of the better programs that can really help modem users. Shareware, or user-supported software, is a way of marketing software for the program's author. The manual for shareware is usually found on the disk, often in the form of a text file. Shareware software is copyrighted. The authors encourage you to copy their software and share it with friends. You can obtain shareware programs from shareware vendors, usually for just a few dollars per disk. This distribution charge does not cover the cost of the program. If you continue to use the

software, you must send in the "registration fee." You can download shareware software from BBSs, online services, and the Internet for little or no cost.

You can find out how to register a shareware program by reading the manual. If you try it and don't wish to continue using the software, you owe the author nothing. This lets the user try the program first. When you register shareware software, you often get additional benefits. Depending on the author, you may get: free updates of the latest version, telephone support, a bound manual, customization, and other goodies. Where else can you "TRY BEFORE YOU BUY"?

Shareware software is becoming more popular all the time due to the geometric increase of excellent programs. In almost any computer magazine you will find advertisements for shareware software Public domain software is another type of software. Public domain software is not copyrighted and can be freely distributed without restrictions. With public domain software the author wants nothing in return for his efforts.

Freeware is a type of software that is similar to public domain software. A freeware program is copyrighted and has copyright restrictions; however, the author is not requesting a registration fee. Most of these are shareware programs and can be obtained from shareware vendors or downloaded from a BBS or online service. They will enhance the time you spend doing modem work BBSCAN Terry Huss P.O. Box #75 Winchester, KS 66097-0075 BBSCAN is a wonderful shareware utility to search BBS file lists and generate a sublist. It can hunt for a key word or phrase and can also do boolean searches using AND, OR, and NOT. First you download the ALLFILES list (which most BBSs make available). The ALLFILES list contains a listing of all the downloadable files on a particular BBS. Incidently, on the Internet, the master file list of downloadable files is often called something like "INDEX." Once you have such a master file list, you can scour the list on your own time off-line.

You can use BBSCAN to automatically generate a list of the files about which you are interested. Suppose you are a chess player and downloaded an ALLFILES file and unzipped it. ALLFILES lists can be many megabytes in size. You would then use BBSCAN to search the ALLFILES list for the word "CHESS." It would create a list (on your screen) of all the files and their description that contained "CHESS." BBSCAN then gives you the option to create a text file containing the search results. With this personalized list, you can call the BBS again and efficiently download the desired files. BBSCAN is one of a few shareware utilities that can help change a modem weakling to a modem power user. BBSCAN is very easy to use. COMSET P.O. Box 43214 Baltimore, MD 21236 COMSET is a shareware utility program to setup a communications port with a Hayes compatible smartmodem and gives the option of switching communications port assignments. It will also set COM port baud rates from 300 to 57,600 bps and test CTS/RTS handshaking needed in hardware flow control.

INFOPLUS Infoplus BBS 708-537-0247 This is a modem number (14400/9600/2400/1200) Log in as INFOPLUS
INFOPLUS is a public domain program that will give you 21 pages of information about your computer. This program will tell you almost anything you might want to know. Plus, it is very easy to use. It can help solve IRQ conflicts with modem installations. You can also use it to print out your CMOS RAM setup information. This program is available on most BBSs. The author runs his own BBS where the latest version is always available.

OZCIS is "front-end software" that automates access to CompuServe. OZCIS has excellent online help and mouse support. The e-mail features are particularly good. You compose your messages off-line. It can even do broadcast e-mail (where you send the same message to a bunch of people). After composing your messages, press a key or click your mouse. Then OZCIS will automatically call CompuServe, retrieve any waiting mail, and then send the outgoing mail. OZCIS then logs off. It does not waste time. It gets you on and gets you off as quickly as possible. Because OZCIS is so efficient, it saves you money. This program is free for personal use.

