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NUCLEAR REACTOR

A team of scientists in Chicago, USA, led by the famous physicist Enrich Fermi, first successfully managed to control nuclear fission. Fission, in physics, is the process of splitting of heavy atomic nuclei into two or more fragments. Under his direction, the ?so called? atomic pile or reactor was first established in 1942 to release nuclear energy in a controlled way.

Do you know what nuclear reactors are?

These are the key units in nuclear power stations. In other words, a nuclear reactor is a device for producing nuclear energy in a controlled manner where fission takes place. The nuclei of uranium are used as the main fuel to induce the split that releases a large amount of heat energy.

Types of Reactors:

Broadly, there are three types of reactors,

1. Thermal
2. Fast-Breeder
3. Fusion.

Thermal Reactors:

In thermal reactors slowing down or sending out neutrons in the core by using moderators such as carbon or graphite increases the efficiency of fission process. They surround the neutron-absorbing rods in the reactor, made out of boron to release heat energy.

Fast Breeding Reactors:

Fast breeding reactors have no moderators. In this case, neutrons bring about fission and a mixture of plutonium and uranium oxide is used as fuel. While in operation, uranium is converted into plutonium. The plutonium is extracted and reused later as fuel. It is called fast breeder because it produces more plutonium than it consumes. Fast breeder reactors can extract about 60 times the amount of energy from uranium that thermal reactors do.

Fusion Reactors:

Fusion reactors are not yet in commercial production. Instead of splitting heavy atom, they force very light atoms together. In all nuclear reactors, there is a coolant system in which ordinary water or gas like carbon

dioxide is used. The heat produced in the reactors turns the water or gas into steam that drives generators to produce electricity. The advantages of nuclear energy are that it produces a large amount of useful energy from a very small amount of fuel and doesn't produce gases contributing to the? Green house effect? The disadvantages are that the harmful radioactive nuclear wastes that it produced are difficult to store and there is always a risk of accident if something goes wrong.

S Anusha,
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BATTLE OF THE BLUE LASERS

Even as consumers grapple with the complexities of multiple incompatible recording formats for the current generation of DVDs, rival camps are finding different standards for tomorrow's high versions. Remember the early 1980s - and the battle between the two video recording formats, VHS and Beta-max? For something like four years, both formats slugged it out in the market place. Customers, who bought one type of player, discovered they couldn't play the other.

Sixteen years later:

The wise ones waited? Till 1988 - when VHS won out on sheer numbers, and Sony conceded that its Beta-max format was a flop. But before that slug fest ended, millions of consumers had wasted their money backing the wrong horse. Sixteen years later, it is sadly a replay of that sorry episode. The battle lines were drawn last week in what could well be a new edition of the? DVD Wars?, as the optical recording industry seems poised to launch into another needless ?winner takes all? Contest between two different standards for the next generation of high density-high resolution DVDs.

Incompatibility:

Plus records will not work with dash Media and vice versa. Fortunately the customer was not overly hassled by this lack of standardization because makers of player and recorders quickly adjusted their technology to accept both types of recording and playing media. Last week LG advertised its? Super multi DVD Re-writer? in India, claiming that

it was the world's only all-format DVD re-writer?, which can read and write all six prevalent formats.

When it comes to tomorrow's DVDs the conflict has become sharper. While all the current optional disk technologies (CD's as well as DVDs) use a read laser (of wavelength, 650 nanometers) to read and write data, the new format uses a blue laser (with a shorter wavelength: 405 nm). The shorter wavelength makes it possible to focus the laser on a smaller spot, and hence pack in the data much tighter. While today?s DVDs can hold about 4.7GB of data, the next generation of DVDs based on the blue laser can be expected to hold at least five times as much: 20 GB to 25 GB.

One group of manufactures, already gearing to offer these higher density DVDs starting in 2005, has jointly evolved a joint standard for what will be know as the Blu-Ray disk association. Even while using an identical Blue laser at 405nm, to achieve its higher densities, and the same size of the disk, 120mm ? as the current CDs and DVDs as well as Blu-Ray DVDs-another group of companies is offering a rival standard called HD-DVD.

The main promoters of this specification are all Japanese components. The body supporting the HD-DVD format is known as the DVD forum. The single layer HD-DVD can hold 15GB of data, while the single layer Blu-Ray DVD is promised with 27GB. The only important difference between the competing standards is in the coating. Blu-Ray disks have a recording layer that is 1.1mm thick with a coating of 0.1mm thickness.

Coating thickness:

Thus they are just as thick as today's 4.7GB DVDs where a 0.6mm data layer as another 0.6 thick coating on top of it. The HD-DVD has used the same data and coating thickness as the present generation DVD- that means 0.6 mm plus 0.6mm.

The Blu-Ray disk's data layers are closer to the surface because of the thin coating; so the laser can read smaller etchings enabling it to accommodate slightly more data. However the point the HD-DVD camp is touting, is that precisely because their product is identically in thickness of

data layer and coating, to today's DVDs, it will be cheaper to manufacture: Existing plants will not need much re-tooling.

The unsaid logic:

Indeed, the unsaid logic behind going for high density DVDs is the expected boom in film-based mass consumer applications. HD-DVD and Blu-Ray DVD disks will in all probability require different types of layers and recorders- at least to start with. Optional media manufacturers are hedging their bets and gearing to deliver either or both of this next generation DVDs.

Unfortunately, from the consumers? perspective, there is going to be a bit of confusion over the two formats and the lack of clarity on any one?. ?That?s because larger components and production houses are divided in their backing for any one standard. Also, unlike the case of DVD+R and DVD-R, where the same drive read both formats, it is not yet clear whether HD and Blu-Ray will be able to read on the same drive. Therefore, it does appear likely that we are headed for any other format war?.

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FUTURE OF THE PC
PART-2

Inside The Box

Time and technology wait for no one. Come take a seek into our magic crystal ball as we show you what the future holds for the pc in the coming year. No more fat beige boxes, no more clutter with wires and cords, ample desk space without bulky CRTs. Is this what lies ahead? Super powerful PCs, small and sexy form factors, thin and crisp looking TRTs, hands-free computing and wireless freedom is what we?ve always been promised. Now the time has come for these promises to deliver what we?ve always desired a richer computing experience.

