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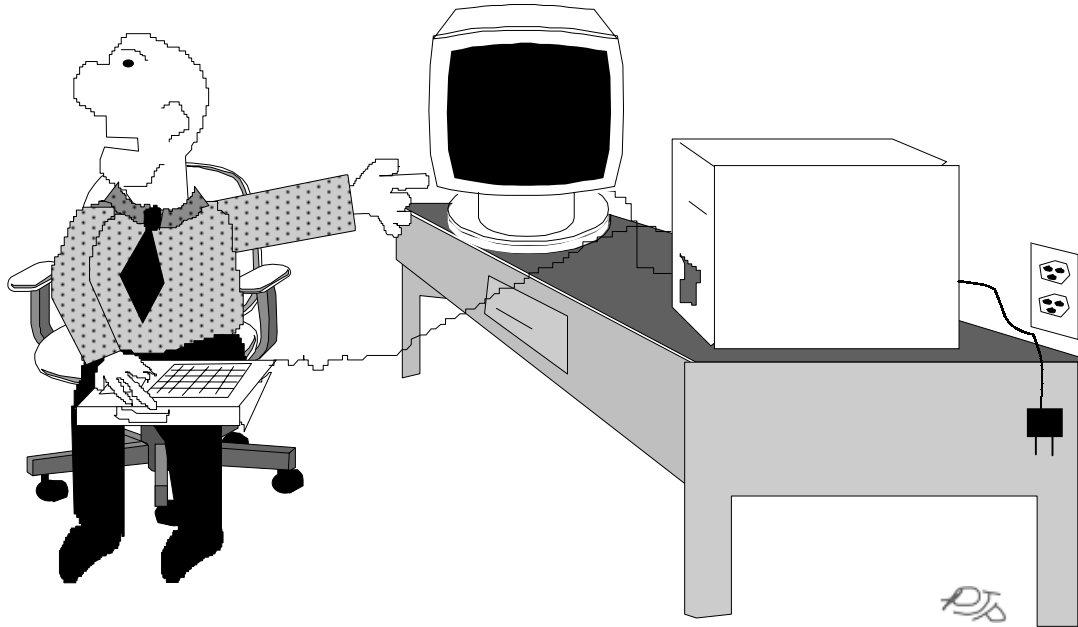
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PERSONAL PLANNING

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*“Look our computer's isn't working.
I think we've got a Michangelo virus!”*

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AVOIDING THE COMPUTER BLUES

IF a computer is essential to your business, and consequently you need to spend long hours in front of it every day, keep in mind the following fundamental rule for avoiding the computer blues:

“Prepare for the worst and *prevent* for the best.”

This means that avoiding the computer blues is more than just selecting the right equipment and applications and then crossing your fingers. It also means training personnel properly, keeping up security, maintaining equipment, taking “computer breaks,” and learning how to protect your computer from computer gremlins (a.k.a. computer viruses).

HARDWARE *BLUES*

COMPUTER systems are extremely reliable. If your computer and associated equipment have been running for ten hours without mishap, it shouldn't need doctoring for a long time to come. Electronic components seem either to die almost immediately or last until external problems like heat, dust, moisture, power brown outs, electrical disturbances, and repeated power surges do them in. For most people, computer maintenance really means forestalling or heading off disaster.

It has been said that a glare and radiation filter is to a computer monitor like the seat belt is to a car and it is only a matter of time before legislation will make glare and radiation reducing filters mandatory. It is already law in Sweden.

POWERPOINT

To Avoid the Hardware Blues:

Break in your computer. When you first get your computer home, or installed at your business, leave it on for at least two days straight to test its circuits.

Clean and treat all computer electrical contact points.

The build up of contaminants, even tarnish, on connector and integrated circuit pins can cause mysterious erratic computer behavior and even intermittent failures in electrical contacts. To cure ICs and components with contact problems:

- remove them and thoroughly vacuum all parts
- spray all exposed pins, connectors,

slots, receptacles, and cable ends with electrical contact cleaner / degreaser available at any electronic or electrical supply store such as Radio Shack

- catch the drips on paper towels
- blow dry with canned air (available from photo stores as well as electronic and computer supply stores)
- carefully reseal, attach, or replug the parts.

Don't plug your computer into a shared wall outlet. Plugging your final computer power cord into an outlet being shared with a power hungry appliance or any piece of equipment containing a motor is asking for trouble. Electric

Electric motors are notorious for generating nasty spikes, which can easily destroy ICs.

motors are notorious for generating nasty spikes, which can easily destroy ICs.