PICK-UP Mark P. Harrison 6676 Robinson School RoadNew Athens, IL 62264
PICK-UP is a shareware file manager and upload helper for TELIX communications software. It is actually an accessory script for TELIX that automates the task of uploading messages and files. First, you write messages and save them as text files off-line. Then, when you are online with TELIX, pop-up PICK-UP to pick out from a list of files the one you want (please excuse the alliteration). Then press <ALT> S to automatically send the message. PICK-UP makes e-mail easy and saves you money. It also makes regular uploading of files easier. If you use TELIX, you will want to try PICK-UP.

PKZ204G   Pkware, Inc. 9025 North Deerwood Drive Brown Deer, WI 53223.
PKZ204G is a self-extracting program that contains PKZIP, PKUNZIP, and other supporting files. PKZIP is a program for compressing files. PKUNZIP uncompresses ZIPped files. Zipped files can be recognized by their .ZIP extension. This new version can ZIP a directory and include the subdirectories. It also allows your ZIPped file to span multiple diskettes! If you intend to use a modem, you will find that most BBSs and many commercial online services store their files in ZIPped format. This means you will need to use PKUNZIP to unzip files.

PRO-MASTER   Gateway Software Inc. 1230 Market Street #402   San Francisco, CA 94102
This shareware program is ram-resident. It gives you a pop-up menu to get more control over Prodigy with nifty utilities and tools.

PSEARCH   Patri-Soft 5225 Canyon Crest Drive Suite 71-358   Riverside, CA 92507.
PSEARCH will search multiple files for keywords or phrases. It will search an entire hard drive, or you can tell it to just search certain directories. Of course, wildcards can be used in the searches. PSEARCH then provides you with a list of documents that fit the

search parameters, and they can be viewed one at a time. PSEARCH will view both text files and WordPerfect documents. It can also be used to find lost files.

SHEZ   California Software Design James Derr P.O. Box 15248 Santa Rosa, CA 95402
SHEZ is a shareware program for dealing with archive files. It is a shell that makes it easier to work with .ZIP, .LHA, .ZOO, .ARC, .ARJ, .SQZ, and .PAK files. Shez will run from DOS or Windows and can work with virus- killing software like VIRUSCAN (from McAffee Associates). If used in conjunction with VIRUSCAN (called SCAN for short), it can check an archived file for viruses and disinfect files that are in the archive. SHEZ gets rave
 reviews everywhere.

SLEARN Paul Roub P.O. Box 141583 Coral Gables, FL 33114-1583
SLEARN is a program for Telix telecommunications software that will automatically write scripts. A script is a series of commands, instructions, or text that can be executed automatically by your telecommunications program. SLEARN makes it easy to make automatic logons to BBSs and online services.

STEREO SHELL M.R.E. Software 150 Jones Street West Point, MS 39773.
STEREO SHELL is a wonderful shell for running your hard drive. You can view two directories at once, which is where it got the name. Copying software to and from your hard drive and between directories is made simple. It can also use your favorite viewing utility (LIST) and your favorite editor. Stereo Shell is very fast and provides an easy-to-use interface to compress and uncompress files using all the popular archive formats. For example, it will automatically unzip a zipped file. If you don't want to use Stereo Shell, two other shareware programs that make it easy to deal with compressed files are SHEZ and WINZIP (for Windows).

TAPCIS   Support Group Inc. Lake Technology Park McHenry, MD 31541
TAPCIS is another front-end program for CompuServe, automating some of the tasks and making CompuServe easier to use.

VIRUSCAN   McAffee Associates 3350 Scott Boulevard Building 14 Santa Clara, CA 95054-3107 VIRUSCAN is considered by many around the world to be the industry standard in virus protection. This program has a list of over 2,000 viruses that it guards against. McAffee Associates make a collection of virus protection programs. In addition to VIRUSCAN they also have other products. These programs are updated often to keep up with the loathsome viruses that are generated by warped individuals.
WINZIP   Nico Mak P.O. Box 919   Bristol, CT 06011-0919   WINZIP is a Windows shareware program for viewing, running, extracting, adding, and deleting archived files such as .ZIP, .LHA, and .ARC. WINZIP has won many awards for its ease of use.