Right now we are starting straight into the end of an era in computing. Technologies and products that we are used to are almost at the end of their life-cycles and emerging technologies that are on the bleeding edge will become more common place.

By the beginning of next year we?ll be ready to abandon the tried and tested interface for IDE drives. Also, most of the legacy ports that we see today at the back of our PC would be dead and buried. The PC, both internally and externally, is going to get a steroid shot in the arm that will put it firmly on the entertainment super highway. By the beginning of next year we will officially operate in multi-GHz territory and almost every device will transition to a faster and improved standard. But with this much-required facelift and makeover, the PC scene will become a little chaotic and the situation will only stabilize by the year to come.

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HAND-HELD COMPUTER ? Jawan?s True Friend

A Bangalore -based company has developed a tactical computer that may provide the armed forces a critical technical edge in the increasingly electronic battlefield scenario. Encore software ? known mainly so far as co-developer of the first Indian-made hand-held computer, the Simper ? has created a device integrating satellite-backed Global Positioning System (GPS) navigation with radio frequency communication, a Geographical Information System (GIS) and a wireless data network.

In effect, the color touch-screen display will show the soldier exactly where he is, help him navigate across unknown terrain and access a secure network for tactical command and control. The GIS map display can be integrated with military grid references, which will help to distinguish friend from foe. Secure and encrypted short messaging services will allow the soldier to interact with command centers ? and in the event of the device falling into enemy hands it will destroy itself.

Code named SATHI

Backed by heavy-duty lithium-ion batteries, which provide 24 hours of use before needing recharge, the computer code-named? SATHIB? Or friend? Acronym for Situational Awareness and Tactical Hand-held Information? Works off a special processor based on the industry standard ARM chip. Developed over two years by Encore, in close cooperation with the Army's Director General of Information Systems (DGIS), the device, delivered in prototype quantities earlier this year, is being evaluated in various battlefield scenarios of C3I? Command, Control, Communication and Intelligence? And indications are the army may soon place order for large quantities.

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ANIMATION —What's the Feature Scope.

Now, across the world there are number of training center concentrates over animation, graphics and multimedia course. This is because that the future scope of animation seems to be very brighter and many of the graduate students seem to be much interested in these fields.

India being a developing country in the IT field seems to have a bright feature in the animation industries. Some of the surveys say that, by 2005 India will have a business of $150crores in the animation area. Among all the countries in the world India seems to have large number of satellite channel and producing a large number of films every year. But in India no signal channel is there for producing cartoon films and broadcasting if. This is due to lack of technologies in animation field.

Animation films first came into existence at the year 1924. In India, from the 90's
Films division origination is the only center for producing animated films.

No proper existence of training center to take over animation technologies.

Not enough market resource for producing animation films.

Need for large amount of capital to produce the animation films.

Standard of animation films are not equal to foreign films.

Usage of cartoon logos to sell a product, that well attract through child to look at cartoon films.

Story for animation films has to the chosen clearly such that they attract its viewers.

Producing advertisements as an animation well motivate the companies to provide more investment in advertising the product using animation.

India is now being marching toward the height of software industry and more concentration in the animation industry will figure India as the software professional of the world. Whatever it is India seems to have a brighter feature in the animation feature field and at the same time students also have to choose a right training center. To know about the animation in India there are very few center to train people in the animation field. To get a good knowledge one should need right people to prefer right choice. Animation is nothing but putting your creativity into action. Psychologist also says that Indians are well over the creativity and the India will surely raise its hands in the field of graphics.

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HEART BEATS

The symptoms of dead PC are general symptoms applicable to a computer. In addition there are some more checkpoints, which are heartbeats of IBM PC & clones. They determine how to proceed with sequence successfully.

Keyboard Flash:

In the POST sequence KB clock is pulled low during initial house keeping operation. Sensing this the keyboard LED?s indicates the reset sequence is successful.

Memory refresh request:

Refreshing DRAM ICs is done at regular interval for this purpose, DRQ0 signal is generated once every 15 µs. If the pulse train is present it indicate the following:

Microprocessor is alive:

Initial startup is successful.

Reset sequence has been completed.

Microprocessor firmware has successful initialized the time 1(PIT)

The Timer 1 (PIT) is function properly.

The data bus, address bus & control bus are reasonably error free, otherwise programming the PIT would have failed.

DMA controller (channel 0) is working satisfactory.

Timer O Ticks:

The IBM Pc & clones maintain the time of day. The co-operation between timer 0 periodically updates the time & timer interrupts service routine. The timer 0 (PIT) raises a TICK periodically & the software uses these interrupt signal to update the time. Probing IRQ0 signal from PIT can monitor the generation of the TICK. If the IRQ0 pulse train occurring is perfect it confirm the following: -

- Microprocessor is alive, initial start-up is successful: reset sequence is completed.
- Microprocessor firmware has successfully initialized timer 0 (PIT).
- Timer 0 is functioning properly.
- ROM? & RAM (at least some portion) are intact.

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BIZ- BITS

(*) **Network Associates**, announced new versions of network instrumentation solutions from its snuffer technologies division-snuffer distributed 4.5 & the snuffer technologies S6040 version 1.5 solution. These new releases enhance the products unsurpassed network monitoring & troubleshooting capabilities to how provide enhanced visibility into applications.

(*) **Patni computers**, announced plans to set up its first development center in Bangalore. The proposed center, which will be located at the electronic city phase II, Will house 1100 people. Positioned for growth the company plans to increase its presence in the south, as currently its operations are concentrated in the western and the northern and regions.

(*) **InFinera**, provider of technology telecommunications system based on breakthrough photon integration technology announced its expansion plans in India to include software development & an advanced telecom lab. Infinera currently has a product development center in Bangalore, which performs a strategically critical role in overall product development.

(*) **Zenith InfoTech** announced the launch of MSP @ SAAZ, a unique software & security infrastructure for MSPS to build comprehensive remote management ability with very low capital investment & very quick time to market. MSP @ SAAZ is a complete solution to allow VARs, Sis, MSPs & outsourcers to remotely manage their remote client networks across the Internet or any public IP network.