Keep cables neat. Don't allow cables to form loops. Wire loops are inductors that induce electrical noise and current.

Keep liquids and food away from your computer. Food particles have an incredible knack of working their way into irretrievable spots on your keyboard causing them to stick. You'll have enough problems keeping hair out. Also, refrain from having your morning coffee with your computer. This may be nice until you accidentally spill it and damage your keyboard beyond repair.

Keep your computer away from dust, cigarette smoke, and airborne

grease. Dust, cigarette smoke and airborne grease are the worst and most common computer killers over a long period of time.

Dust – Coats your IC chips, insulates them, and causes them to overheat. Therefore, when not in use, your computer equipment should be protected by static-resistant dust covers. Likewise, avoid dust-raising activities around your computer, like whacking overstuffed furniture or wrestling with your pet.

Cigarette Smoke – Can not only turn the pink living tissue of your lungs into a hardened brownish crust, but it can also damage your computer by coating your electrical components with a thick gunge that like dust causes them to overheat or

High moisture content in the air increases the chance of your computer short-circuiting.

lose their connectivity.

Airborne Grease – Will quickly accumulate on all computer parts and cause things to overheat, especially if you put your computer in or near your kitchen.

Keep your computer away from moisture. As the moisture in the air increases, the density of the air decreases. This decrease in density lowers the cooling efficiency of the air, hence, all fans. High moisture content in the air also increases the chance of your computer short-

circuiting.

Keep your computer cool. Excessive heat will kill electronic components faster than dirt, grease or cigarette smoke. It will even cause lubricant in disk drives to dry out and sublimate into areas where they

are not wanted. Therefore, to keep your computer cool and running well, never put the computer in direct sunlight or near a heater. Place it in a cool shaded environment. As well, do not position it in such a manner that other equipment blocks its ventilation slots, and if necessary buy an external fan (just don't plug it into the same socket as your computer).

Keep your computer safe from static electricity.

ICs can be easily destroyed by sparks created from people walking across carpets. As well, data files can be corrupted by static electricity.

If you want to test and hear the electromagnetic waves coming out of your monitor, take an electric guitar (which responds to electromagnetic waves produced as the strings pass over magnets) listen to the low frequency hum of the computer. The less hum, the better your monitor.

SUPERTIP

To minimize static buildup:

- don't use a carpet in your workplace (and if you do spray your carpet with Static Guard)
- use an antistatic strip on your keyboard
- get into the habit of discharging yourself into a large metal object before sitting down at your computer
- wear cotton instead of wool or other synthetic fiber clothing

NOTE Cleaning monitors with antistatic spray also reduces the potentially dangerous buildup of static.

Turn your computer off during thunderstorms. During electrical storms, many computers have been fried even with proper electrical protection. To be safe, some experts even go as far as to recommend stopping your work, and unplugging your computer from the wall outlet.

Use AC convenience connectors properly. Don't use the AC convenience connector on the back of your computer for anything but a video monitor. Plugging a fan or printer into this connector is a sure way to generate power surges that your computer will not like.

Use proper electrical protection.

Computer monitors, printers, and other peripherals should all be plugged into a good

Although, giving your computer a bath is out of a question, vacuuming its insides regularly can add years to its life.

quality power bar or surge suppresser. For more protection this power bar should be plugged into an uninterruptable line-conditioning power supply (UPS) of sufficient power-handling capacity to comfortable service your whole system. If the UPS lacks line voltage regulation, more protection can be achieved by plugging it into a voltage regulator.

NOTE A surge suppresser protects against power surges, but not data loss. On the other hand, a UPS protects against power drops or outages that may cause you to lose data. This is particular important to businesses.

Vacuum your computer regularly. Although, giving your computer a bath is out

of a question, vacuuming its insides regularly can add years to its life. About twice a year, or more depending upon the dust content in your working environment, open your computer case. If you haven't cleaned your computer in a while, don't be surprised to find scary looking fluff balls and other bits and pieces of trash (you may even find solder blobs and orphaned screws). Using a soft round utility brush attached to a vacuum hose or small portable vacuum cleaner, give the power supply careful attention, holding the brush to all the vent holes, including the fan grill. Follow up by carefully cleaning hard-to-clean places such as the insides of expansion slots and around the disk drives.



Don't be surprised to find scary looking fluff balls and other bits and pieces of trash.

SOFTWARE BLUES

WAITING FOR things to go wrong is the surest way to give yourself a computer induced ulcer. Avoiding the software blues, like avoiding the hardware blues, centers around careful planning and prevention strategies.