WIZLINK   WIZ-TEC Computing Technologies Inc. P.O. Box 80010 55 Castleridge Boulevard N.E. Calgary, AB Canada T3J 3L6   WIZLINK is a program that will let you control another computer from a remote computer. This shareware program can replace expensive commercial programs like pcAnywhere, Carbon Copy, etc. WIZLINK remote control software performs as if you were at the keyboard of the distant computer. It works over a modem or using a direct connection (null modem cable). WIZLINK will also work on a LAN (Local Area Network). WIZLINK uses only 7K of memory and runs in the background as a TSR on the host computer. It offers high speed file transfer, data compression, and password protection. One of the most desired features of WIZLINK is to allow the user to send and receive files. It is also great for technical support and customer service. Portable computer owners will find many uses for WIZLINK. WIZLINK is remarkably easy to set-up and the newest version has an e-mail feature called WIZMAIL. WIZLINK is for DOS-based remote control. If you need one to work with Windows, you will want to take a look at pcAnywhere or Filex, which are commercial software programs

THE BEGINNER'S GUIDE TO THE INTERNET   Suarez Associates P.O. Box 764 Miamisburg, Ohio 45343
This is a beginner's guide to the Internet. It is a computer-based tutorial with step-by-step instructions, covering the most important aspects of the Internet. The Beginner's Guide To The Internet is a shareware product.

S U R G E   P R O T E C T I O N Buy a good phone line surge protector to protect your modem. Some computer surge protectors provide a special modular jack to protect your phone line as well as your electrical line.If you live in an area that has frequent lightning storms, it is best to unplug all your equipment when you are not using it. For example, I live in Florida. The summers in Florida have lightning storms often in the afternoons. In the summer, when I am not using the computer, I unplug everything. Even with good power surge protection, it is wise to unplug all your computer equipment in a lightning storm. Be sure to unplug both the electrical cord and the phone wire where it plugs into the wall.

C H O O S I N G   M O D E M   S O F T W A R E   A modem needs some kind of telecommunications program to make it work. Some commercial online services, such as America Online and Prodigy, require special software to obtain access. Most BBSs and other online services can be accessed by almost any telecommunications software program. There are dozens of good general purpose telecommunications software programs available. There are also some real lemons. There is a Terminal program that comes with Windows 3.1. It is what is called a "bare bones" telecommunications program. In fact, in my humble opinion, it should only be used to download another telecommunications program. The Windows Terminal program has Xmodem and Kermit as the only transfer protocols. That was fine ten years ago but will not do in today's world of high speed modems. Below are a few features you should look for in a telecommunications program.

WHAT TO LOOK FOR IN TELECOMMUNICATIONS SOFTWARE   ZMODEM PROTOCOL   The Zmodem protocol has become the industry standard. You   will want this feature in your telecommunications   software. Zmodem has excellent error checking and can even resume an interrupted file transfer if you select this option on your communications software. This ability is sometimes referred to as "crash recovery."

SCREEN CAPTURE   The telecommunications software that you select should have a screen capture feature. This is often called a capture log. With screen capture turned on, your telecommunications software saves whatever scrolls across your screen to a text file. Then, when you are off-line, you can use LIST (shareware), an editor, or a word processing program to review the screen capture file. A screen capture text file is often called a capture log file.

SCROLL-BACK BUFFER   A scroll-back buffer allows you to review past screens. This feature is real handy when important information has passed by, and you need it immediately while online. Often, a scroll-back buffer is activated by pressing a key combination such as <ALT> B. Then, you can use your arrow keys to scroll-back. A good scroll-back buffer will also have a search feature.