(*) **Cannon India** announced the extension of its retail network in Bangalore with inauguration of the first cannon retail station in the city. The outlet, computer mega bazaar in Bangalore, will be a one-stop shop for customer to sample products from canon's digital imaging portfolio prior to making a purchase decision.

(*) **Infosys Technologies**, announced that it has been certified ISO 14001 compliant by Det Norske Verities (DNV). The certification has been received by its developed center in pune, chennai, Bangalore, Bhubaneshwar, Hydra bad, Mangalore, Modally & my sore, ISO ? 14001 certification is accredited third party verification that Infosy?s environmental initiatives meet international standards.

TOOLS ON THE INTERNET

The Internet consists of not one but multiple data systems that were developed independently. The most popular and important systems are:

E-mail   For exchanging of electronic mail message.

USENET newsgroup   For Posting and responding to public: Bulletin board messages.

File Transfer Protocol (FTP)   A system Storing and Retrieving data files On large computers systems.

Gopher   A method of searching for various text-based Internet resources.

Telnet   A way of connecting directly to the Computer systems on the Internet.

Internet relay chat (IRC)   A system for sending public private message To other users in ?real time?. (I.e.) Your Message appears on the recipient's screen as Soon as you type it.

Cu.seeme   A video conferencing system that allows Users to send and receive sound and Pictures simultaneously over the Internet.

Veronica   Is an acronym for very easy rodent Oriented Net-wide index to computer Archives. It is an Index of titles and Internet gopher items that is updated Once every fortnight and provides Keyword searches of the titles.

Archie   Is another Internet search program that helps Users to locate files and directories on Anonymous servers anywhere on the Internet.

Wais
Stands for wide area information system. It is another tool that helps you to locate text? Documents. The search is based on the Keyword provided.

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WINDOWS XP MADE MORE SECURE

Microsoft corporation India Pvt. ltd. has announced the availability in India of the Windows XP? Service Pack2 (SP2) with advanced security technologies. This is a free add-on to Windows xp, and delivers innovative? security features to help customers protect computers from hackers, viruses and other? security risk.

Windows XP sp2 enhancement include default enabling of windows firewall in the on-with-no-exceptions made which helps customers? guard against network-based attacks by unsolicited inbound traffic. It also extends protections to a computers boot time and shutdown process; and it provides stronger default protection against viruses spread through outlook express, windows messenger and internet explorer by isolating potentially unsafe attachments during the opening process.

The sp-2 includes code level changes in IE that helps protect against certain types of exploits. Avoid there is a reduction in buffer overview vulnerabilities, which helps to prevent certain types of malicious code from attacking and over wholing a computerizes memory.

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PC GRAPHICS REPORT

Introduction:

A picture is worth a thousand words... but not a thousand kilobytes. Graphics can add to or detract from your WebPages, depending on how they are used. Too many pictures, and your page loads very slowly. No pictures, and your page look like a boring text file.

Computer Graphics:

Research in computer graphics covers a broad range of topics including both photorealistic and non-photorealistic image synthesis, image-based modeling and rendering, applications of wavelets and other multiresolution methods, curve and surface design, range scanning, surface reconstruction and modeling, motion capture, motion editing, physics-based modeling, animation, interactive 3D user interfaces, image editing and color reproduction.

Animation:

The University of Washington Department of Computer Science & Engineering, together with the Schools of Art, Music, and Architecture, have launched a new interdisciplinary center of research and education, called the Animation Research Labs (ARL). The ARL is a place where computer scientists, animators, artists, musicians, architects, storywriters, and user-interface designers work together to create new algorithms, systems, and tools for computer animation, and use these advances to create innovative and experimental productions. ARL animation production includes animated shorts and interactive forms of animation such as web-based animation and games.

Explosive Effects:

While the game allows seamless transitions from on-foot action to driving missions behind the wheel of the cars, it's astride the Triumph Daytona 600 motorbike that players will experience an unparalleled tour de force of visual effects. ILM's Habit Zargapour and his crew developed several innovative effects to maximize the sensation of speed and the loss of control.

Zargapour, inspired by the Hollywood camera tricks developed by Rick Fichter to convey supersonic speeds in the film *The Right Stuff*, applied

the same effect to Bond's Triumph. At maximum velocity, the bike enters a kind of speed zone wherein the sound of the engine drowns out everything else as the surrounding air condenses to produce "speed contrails," an effect that enhances the sensation of breakneck speed.

The game also boasts dynamic effects for heat ripples, sparks, and small particles that streak through the air and enhance the speed contrails, all of which EA created using a custom particle-simulation engine. In addition, the game worlds are permeated with hundreds of environmental textures, created in Photoshop, that dictate the friction, collision, and other physical properties of the objects to which they're applied?for instance, objects mapped with a wood texture will crack and splinter like wood when struck violently. Each texture is also associated with an array of particle effects, so that driving on dirt will cast plumes of dust around the car, and motoring through puddles will cause the splashing and spraying of water.

COMPUTER GRAPHICS CARD UPGRADE GUIDE

Introduction:

It is a relatively easy procedure to install a new video card, the decision of when to upgrade, and what card to buy, is very complicated.
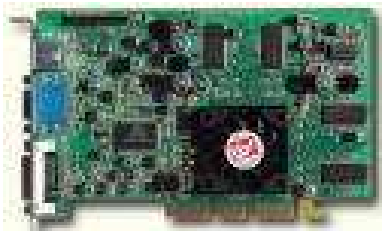
Deciding if you need a new Graphics Card:

Before we get started on the upgrade decision, let's talk a little about why you might want to upgrade your video card. There are probably only two basic reasons to upgrade a video card:

1. Your current card has poor performance.
2. You just "want" faster video performance.

     If you think your current video card is performing poorly, there are a couple of things you should do prior to upgrading your video card. The first thing your should do is give your computer a "tune-up". This involves things like running Defrag, Scandisk, virus checkers etc.