To Avoid the Software Blues:

Back up regularly. Sooner or later you will accidentally delete a critical file or directory, or worse yet, accidentally reformat your entire hard drive. On top of that, your floppy disks, or hard drive will one day reach the end of their useable life and cease to work. Thus the best way to protect data stored on your hard drive and floppies is to make backup copies and store them in a safe place.

Magnetic fields can erase or damage files stored on floppy disks, tape drives and even hard drives.

Choose your software carefully. The most important strategy to avoid the software blues is to make sure you buy the right software for your needs and the limitations of your hardware.

Don't place software near strong magnetic fields. Magnetic fields can erase or damage files stored on floppy disks, tape drives and even hard drives.

Protect your computer from computer viruses. Not so long ago computer viruses were relatively rare, in spite of all the hype surrounding them. However, two things have changed this in recent years:

FIRST, the Internet has given ordinary small business and home users access to

a vast reservoir of files and data, which can be downloaded simply by clicking on a link.

SECOND, virus makers have discovered what has become known as the “macro” or “document” virus (refer to the sidebar at the end of this guidebook for ways of recognizing and protecting your computer from viruses).

NOTE A *virus* is a program that attaches itself to files on a floppy or hard disk and duplicates itself without the user’s knowledge. Left unrecognized, they have the potential of creating a number of nasty and costly problems.

Software anti-virus experts have isolated more than 7,000 different types of com-

puter viruses, most of which infect the computer by modifying its Master Boot Record (meaning, without getting too technical, they plonk themselves in the computers memory when a system boots).

A virus is a program that attaches itself to files on a floppy or hard disk and duplicates itself without the user’s knowledge (see p. 24)

The Macro Virus – In an effort to make its software more powerful, companies like Microsoft, WordPerfect and Lotus have given their desktop applications a programming language of their own. This programming language can be used to create powerful macros, which can greatly reduce the time needed to do repetitive tasks particularly in word processing and spreadsheet applications.

However, this “macro” programming language, despite its greater utility, has at-

tracted a new breed of virus maker. Most viruses live in the “executable” files of application and utility programs and are launched when the infected program is run. But to get the new “macro” virus, all you have to do is open a document infected with such a virus. Since office workers and everyday users exchange documents far more frequently than programs (via e-mail or floppies), the potential for such a virus to spread throughout a company in a far shorter period, is much greater.

How the Document Virus Works –

Using Microsoft Word, for example, a macro can be written so that every time a document is opened, the number of words it contains is counted and put in a small box on the screen along with the name of

the author. This is especially useful for journalists and newspaper editors. However, the same technology can be used, so that every time a document is opened, all other documents in the same directory on the user’s hard drive are erased. This is bad. To make matters worse, while old style virus programs can be isolated and removed with a decent virus scanner, this new style document virus looks like a normal macro program. Thus, it is substantially more difficult for anti-virus program designers to remove “bad” macros without removing “good” macros as well.

Microsoft offers a free program on its Internet site that can be used to help protect your computer from some of the newer Word “macro” viruses.
SUPERTIP



CTS & VDT BLUES

STUDY AFTER STUDY has been done in the last decade investigating the effect of long-term work with computers on our health and well being. And what scientists have found is that like the problems associated with smoking, drinking and overeating, computer-related problems usually develop slowly over a long period of time, but when they arrive, they arrive with vengeance.

Three of the most common problems on the rise are CTS (Carpal Tunnel Syndrome

or wrist inflammation), VDT Syndrome (eyestrain) and lower back pain. Out of the above three, CTS is perhaps the newest and most insidious.

One study done by the National Institute of Occupational Safety and Health (NIOSH) in the U.S. found that VDT (video display terminal) operation in clerical jobs showed the highest levels of stress of any occupation group even studies by the agency, that included air traffic controllers.

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CTS is classified as a repetitive strain injury. It is derived from the repetition of nearly identical keystrokes at a high rate of speed, tens of thousand of times per day. Each keystroke causes the muscles to contract and the tendons to move; this in turn irritates the tendons as they slide over the bone, eventually leading to pain and inflammation.

At the Los Angeles Times, 200 out of 1100 reporters and editors have sought

medial attention for repetitive strain injuries and CTS since 1985.

Other physical problems linked to computer use include fatigue, pain in the shoulders, wrenched necks and nerve damage, angina or chest pain, blurred vision, chronic headaches, dizziness, facial rashes, irritability, nausea, shortened attention span, reduced productivity, sleep disturbances and sore toes (from having computer components accidentally dropped on to them).