TERMINAL EMULATION TYPES   Terminal emulation is the ability of your telecommunications software to emulate different types of terminals. This peculiar term comes from "dumb terminal" which consists of a keyboard, a monitor, and no brains (or memory). These dumb terminals were used to connect to mainframes and minicomputers. These often required a particular manufacturer's dumb terminals. Hence, the term "terminal emulation." Your telecommunications program has different terminal emulations, so your computer can talk to a variety of host computers. Almost all telecommunications software will emulate TTY, ANSI, and DEC VT100/101/102. It is nice to have even more. If you want to connect to the Internet, it is important to have VT100 (or VT102) terminal emulation

MACRO CAPABILITIES   A macro is a series of keystrokes that are executed when a certain key or key combination is pressed. If the telecommunications software has macro recording capabilities, it can make it much easier for you. You can store data such as your name, password, etc., as a macro. Suppose you assign your name to the function key labeled <F5>. Then, you can press <F5> to type your name.

SCRIPT LANGUAGE   A script file is a collection of commands, instructions,   or text that can be executed by your telecommunications program. A script is particularly useful when you want to log on automatically to a BBS or online service. Often, the better telecommunications programs have an automatic script writing feature.

WINDOWS OR DOS?   If you are primarily a Windows user, you will probablySome people, who like DOS, think that using a Windowstelecommunications program is a little like turning on a light switch with a broom handle. It is really a matter of personal choice. If you are comfortable in DOS, you may find that you can get online work done faster with a DOS based program.

COMMERCIAL, SHAREWARE, OR FREEWARE?   Commercial software programs are sold by traditional software vendors. You will find commercial software at your favorite super computer store or software specialty store. However, some of the best telecommunications programs are available for trial use as shareware. Shareware is a method of marketing software for the program's author. Shareware programs are copyrighted. The manuals for these programs are usually found on the disk in the form of a text file. You can print the manuals, using your printer. You can obtain these programs for trial use from shareware distributors for a copying fee of just a few dollars per disk. You can also download shareware programs from BBSs and online services.Shareware programs require a separate payment to the author if found useful. The wonderful thing about shareware is you get to try it out before you buy it.

According to Boardwatch magazine, the majority of modem maniacs use shareware terminal programs. A freeware software program has copyright restrictions; however, the author is not requesting a registration fee. Freeware programs can be found from the same sources that offer shareware programs. Here are some of the better full- featured DOS-based telecommunications programs available in shareware: Telix, Qmodem Test Drive, and Telemate. Ripterm is an easy to set up freeware program. If you are looking for Windows shareware telecommunications programs, you should take a look at MicroLink for Windows. Some commercial DOS-based telecommunications programsthat are excellent include: Procomm Plus, Qmodem Pro for OS, and Crosstalk Mark 4. Some of the best full-featured ommercial Windows telecommunications programs include Procomm Plus for Windows, Qmodem Pro for Windows, and Crosstalk for Windows.

T E L E C O M M U N I C A T I O N S   T E R M S   ARCHIVED FILE: An archived file is a file that has been compressed by a special program so that it will use less disk space. When you see a .ZIP, .ARC, .ARJ, .LZH, .PAK, or .ZOO extension, it indicates that the file is in a compressed archived format. ASCII: Pronounced ASK-EE. An ASCII file is a file saved in a format called ASCII, also called a text file. ASCII stands for American Standard Code for Information Interchange. ASCII can also be offered as a transfer protocol used for sending ASCII files. See description below.

ASCII PROTOCOL: ASCII protocol should only be used for plain text files and should be avoided when possible because it does not offer any error correction.ASYNCHRONOUS: When signals are sent to a computer at random intervals, they are said to be asynchronous. Start and stop bits tell where the information begins and ends. Synchronous transmition sends data at timed intervals, eliminating the need for start and stop bits.

AT COMMAND SET: Hayes compatible modem commands. AT commands start with the letters AT. Incidently, the AT stands for ATtention!

AUTO ANSWER: The capability of a modem to be set to automatically answer incoming calls.