     Once you are certain that your computer is performing properly, and your computer is still experiencing slowdowns in video intensive programs, like games or graphic design programs, then the second thing you may need to do is upgrade your computer's main system memory. Inadequate amounts of system RAM will choke your computer's performance. That's why it is recommended that all newer computers must have at least 512 MB of system RAM.

     If your computer is more than 3 years old, it should told you save your money for a new computer and forego the expense of a video card upgrade. A new video card will not significantly increase the performance of systems this old. Once you have decided that you need a new video card, or you just want a newer video card to improve your system's performance, it's time to lay down some rules for upgrading.

Graphics Card General Upgrade Rules:

1. To buy the fastest video card available is extremely expensive and may not significantly improve your system's performance. The fastest computer graphics cards (NVidia GeForce FX 5950 Ultra and the ATI Radeon 9800 XT) sell in the $400-$500 range. It is unreasonable to think about upgrading to these cards unless you already have a very fast computer system. Remember that a slow system is an indication that you might need, or want, a new computer.

2. The vast majority of people should try to buy graphics cards with good performance at reasonable prices. My reasonable price is less than $200. In this price range you can find very good video cards that won't dig too deep into your computer budget.

3. Know the type of video card your system can use. Most computer systems built in the last 2 years have an AGP video port. However, many low cost computers do not have an AGP port and must be upgraded with a PCI video card. If you are uncertain as to the type of video card your system can use, visit your computer manufacturer's web site and research your computer's video capabilities.

4. Decide whether you want to install the card yourself or if you would rather have someone else install it for you. Many major computer chain stores will install new computer peripherals for free or for a small fee if you buy the item in their store.

5. Make sure you understand your right to return the video card if you are unsatisfied with it. Many online stores do not accept graphics card returns or will charge you a restocking fee. Needless to say, always use a credit card when shopping online.

Next we'll take a look at a few handy tables that list the features of the newer graphics cards from ATI and NVidia.

ATI and NV India Graphics Card Comparison Tables:

In the tables below, video card speed and other features are listed for newer ATI Radeon and NVidia GeForce FX video cards. Use the tables as a general guide to video card speed, price, and other card features.

ATI	RADEON 9600 XT	RADEON 9600 PRO	RADEON 9600	RADEON 9600 SE
Frame Buffer	128MB DDR	128MB DDR	128MB DDR	128MB DDR
Memory Interface	128-bit	128-bit	128-bit	64-bit
Rendering Pipelines	4	4	4	4

Pixel Fillrate (Gpixels/sec)	2.0	1.6	1.3	1.3
Engine Clock (MHz)	500	400	325	325
Memory Clock (MHz)	600	600	400	400
Estimated Price	$200	$165	$150	$130

Notes about ATI Radeon Graphics Cards: The ATI Radeon 9700 series of cards are no longer in production and have been replaced by the Radeon 9800 series cards which are not shown in the above table.

For those that are interested, the 9800 series of cards have 256-bit memory interfaces, 8 pixel-rendering pipelines, and have fill rates that range from 2.6 to 3.3 Gpixels/sec. For more information on ATI's Radeon 9800 series video cards visit ATI's Radeon 9800 comparison table.

NVIDIA	GeForce FX 5950 Ultra:	GeForce FX 5700 Ultra:	GeForce FX 5600 Ultra	GeForce FX 5200 Ultra
Frame Buffer	256MB DDR	128MB DDR2	128MB DDR	128MB DDR
Memory Interface	256-bit	128-bit	128-bit	128-bit
Rendering Pipelines	8	4	4	4
Pixel Fillrate (Gpixels/sec)	3.8	1.9	1.3	1.3
Engine Clock (MHz)	475	475	325	325
Memory Clock (MHz)	950	900	650	650
Estimated Price	$425	$200	$150	$120

Notes about NV India Graphics Cards: The NVidia GeForce 4 FX 5600 card is no longer in production and should not be purchased except by very savvy shoppers for prices considerably less than $160. Those that want better performance than the GeForce FX 5200 Ultra should upgrade to the 5700 Ultra.

General Comments on the Comparison Tables:

The purpose of the comparison tables is to provide a quick guide to the various ATI and NVidia chipset video cards. The faster cards are listed on the left of the tables and the slower cards appear on the right. Many factors influence a video card's speed, however to simplify the comparisons, we used fill rate speed.

Estimated street prices reflect what the author has recently seen and may or may not represent what you will have to pay for the video card. A shrewd shopper should be able to buy these cards for as much as 30%-40% less than the listed prices.

Specific Recommendations for Upgrading your Video Card:

Below you'll find our specific recommendations for upgrading video cards depending on the age of your video card or computer system. If after reading our recommendations you are still uncertain if you current card should be upgraded, then visit your graphics card manufacturer's web site and determine the fill rate of your current card and compare it those in the charts featured in the ATI and NVidia Graphics Card Comparison Tables on the previous page.

If your video card/computer system/ is 2 years old or older:

It is suggested to spend no more than $100 to upgrade your video card. Suggested upgrades would be the GeForce FX 5200 Ultra or the ATI Radeon 9600 SE.

If you already have an ATI Radeon 8500 or an NVidia GeForce 4 Ti card than you shouldn't upgrade.

If you currently have a video card/computer system less than 1.5 years old:

If you currently have an ATI Radeon 8500 or 9000 series card, or an NVidia GeForce 4 Ti series card with at least 64 MB of memory, your video card has adequate performance, and does not currently require upgrading.

If you are concerned that new performance games like Doom III will not run adequately with your current card, or if you just would like faster video performance, then be prepared to spend at least $170-$200 to upgrade your current card to an ATI Radeon 9600 XT or a NVidia GeForce 4 FX 5700 Ultra.

If your video card is less than 1 year old:

1. Do not pay a premium for 256 MB graphics cards. Only those purchasing ATI Radeon 9600 XT or a NVidia GeForce 4 FX 5700 Ultra or faster cards should consider paying additionamoney for a 256 MB card. Your money would be better spent on a faster video card with 128 MB of memory. The additional memory on a slower video card will not give you an appreciable boost in speed.

2. Understand the warranty. Most graphics card manufacturers have a 2 year or longer warranty on video cards. However, at least one brand of video cards, PNY's Verto, claims to have a life-time warranty, while in reality its warranty only covers the card as long as it is in production.