NOTE To fight computer related health problems, designers have come up with the science of ergonomics. *Ergonomics* is the part of design that refers to the comfort and safety feature of a product and covers everything from the back support of

The formula that creates an ergonomic workstation is equal parts physics and common sense.

your chair to the invisible emissions from your equipment. The formula that creates an ergonomic workstation is equal parts physics and common sense.

To Avoid the CTS & VDT Blues:

To reduce BACK pain, select proper chair height and position. The height of your chair should be adjusted so you don't feel pressure on your tailbone (seat too low) or lower thighs (seat too high). Ergonomists recommend 90 degrees as a good angle between the thighs and the spine. For a 5 ft. 9 inch person, a chair height of 18 inches from the floor to the top of the cushion is recommended.

In regards to chair position, most people find an upright or slightly reclined position

to be the most comfortable and practical. However, keep in mind that reclining slightly brings up your line of vision and if you wear bifocals, your range of view may be reduced.

To further avoid the risk of back pain, make it a habit to maintain good seating posture (to keep your spine straight – not curved or twisted to one side or to the back) and avoid sitting or standing for too long at a time. As well, take the time to relax and gently stretch your back, or rotate it in a controlled, slow manner from one side to the other.

NOTE Using a chair with arms to help minimize arm and wrist fatigue is a good idea. However, make sure it doesn't put your arms at precisely the wrong angle

For an average person 5 feet 9 inches tall, the recommended desk surface height is 26 inches.

with your keyboard.

To reduce CTS, as well as, shoulder and arm numbness, match desk surface & keyboard height specifically to you – For an average person 5 feet 9

inches tall, the recommended desk surface height is 26 inches (take into consideration whether you have a very short or long upper torso and adjust accordingly). If your desk surface is too high, raise your chair and put a footrest underneath your feet. If your desk surface it too low, raise it by attaching blocks to the ends of the legs. Another way of determining your proper desk surface and keyboard height is to attain the proper keyboard/forearm angle. Your keyboard angle from forearm should be between 85 and 110 degrees to

help prevent muscle fatigue. Avoid extremes.

To further buffer your hand muscles and guard against CTS:

- add a wrist rest in front of your keyboard
- keep your hands in the neutral position as much as possible (wrists straight, fingers relaxed and slightly bent)
- look for off-the job activities (cycling, weightlifting,) to strengthen your arms, hands and wrists
- shake out and flex these body parts from time to time

To reduce EYESTRAIN follow recommended lighting guidelines. The

Ideally, lighting should be indirect or overhead and directed downward.

American Optometric Association recommends lighting for computer users be adjusted to about half that of normal office lighting. Incandescent lights with a dimmer switch are better than the flicker of fluorescent lights. Also, it is recommended that you avoid facing windows as the light may flood your eyes and wash out the image of the character cast upon your retinas, and if you must sit next to a window, position yourself so the screen is at right angles to the window. Ideally, lighting should be indirect or overhead and directed downward.

To reduce EYESTRAIN use a glare filter. Polished glass screens may look nice in the showroom, but will reflect unwanted light into your eyes and cause eyestrain,

squinting, headaches, fatigue and even serious data entry errors.

To solve this problem you need a monitor with an etched screen (an etched screen helps diffuse reflected light) or an add-on glare filter. If you choose to buy a glare filter, like most computer accessories, you get what you pay for. A fine-mesh glare filter can be purchased inexpensively but does not compare in quality to the more expensive optical glass glare filters which can actually increase the resolution and contrast of characters against the background colors of your monitor. A good glare filter will also be grounded and prevent the dust storm that is created by E-field radiation (static electricity) by 99.99%. Glare filters can also be designed to help

The distance from your eyes to the screen should be only slightly greater than the distance you would maintain when reading printed material (about two feet).

reduce VDT radiation.

To reduce EYESTRAIN wear tinted glasses. To remedy or prevent eye fatigue or strain from peering at your computer screen for hours, some people

use specially made non-prescription tinted glasses. For example, if the screen is mostly green, use brown tinted lenses. If it's mostly amber, use blue-tinted lenses. To further reduce eye strain:

- frequently divert your eyes to objects farther away
- exercise eye muscles by rolling your eyes up and down, right and left
- adjust the brightness level on your computer screen

To reduce general VDT STRESS take regular breaks.

A day of intense computer work won't kill you, but ten years of repetitive work can create aggravating conditions, which can ruin your life. And what makes matters worse is the damage incurred could have been prevented. Taking 5 to 10 minute breaks every hour helps keep your blood flowing to your wrist, forearms, hands, eyes and the rest of your body. It also reduces the tension that builds up during prolonged computer sessions.