AUTO DIAL: The capability of a modem to automatically dial the phone via a telecommunications software program.

AUTOMATIC SPEED SENSING: The capability of a modem to automatically determine another modem's speed and adjust itself accordingly.

BAUD: The speed at which data can be transmitted between two modems. This term comes from J. M. E. Baudot (1845-1903) who was a French pioneer in printing telegraphy. Bits Per Second (bps) is the usual way BAUD is expressed. However, bits per second (bps) and baud are not the same. The modem manufacturers and the people who sell modems use the term "baud" when they really mean "bits per second."

BBS: A Bulletin Board System (BBS) is a computer system that is set up with software and a modem(s) to allow other computer users with modems to access information on the computer.

BINARY FILE: There are two basic kinds of files, ASCII and binary. Data that is not plain text (ASCII) is binary. For example, a .GIF picture file is not a plaintext file but a binary file. Each dot in the picture is recorded as a 0 or a 1. This is called a bit which stands for binary digit. Any file that does not use characters must be represented as binary data. If you get on the Internet, you may need to choose a file transfer type--ASCII or binary. It is wise to choose binary because the transfer protocols for binary files will include error correction and will transfer all kinds of files, including ASCII and binary.

BIT: BIT stands for BInary digiT which is the most basic unit of information in the binary numbering system.

BPS: Bits Per Second. The modem's speed is measured in bps.

BLOCK: A group of bytes that are treated as a unit when receiving (downloading) or sending (uploading) files. Most blocks are 128 or 1024 bytes long.

BYTE: A byte contains eight bits. A byte can store one letter or other character. A byte is a unit of measure for a computer's memory and also for disk data storage. The disks we buy are expressed in how many bytes of storage that they will hold. One kilobyte (k) is 1,024 bytes.

CARRIER: Before a modem sends data, it sends a tone called a carrier which has a fixed frequency and amplitude.

COM PORTS: These are also called serial ports. A connector on the outside of the computer where you can plug in mice and modems. IBM-compatible computers can have as many as four COM ports. These are designated COM1, COM2, COM3, and COM4. CD-ROM: Compact Disk Read Only Memory. They are optical storage devices that can store huge amounts of data. These are becoming very popular as the price continues to fall.

CHAT: To type at your keyboard to someone online and have a "conversation."

COMPRESSED FILES: A compressed file is a file that has been compressed by a special program so that it will use less disk space. When you see a .ZIP, .ARC, .ARJ, .LZH, .PAK, or .ZOO extension, it indicates that the file is in a compressed archived format.

CRC: Cyclic Redundancy Check. Used to determine if an error in data transmission has occurred.

DATA BIT: BIT stands for BInary digiT and is the smallest unit of information. A bit is either represented by a zero or a one. A computer word that actually holds the information is called a byte.

DATA BYTE: The number of bits used to represent one byte in telecommunications. This number is usually 7 or 8. Most BBSs require you to use 8 bits. Many commercial online services such as CompuServe require you to use 7 bits. You use software to change this setting. You need to match your system to the host system that you are calling.

DEDICATED LINE: A phone line that is only used for the computer.

DIP SWITCH: DIP is an acronym for Dual Inline Package. These are tiny switches that you can set using a pointed object such as a top to a ball point pen.

DOWNLOAD: To receive a file from a computer or online service.

DOOR: A gateway to allow a user to run a program while online. Many BBSs have DOORS to play online games, etc.

DUPLEX: This term refers to how the characters appear on your screen. With full-duplex both parties can communicate simultaneously. With half-duplex only one modem at a time can transmit.

ECHO: Characters that appear on your screen from your computer. See DUPLEX above.

E-MAIL: Electronic mail. You can receive or send e-mailon a BBS or online service. You can type it in from your keyboard or prepare it in advance using a program that can save a file in ASCII format.

EXTERNAL PROTOCOL: An external protocol is a protcol (software) which can be added to you modem software. See PROTOCOL below.