3. Beware of overpriced video cards. GOFER FX 5200 and 5600 cards are priced in the $175 range. These cards typically have 256 MB of video memory and are proclaimed as a great deal. Don't be fooled! The ATI Radeon 9600 XT and NVidia GeForce 4 FX 5700 Ultra with 128 MB of video memory can be found in the same price range and are much faster cards.

4. Make sure the graphics card has the correct video out connectors. If you have a flat panel monitor you will need a DVI out connector. If you have a regular CRT monitor you will need a VGA connector. Those wanting to hook their video card to TVs or VCRs need a SVGA connector.

5. Make sure your system can use the card before you buy it. Many new video cards require the use of a hard drive power connector to function properly. If you do not have a free hard drive connector or your connector is not long enough, buy a splitter/extension known as a hard drive "Y cable".

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VoIP

Peer to Peer:
Say Good Bye To Your Telephone:

There was a big noise about Voice-Over-Internet-Protocol (VoIP) technology a few years ago and its bright future. The entry of this low cost technology put the plain old telephone technology under threat.

But the government in many countries protected the Telco's interest by declaring use of VoIP as illegal. There were of the opinion that VoIP would wipe the Telco's out. Despite, all the legal hurdles, developers continued to develop VoIP technology with optimism that one day all the governments would eventually free VoIP of legal bounding.

In India, it did not make sense to ban VoIP, as the government did not have the time & resources to track illegal users of VoIP. Popular portals like yahoo & MSN were providing server-based VoIP service on their instant messaging utilities for quite sometime without ever getting caught.

Users from around the world could do an instant voice chat between PC-to? PC or even PC-to-Phone & vice versa using yahoo, MSN or the likes. But somehow, the server-based VoIP service could not match the efficiency & quality of voice offered by telephone services. Limited ability of bandwidth also becomes a hurdle for this technology, making it the last choice for serious users. While all these developments were happening in VoIP technology, Niklas Zennstrom- the co-founder of popular peer-to-peer (P2P) file transferring network KaZaA, introduced the concept of P2P VoIP with skype.

How skype works?

Skype uses P2P technology, which essentially means a decentralized network. There is no fixed service which routes the data packs from one user to other. A large number of users on the network could become the decentralized servers depending on the ability of resources. The efficiency of skype network increases with more numbers of skype users making free calls over the internet.

Skype calls require a PC microphone & speakers, or a PC environment & will set up with no server or workstation configuration. Skype works behind most firewalls & gateways without providing new security risks. Calls are encrypted for security. Most Internet-based communication like yahoo or MSN?s chat tools track users with a central directory which logs each username & IP number & keeps tracks of whether users are online or not. Central directories are extremely costly when the user base scales into the millions. By decentralizing this resource-hungry infrastructure, skype is able to focus all resources on developing cutting-edge functionality

In order to deliver high quality telephony with the lowest possible costs. P2P technology or Global Index(GI) technology was necessary for the development of scalable networks. The Global Index technology is a multi-tiered network where super nodes communicate in such a way that every node in the network has full knowledge of all available users & resources with minimal latency.

VoIP Trends:

VoIP is becoming an increasingly important part of global communications. It is already being used to carry an essential 6 % of international traffic on routes where competition is limited, says VoIP Market Research Birds Eye Network Services.

The next big potential market is corporate IP voice, which could account for atleast 15 % of over all business voice revenues by 2007. VoIP costs remain significantly below circuit voice costs, even with charges for local access imposed over VoIP calls. VoIP prices are dropping significantly, from 4.3 cents per minute in 2001 to an estimated 2.7 cents per minute in 2004, compared with circuit voice of 6.0 cents per minute to 4.4

cents per? Minute, respectively, says the report. With growing popularity of P2P VoIP, the cost sense can become a lot more affordable.

Ways To Communicate On VoIP:

There are 4 ways to communicate using VoIP

*PC-to-PC:

There are many companies offering free or very low cost software that you can use for this type VoIP. All you need is the software, a microphone, speakers, a sound card & an internet connection, preferably a broadband connection. Except for your normal monthly ISP fee, there is usually no change for computer-to-computer calls, no matter the distance.

*PC-to-Phone:

This method allows you to call any one having a phone from your computer using the software client, provided the application provider has made such provision with telephone company.

*Phone-to-PC:

A telephone user can initiate a call to a computer user in such service. The cost of call is normally cheaper than a traditional long-distance call.

*Phone to-Phone:

Telephone Company can tie up with VoIP application provides to & offer telephone service through IP anywhere in the world. The rates are much lower than the normal long-distance call.

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STAX SR-007 OMEGA 11/717 HEADPHONE

Here's something that will make that audio files really, really happy-a pair of headphones that not only looks classy in its grab of dull gold and leather, but also delivers high audio fidelity. The fully adjustable ear pads are crafted from high audio fidelity.

The fully adjustable ear pads are crafted?? from high-quality artificial leather, with the gold plated electrodes showing through the outer edge. These electrodes are constructed such that they provide an increased diaphragm vibration area. So that the diaphragm is the only component that vibrates, the sound? element itself is encased in? a thick insulated resin case firmly fixed to the rigid body.

J Mohamed wasim,
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ONE CONNECTION THAT LAUNCHED A MILLION

The Internet today is a large network of countless clients and servers connected to each other, through networking technologies that have changed the way we communicate. This month marks the thirty-fifth anniversary of the first communication between two computers over a network.

It may be recalled that the Internet began as an initiative of the US Department of Defense (DoD). The then American President, Dwight D. Eisenhower, felt the need for the US to develop a satellite network as a response to the Soviet Union?s successful launch for the Sputnik the first ever, artificial earth satellite. The Advanced Research Projects Agency (ARPA) was set up with the task of developing and promoting computer technologies. Foe some time, there was not much progress till the first paper on packet switching over networks by Leonard Kleinrock of MIT was released in 1961. Even though Leonard?s paper was largely on the theory of packet switching rather than its practical implementations, it was to be instrumental in the development of computer based communications.