During these breaks it is also advisable to perform a few *exercises* such as:

- stretching arms above your head and

extending fingers (yawning)

- raising and lowering your shoulders and upper back

- placing hands behind your head and pulling shoulder blades toward each other; rotating your torso

Angles and measurement alone are find if you're a crash-test dummy, but real people need muscle support, exercise, and rest in order to stave off injury and computer related stress.

POWERPOINT

To reduce NECK pain, position monitor at the proper viewing angle.

Second only to desk and keyboard height in importance is your monitor and viewing angle. Since your posture always follows your eyes, it is essential that your monitor not be

placed too low or angled improperly. The distance from your eyes to the screen should be only slightly greater the distance you would maintain when reading printed

material (about two feet). Your viewing angle should be between 0 and 45 degrees (at eye level or a bit below) with a zero degree angle as optimal.

To further reduce the risk of neck pain:

- while working, keep your head erect, with the small neck vertebrae curved slightly forward
- routinely exercise your neck, shoulders, and arms during the day
- adjust your chair and the items in your work station to avoid prolonged or repetitious titling or craning of your head

NOTE If you often look at paper documents when working on a computer, to

CTS and low back pain now account for more lost days of work than any other single cause – almost 30 billion dollars a year in the U.S. alone.

**COMPUTER
MAGAZINE**

avoid neck strain, buy a copy stand or holder aligned so that it puts your work in the same plane and at the same height as the screen.

To reduce stress and regain a grounded or centered feeling, do a little meditation, yoga, or tai chi. Break the stress cycle. Sit or lie down and close your eyes. Tense successive parts of your body and then relax them, allowing tension to flow out. Breath in, hold the breath, then exhale. Daydream about a peaceful setting.

To reduce VDT radiation, buy a good monitor or switch to a LCD flat-screen panel. There has been a lot of concern about, and research into, the possibility that sitting one or two feet in

front of a video display terminal every day might be bad for ones' health. This is because monitors emit electromagnetic radiation (EMR) ranging from extremely low frequencies (ELF) such as standard 60 cycle household current, to very low frequencies (VLF) around several thousand cycles per second, to billions of cycles in the microwave range. Although there is no conclusive evidence that this radiation is harmful, many health experts feel that it is better to err on the side of caution.

In fact, The New York Occupational Safety and Health Committee urges women who are pregnant or seeking pregnancy to be transferred to non VDT work during this time, and if they must work with computers, to use a liquid-crystal display

Although there is no conclusive evidence that this radiation is harmful, many health experts feel that it is better to err on the side of caution.

terminal.

To protect yourself from this problem, buy a monitor that complies with the Swedish MPR II (SWEDA) standards, for these standards are the most stringent and include both VLF and ELF emissions. Monitors that meet MPR II also tend to have better electronics and are better built in general than monitors that don't.

NOTE One point worth noting is that every device that uses electricity, from stoves to VCRs, emits a low level of radiation.



COMPUTER CRIME BLUES

COMPUTER crime can range from vandalism or burglary, to serious damage inflicted by disgruntled employees who use their access to divert money, goods, or destroy records – with surprisingly little chance of being caught. To protect yourself from computer crime, know the real costs of producing computer records and take out coverage to compensate for those costs in case of a tragedy. As well, consider implementing the following preventative strategies:

To Avoid the Computer Crime Blues:

- Assign computer passwords and

To protect yourself from computer crime, know the real costs of producing computer records and take out coverage to compensate for those costs in case of a tragedy.

security codes to anyone who uses the computer to help prevent unauthorized users from stealing, modifying or destroying data.

- Change passwords frequently and on an irregular basis.
- Do not give too much control over company funds to any single employee without establishing checks and balances to monitor their work.
- Label all disks to identify their contents.
- Keep a meticulous computer log and review it occasionally to make sure employees not authorized to work in certain areas do not overstep their bounds.

- Keep diskettes, removable hard drives and other vital data in a safe locked compartment.
- Lock up equipment especially removable hard drives.
- Make back-up copies of all vital material and store them in fireproof, waterproof containers, preferably off your business premises.
- Shred or otherwise destroy sensitive material from computer printouts.
- Spot-check usage of computer by employees, to reveal possible abuses of the system.
- Use file encryption software to physically scramble critical data so no one else can see it or use it unless they

have the codes and passwords to descramble it.



Shred or otherwise destroy sensitive material from computer printouts.