FILE: A collection of information that is stored on a disk as a single unit and has a file name.

FLAME: A nasty and personal attack on somebody online. A person who does this sort of thing is called a FLAMER. Such attacks can lead to FLAME WARS.

FLOW CONTROL: The way modems tell each other to stop sending or restart sending data. There are two types of flow control. The first is software flow control known as XON/XOFF. The second type of flow control is hardware flow control RTSþCTS.

FOSSIL DRIVER: FOSSIL is an acronymn for Fido/Opus/ SEAdog Standard Interface Layer. A FOSSIL driver is software that replaces your computer's internal BIOS routines for the serial port driver. Such a FOSSIL driver may provide a faster means of accessing the serial port. BBS doors and external file protocols sometimes require fossil drivers.

FREEWARE: This is a program that is similar to public domain software, except that it is copyrighted. A freeware program has copyright restrictions; however, the author is not requesting a registration fee. Also, see SHAREWARE and PUBLIC DOMAIN SOFTWARE.

FTP: File Transfer Protocol. A protocol system used to transfer files on the Internet

HAYES-COMPATIBLE: If your modem is Hayes-compatible, then it will accept a set of commands like those used by modems made by Hayes Microcomputer Products, Inc..

HOST: This is the computer that you are calling (the one to which you are connected). This can be another computer, a BBS, or a commercial online service.

HS/LINK: This is a high speed bi-directional file transfer protocol. It sports all kinds of goodies like: 32 bit CRC protection, batch file transfers, and aborted file crash recovery. HS/LINK uses Full-Streaming-Error- Correction and can send and receive data in both directions at once. This means you can upload and download at the same time. It also works great for just sending or receiving files in one direction. HS/LINK will even allow you to enter into CHAT mode while sending and receiving files. HS/LINK is a shareware program and can be used as an external protocol with most telecommunications programs.

IRQ: Interrupt ReQuest. Physical connections between hardware devices and interrupt controllers. You need to configure expansion boards so each has its own IRQ address. You can run into trouble if two (or more) expansion boards are assigned the same IRQ. To avoid trouble, read the documentation that comes with each board. If you have Windows 3.1 or DOS 6.0 or higher, run the MSD (Microsoft Diagnostic Utility) program.

KERMIT: A data transfer protocol that can be used to send files between computers. It was developed at Columbia University. KERMIT can be very slow and was named after the frog with the same name. KERMIT is even slower than XMODEM. You would be well advised to avoid this toad.

KILL: To delete a file or message.

LOGON: To enter your user ID and password so you can gain access to a BBS or online service.

LOG OFF: To enter the commands to get off a BBS or online service.MAIN MENU: The starting menu that allows access to almost everything on the BBS or online service.

MNP: Microcom Networking Protocol. A hardware error correction protocol for transferring data (levels 1-4). However, MNP 5 is a data compression protocol which includes MNP error correction.

MODEM: Modem is an acronym for MOdulator-DEModulator. A modem is a device that allows a computer to communicate and transfer files with other computers over a telephone line.

NEWBIE: Someone who is new to computers or is new to the Internet.

NRAM: Non-volatile RAM. A modem with NRAM can store information even when the power to the modem is off.

NULL MODEM CABLE: A modem-eliminator adapter used to connect two computers for telecommunications. You can purchase these at Radio Shack or your favorite super computer store.

OFF-LINE: When your computer is not connected to another computer via a modem.

ONLINE: Being connected to another computer via a modem.

PAGING: To issue a command that rings the SYSOP's computer speaker indicating that someone wants to talk to him. See CHAT above.

PARITY BIT: This is the eighth bit of a character which has a value set to 0 or 1. Both computers must use the same parity bit to communicate.

PASSWORD: A secret word that you type in to obtain access to a BBS or online service.

PROTOCOL: A set of rules which govern the transfer of data in telecommunications. These rules define errorcontrol, line control, start up control, and othercommunication problems.