In 1962, Dr JCR Licklider from MIT thought that if computers could be made to communicate with on another, it would be of great value and help if researchers shared information. His work on the concept of Galactic Networks talked of ?interconnected sets of computers?, and this impressed the US government enough to ask Licklider to head ARPA, ARPA was instrumental in bringing the ARPANET project into shape.

Many more papers and research activity in associated technologies helped Lawrence G. Roberts and Thomas Merrill in setting up a trial run on a computer network in 1965. This first networking of computers achieved by connecting in Massachusetts with another at California over a 2.4 kbps telephone line. Though the network was not based on the concept of packet switching, the experiment proved that computer networking was indeed possible.

In 1968, ARPA outsourced work related to the development of packet switches for ARPANET to a Massachusetts-based company called Bolt Beranek and Newman (BBN). Dr Robert Kahn of BBN was instrumental in the architectural design of the network. Meanwhile, Lawrence Roberts, a specialist in communications who joined the University of California at Los Angels (UCLA) from MIT, continued his work on topology on which ARPANET would be running. Leonard Kleinrock, on the other hand, built a team at UCLA for the Network Measurement Centre of the ARPANET project.

In 1969, Steve Crocker gave the Final touches to the first Request for Comment (RFC) document titled ?Host Software?, which stated that each of the hosts to develop their own interface software to connect to the ARPANET Interface Message Processors (IMP). The IMP was actually a Honeywell DDP 516 minicomputer.

Around Labour Day, September 2, 1969, the first IMP got connected to the Xerox Data Systems Sigma-7 computer set up at UCLSA. In October, the second IMP node was set up in Stanford Research Institute (SRI). With two nodes already set up, the next challenge was to make them communicate with each other.

It was on October 29, 1969 that Kleinrock and his team at UCLA decided to start off with an experiment of transferring messages from the node at UCLA to the node set up at SRI at Menlo Park, California where

Doug Engelbart and his team were working. The connectivity between the two hosts was realised with the help of a 50 kbps circuit. A stable connection was established, after many tries. The phrase chosen for the transmission of the first message ?login?. The time was 22:30 PST and the two teams on either side were connected with telephone call beforehand so that they could communicate easily.

Kleinrock typed the letter ?L? and asked if the other team could see it on the other screen. In a few seconds, the letter flashed at the SRI host and the acknowledgement was received. The next character typed was ?O? which also got displayed on the other terminal. But when ?G? was typed, the system crashed. To put it in Kleinrock words, ?then we typed the G, and the system crashed. Yet a revolution had begun.? This was the first time that ?host-to-host? communication was ever done on a network. The next attempt to send a message was successful and the experiment became a milestone in the history of computer networks. After a bit of troubleshooting, the network was more stable and attempts to send messages across nodes turned out to be smooth affair.

Within the next two months, two more nodes, one from the University of California, Santa Barbara (UCSB) and another from University of Utah, were added to the ARPANET. And by the end of the year, ARPANET had four nodes. Specific jobs were assigned to each node and the UCLA node was asked to look after network measurement. The SRI node was the NIC (Network Information Centre) and was responsible for network addresses. The UCSB ran on an IBM 360/75 and was famous for its work on Culler-Fried interactive mathematics, while the Digital PDP-10 running at the University of Utah was a graphics specialist.

In 1970, ARPANET began working on the Network Control Protocol (NCP) for host-to-host communications developed by Steve Crocker. And by 1971, the number of hosts connected to ARPANET increased to 15.

The electronic mail developed by Roberts at BBN became a value addition to the network when it came up in 1972. During the same year, Bob Kahn demonstrated the ARPANET with communication between 40 machines to an audience at the International Conference on Computer Communications. The same year, InterNetworking Working Group (INWG) was formed with Vinton Cerf as its chairman. In 1973, computers from England and Norway became the first to join the ARPANET. At the end of

the year, statistics showed that 75 per cent of all the traffic on ARPANET was pure electronic mail.

In 1974, BBN implement Telnet-the first public network. On January 1, 1983, ARPANET moved from NCP to the famous TCP/IP protocol. The transition was carefully planned for years and turned out to be a smooth one. During the year, ARPANET was spilt into two parts ? ARPANET and the MILNET. In 1985, the National Science Foundation announced the NSFnet that promoted Universities access to supercomputers, and Internet access to the higher education community. With good funding, many networks from within academic circles also got connected to each other.

The concept of Domain Name Server (DNS) was first introduced in 1984 and, by then, the number of hosts connected to the ARPANET crossed the 1000 mark. Soon, small commercial networks such as PSI, UUNET, ANS CO + RE also began to evolve, though they offered very limited facilities.

The Internet Society was formed in 1991 with Cerf as its head. It was also during this year that the ARPANET was decommissioned. The Internet Society granted permission MCI Mail to connect to its network for sending and receiving mails. The World Wide Web came up as a result of the work of Tim Berners-Lee. Soon, more and more networks from round the world joined the NSFnet backbone to form a global network.

So it was the first ?host-to-host? communication between UCLA and SRI that sparked a revolution in computer networking and payed the way of the wonderful Internet.

FEATURES OF A WIRELESS ACCESS POINT

The WAP Features are:

- Must be user friendly
- Must be plug-n-play
- Must support a WDS(Wireless Distribution System)
- Must support point-to-point, point-to-multipoint, client adapter and repeating functions
- Must be upgradeable with no extra investment through firmware

- Must be equipped with all the latest security updates and settings
- Must have an attractive warranty offer and after-sales support.
- Should be a widely used brand

In addition, WAPs should come with the POE(Power Over Ethernet) feature which makes it easy to install them at remote locations. They should also come with the options to connect an external antenna

A Prasath,
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ASSEMBLER

Assembler programs are written with short abbreviations called MNEMONICS, in other words instead of writing GOTO, the programmer writes JMP. These instructions are frequently abbreviated into total incomprehensibility. Of course, we all know that abbreviations are arbitrary. Anyone who has spent any time programming in Assembler knows that all computers can be programmed using an undocumented set of instructions.

Frequently when an error is made writing a program in Assembler a user can actually see the program executing the undocumented instructions. These instructions vary from machine from machine, but all computers have a certain set of them in common.

1. ARG: Agree to Run Garbage
2. BDM: Branch and Destroy Memory
3. CMN: Convert to Mayan Numerals
4. DDS: Damage Disk and Stop
5. EMR: Emit Microwave Radiation
6. ETO: Emulate Toaster Oven
7. FSE: Fake Serious Error
8. GSI: Garble Subsequent Instructions
9. GQS: Go Quarter Speed
10. HEM: Hide Evidence of Malfunction

11. IDD: Inhale Dust and Die

12. IKI: Ignore Keyboard Input

13. IMU: Irradiate and Mutate User

14. JPF: Jam Paper Feed

15. JUM: Jeer at Users Mistake

16. KFP: Kindle Fire in Printer

17. LNM: Launch Nuclear Missiles

18. MAW: Make Aggravating Whine

19. NNI: Neglect Next Instruction

20. OBU: Overheat and Burn if Unattended

21. PNG: Pass Noxious Gas

22. QWF: Quit Working Forever

23. QVC: Question Valid Command

24. RWD: Read Wrong Device

25. SCE: Simulate Correct Execution

26. SDJ: Send Data to Japan

27. TTC: Tangle Tape and Crash

28. UBC: Use Bad Chip

29. VDP: Violate Design Parameters

30. VMB: Verify and Make Bad

31. WAF: Warn After Fact

32. XID: eXchange Instruction with Data

33. YII: Yield to Irresistible Impulse

34. ZAM: Zero All Memory

35. PI : Punch Invalid

36. POPI: Punch Operator Immediately

37. RASC: Read And Shred Card

38. RPM: Read Programmers Mind

39. RSSC: Reduce Speed, Step Carefully (for improved accuracy)

40.RTAB: Rewind Tape and Break

41.RWDSK: ReWind DiSK

M Thangaraj,
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COMPUTER TERMS

486 - The average IQ needed to understand a PC.

State-of-the-art - Any computer you can't afford.

Obsolete - Any computer you own.

Microsecond - The time it takes for your state-of-the-art computer to become obsolete.

G3 - Apple's new Macs that make you say 'Gee, three times faster than the computer I bought for the same price a Microsecond ago.'

Syntax Error - Walking into a computer store and saying, 'Hi, I want to buy a computer and money is no object.'

Hard Drive - The sales technique employed by computer salesmen, specially. after a Syntax Error.

GUI - What your computer becomes after spilling your coffee on it. (pronounced 'gooey')

Keyboard - The standard way to generate computer errors.

Mouse - An advanced input device to make computer errors easier to generate.

Floppy - The state of your wallet after purchasing a computer.

Portable Computer - A device invented to force businessmen to work at home, on vacation, and on business trips.

Disk Crash - A typical computer response to any critical deadline.

Power User - Anyone who can format a disk from DOS.

System Update - A quick method of trashing ALL of your software.

A Prasath,
II B.C.A.

THE COMPUTER PRAYER

Our Morning Prayer . . .

Our Hard Drive

Which art internal

Volume C by name;

Thy code be clean,

Thy fonts be seen

On screen as they are on paper.

Give us this day our documents,

And lead us not into fragmentation

But deliver us our data.

For thine is the SCSI,

And the EISA, and the NuBus,

Forever and Ever,

Amen.

By,
Editors.

GENERAL CHARECTERISTICS OF ZIGBEE IN NETWORK

- Data rates of 250kbps & 20 kbps.

- Star topology (peer-to-peer networking)

- 255 devices per network

- CSMA-CA channel access

- Full handshake type protocol for transfer reliability

- Low power(battery life is Multi-month to nearly infinite)

- Dual PHY(2.4Ghz & 868/915 MHz)

- Extremely low duty-cycle(less than or percent)

- Range 10m nominal(1 to 100m based on settings).

<div align="right">

A JahirHussain,
II-B.C.A.

</div>

SHORTCUT KEYS FOR MICROSOFT WINDOWS 98

Close Applications	Alt + F4
Close client or child window	Ctrl + F4
Get Help	F1
Open Start Menu	Windows Key or Ctrl + Esc
Cycle Open Applications	Alt + Tab
Select menu bar	F10 or Alt
Move through menu items	Cursor Keys
Select menu item	Alt + Underlined letter
Open application control menu	Alt + Spacebar
Switch to previous document	Ctrl + F6
Delete an item to recycle bin	Del
Delete an item permanently	Shift + Del
Copy an item to clipboard	Ctrl + C
Paste from clipboard	Ctrl + V

Remove item to clipboard	Ctrl + X
Move to next field in dialog box	Tab
Drop-down list box	F4
Refresh	F5
Multiple select in a list box	Shift + arrow
Move one folder up	Backspace
Select Desktop item	First letter of item you want to select
Rename	F2
Find File or Folder	F3
View item properties	Alt + Enter
Move between items on Desktop	Arrow keys
Move between programs on title bar	Tab
Bypass AutoPlay CD	Press Shift while putting CD in tray
Maximize Window	Alt + Spacebar, X
Minimize Window	Alt + Spacebar, N
Restore Window	Alt + Spacebar, R
Close Window	Alt + Spacebar, C
Close Client Window	Ctrl + W or Alt + -, C
Maximize client window	Alt + -, X
Minimize client window	Alt + -, N
Restore client window	Alt + -, R
Select All	Ctrl + A
Undo last delete	Ctrl + Z
Bypass startup programs	Shift
Bypass startup system files	F5
Start in Safe mode	F5
Step thru Startup files	F8

RADIATION HAZARDS ON YOUR DESK

Did you know that you have your own radiation plant near you? Yes, if you are one of those who have a long-term relationship going with the PC, you are exposing yourself to a great deal of radiation. The so-called low frequencies, which originate from high voltages at home and electrical equipments criss-cross the human body every day. A computer user in his lifetime spends about 80,000 hours in front of the PC.

The PC causes both high and low frequency fields and intensifies the problem of electromagnetic radiation. The radiation emanating from the PC (from the power supply and the fan) is low in frequency. Law binds most hardware manufacturers, to ensure that the radiation waste remains in the casing and does not touch the user. But if the casing is not fixed well or has developed cracks due to constant opening and closing of the cabinet, the user is bombarded regularly with electromagnetic radiation.