PUBLIC DOMAIN SOFTWARE: Software that is not copyrighted and can be freely distributed withoutrestrictions.

RS-232: A serial port. You plug mice and modems and other goodies into serial ports.

ROUND TABLE: A multi-user conference or forum.

SCREEN CAPTURE: This should be a feature of your telecommunications software. With screen capture turned on, your telecommunications software saves whatever scrolls across your screen to a text file. A screen capture text file is often called a capture log file.

SCRIPT: A collection of commands, instructions, or text that can be executed by your telecommunications program.

SELF-EXTRACTING FILE: A self-extracting file is a compressed file. The file contains a file or group of files that has been compressed to save space. When a self-extracting file is run, other files pop out (emerge) from it. These are often found on BBSs (Bulletin Board Systems) and in shareware. It is best to copy self- extracting files to the hard drive where they will have plenty of room to expand.

SHAREWARE: Shareware is a method of marketing software for the program's author. Shareware programs are copyrighted. The manuals for these programs are usually found on the disk in the form of a text file. You can print the manuals using your printer. You can obtain these programs for trial use from shareware distributors for a copying fee of just a few dollars per disk. Shareware programs require a separate payment to the author if found useful. Shareware is a wonderful deal for the consumer, because you get to "Try before you buy." There are many great programs that are distributed as shareware.

SNAIL MAIL: Mail that is delivered to a box mounted on a post outside a house, business, or apartment.

START/STOP BITS: In telecommunications, start/stop bits signal the beginning and the end of the 7 or 8 bit data character.

SYSOP: An acronym for SYStem OPerator. The person who runs and operates a BBS computer.

 TELNET: Telnet is software that allows you to directly connect to other computers on the Internet. If your Internet access provider offers full Internet access, he will offer Telnet.

THROUGHPUT: By using data compression, a modem can achieve a greater rate of useful data bits sent than its rated speed. This is referred to as the modem's throughput.

UART: Universal Asynchronous Receiver/Transmitter. These are chips that will facilitate synchronous and asynchronous serial communications

UPLOAD: To send a file to another computer using a modem.

V.14: A standard in data conversion used in all V.32 and V.32 bis modems that conform to the CCITT recommendations. CCITT stands for Consultive Committee on International Telegraphy and Telephony.

*Note that the acronym CCITT is used repeatedly below. To reiterate, it means Consultive Committee on International Telegraphy and Telephony.

V.17: The CCITT standard that specifies fax transmission and reception at 14,400 bps.

V.21: The CCITT standard that specifies modem transmission at 300 bps.

V.22: The CCITT standard that specifies modem transmission at 1200 bps with a fallback rate of 600 bps.

V.22 bis: The CCITT standard that specifies modem transmission at 2400 bps.

V.32: The CCITT standard that specifies modem transmission at 9600 bps with a fallback rate of 4800bps.

V.32 bis: The CCITT standard that specifes modem transmission at 14,400 bps with a fallback rate of 12,000 and 7200 bps.

V.32 terbo: An unofficial standard that specifies modem transmission at 19,200 bps with a fallback rate of 16,800 and also the rates supported by V.32 and V.32 bis.

V.34: A CCITT standard that specifies modem transmission at 28,800 bps with many fallback rates.

V.42: A CCITT error correction protocol which includes MNP 1-4 and supports LAPM error correction.

V.42 bis: A CCITT standard for data compression. A modem equipped with V.42 bis also includes V.42 error correction and MNP-5 data compression. You will find that almost all new modems being sold today comply with V.42 bis CCITT standards. You will want to look for this feature when purchasing a modem.

V.FAST: An unofficial standard that specifies modem transmission at 28,800 bps with fallback rates. This is also known as the V.FC.

X.400: A CCITT standard for global e-mail.

X.500: A CCITT standard for keeping track of people whouse the X.400 system.

XMODEM : A file transfer protocol developed by Ward Christensen in 1978, and it is still popular today (but slow). It uses a built-in error checking technique (checksum) to insure that data is being sent without errors. The file being sent is transfered in a series of 128-byte blocks. XMODEM CRC is another version of XMODEM with a somewhat more reliable error correction scheme. XMODEM-1K is another variation of XMODEM with built-in checksum error checking. XMODEM-1K sends a file in a series of 1024-byte blocks, so it is much faster than XMODEM.

YMODEM: A file transfer protocol that uses 1024-byte blocks to send files. It is faster that XMODEM and uses a similar check-sum error-correcting scheme. On a noisy line YMODEM can give poor results. Another varient is YMODEM-Batch. YMODEM-Batch allows you to send serveral files in a row. Another version is called YMODEM-G. With YMODEM-G there is no error correction, so both modems rely on the internal error correction of the modems (V.42). On a good line this can be one of the very fastest protcols for transfering files. However, ZMODEM is much more reliable and is the transfer protocol that this writer recommends.

ZIPPED FILE: A compressed file that contains a file or a collection of files. A zipped file has an extension of .ZIP. You need the latest shareware version of a program called PKUNZIP.EXE to unzip a zipped file. At this writing, the latest version is PKZ204G.

ZMODEM: The Zmodem protocol has become the industry standard for file transfer. You will want this feature in your telecommunications software. Zmodem is fast, has   excellent error checking, and can even resume an interrupted file transfer if you select this option on your communications software. This ability is sometimes referred to as "crash recovery."

T E S T I N G   Y O U R   M O D E M   After you hook up your modem, you will want to test it to make sure you are connected to the correct COM port. Make sure you have all the cables hooked up. One of the most common mistakes is plugging the phone line into the wrong jack on the modem. Read the modem instructions carefully. If you do have it plugged into the wrong jack, you can easily correct the situation by trying the other jack. If you have an external modem, make sure you turn your modem on. An internal modem is powered by your PC's power supply. This means that when you turn on your computer, an internal modem will automatically be powered on.

The following test will make your modem howl. External modems can be particularly loud (depending on how the volume is set). If a loved-one is sleeping nearby, you may wish to wait for a more appropriate time. The next two commands should be issued in either lower or upper case letters. Do not mix upper and lower case letters when issuing one of these commands. Suppose you believe that your modem is using COM4. With all the power on, issue the following command at the DOS prompt:

            echo ata > com4 <ENTER>

If your modem is connected to COM4, you should hear a dial tone. If you are testing for another COM port, make the appropriate change in the command (i.e. COM2, COM3, etc.). Some external modems will squeal like a stuck pig when you issue the above command. To turn the shrieking noise off, issue a command like the following:

echo ath > com4 <ENTER>

These commands make use of the basic AT Hayes command set, which has been adopted by modem manufacturers as the industry standard. A modem that is Hayes compatible can   use this basic Hayes command set. Don't buy a modem if it isn't Hayes compatible. The command letters AT wake upthe modem and initialize it.

The first command used ATA, which told the modem to answer an incoming call. The second command contained ATH, which tells the modem to hang up the phone.

If you have an external modem and don't like the concept of having your modem howl, you can issue a command that will only make your modem lights flash. Suppose you have an external modem and the baby is asleep. You turn your machine and modem on. Make sure all the cables are connected. You suspect that the modem is connected to COM2. Then issue the following command at the DOS prompt: echo at > com2 <ENTER>

Before you press the <ENTER> key, look at the modem lights. If the external modem is connected to COM2, then the lights will flash when you issue the above command. This offers a test to see if the external modem is connected to the COM port that you think it is. If the modem lights didn't flash, try changing the command to reflect other COM ports (COM1, COM3, COM4). The AT means ATTENTION modem.

For more information about the basic AT Hayes command set, and more modem tests, see the section on AT command set usage.

The end