Fortunately, low frequency fields do not enter deep into the human head, but cause surface effects like hair loss or itchy skin. The skin dries up and becomes red. Scientists claim that about 1 to 4 per cent of the people are especially electrosensistive. Working for long hours in front of a PC for such people could mean sleeping problems, headaches, and loss of appetite.

A small body of research suggests that pregnant women exposed to these fields may face an increased risk of spontaneous abortions (miscarriages). Other studies suggest a link between exposure to electromagnetic fields and leukemia and cancers. Most of the evidence for these radiation effects comes from epidemiological studies-surveys, hospital records studies, and so on-rather than clinical or laboratory work. Here the evidence is weaker, and possible causes are poorly understood.

Harmless within limits:

Research on this subject had given conflicting results up until now. Prof J?Bernhardt, Department Head for Diseases caused by Radiation at the National Institute for Anti-radiation in Germany says: ?There are no health risks if electromagnetic radiation is kept within limits.?

Under the guidance of Dr David Carpenter of the US National Advisory Council for Radiation Protection (NCRP), 11 renowned radiation protection experts collected data for nine years. This study is accepted as the

most comprehensive study conducted on electromagnetic radiation to-date. The researchers discovered that if radiation affects the brain over a long period of time, it could disturb the functioning of the pineal body and thereby the production of hormones that are responsible for regulating the biorhythms. The immune system would also be affected leading to molecular changes in the cells that could cause cancer.

The findings of the different research groups (though there is no single established result as such) are a cause for concern. These findings should serve as a guideline for manufacturers of monitors, who should take care to stick to the norms and keep electromagnetic radiation to the bare minimum.

To reduce electromagnetic radiation from your computer, arrange cables and wires from PC, mouse, keyboard, etc, as far away from the body as possible. Magnetic field strength diminishes rapidly the farther you move from the monitor. If you maintain a distance of 28 inches or more between the front of the monitor and your body (approximately arm?s length) you?ll keep your exposure at levels that are generally recognized as safe.

Note, though, that the magnetic fields at the sides, top, and back of the monitor are often stronger than those at the front. To be safe, it is recommended that you keep your body at least 48 inches from these. A distance of 12 inches from the bottom of the monitor is thought to be safe. Similarly, measure the distance from your body to the sides and backs of any monitors near you. You need a distance of at least 48 inches here.

Use devices with ?power save? modes. For example, set the blank screen saver option for your monitor after 5 to 10 minutes and the energy save mode after 30 minutes.

MACROMEDIA DREAMWEAVER 4 V/S. MICROSOFT FRONTPAGE 2000? - Part 2.

Most Web Designers who know both Dream weaver 4 and FrontPage 2000 will get confuse to create website on which software. It is better to say both because their use is differ in lot of factors. If you're a fledgling Web

designer and you're trying to build a simple Web site, you'll surely say that FrontPage 2000 is the best! , FrontPage will be easier and quicker to learn due to its Office-like menus, working system and site templates. It is easy to format a text or inserting images or tables.

FrontPage can also help you a lot in organizing your site's structure, using a tree-structure for all files and folders in your site. Also, if you have a Web page, which is linked from many other pages, and you rename that file, FrontPage will automatically update links in the other files, you don't need to change links by yourself anymore.

For those who are not familiar with FTP (File Transfer Protocol), FrontPage has a tool that uploads your site to your Web Presence Provider (WPP), without the need for an FTP client, and most WPP's already support this new feature. Dreamweaver 4 also has a built in FTP client; it is called the "site manager." With the site manager you can view, upload, or download both remote and local copies of your files. The site manager also allows you to rename your files and, after prompting, will rename all links in other files that point to the renamed file/s. In addition, the site manager can perform a site-wide search and replace on any chunk of text whether it be code or content.

If you are using Microsoft Internet Explorer, you can preview your document directly from FrontPage, without starting the browser, making your work easier and quicker to check. But, sometimes, speed and ease of use are not enough to satisfy you or your client that?s why Dreamweaver 4 exists. One of the most outstanding features of this new version is the possibility of changing between layers and tables.

We can add HTML codes in the layer. Some advantages are absolute positioning, that is, you can set the number of pixels where it will be placed. Dreamweaver 4 allows you to design your pages with layers and then it will automatically transform those layers into tables, without losing any of your document's structure.

Dreamweaver's compatibility with other Macromedia products, such as Flash 5 or Fireworks 4, is as perfect as FrontPage is with other Office programs, even if you don't have Flash 5, Dreamweaver 4 can create Flash Buttons or text, as it keeps your Web site's files in order for future uploading.

You can keep Dreamweaver 4 up-to-date with its Extensions from ASP or PHP server side scripting to new HTML tags. Cascading Style Sheets can be created inside the program. If you wanted to change one simple thing, you'd have to change dozens or even hundreds of pages one at a time. But now you can create a model for the whole Web site and change the design just once, Dreamweaver will take care of the rest!

DETAILED COMPARISON:
I've created a comparison table to further delineate a feature comparison between FrontPage 2000 and Dreamweaver 4.

Direct Comparison: (values range from 1 to 10 (highest))

	FrontPage 2000	**Dreamweaver**
Usability	9	4
Beginner tools	8	5
Advanced tools	3	9
Stability	5	7
Price	3	9
Working with:		
Text	8	6
Tables	6	8
Layers	0 (can't work with layers)	7
Normal images	7	8
Interactive images	7	8
Uploading	5	6
CSS	3	8
DHTML	7	6

In next article we can see the best Features & Pluses and minuses of MS FrontPage and Macromedia Dreamweaver.

To be continued.

L Manjula,
II B.C.A.

PRESS F1 FOR HELP

A friend was on duty in the main computer lab on a quiet afternoon when he noticed a blonde sitting in front of one of the workstations with her arms crossed across her chest, staring at the screen.

After about 15 minutes he noticed that she was still in the same position, only now she was impatiently tapping her foot.

Finally, he approached her and asked if she needed help. She snapped, "It's about time! I pressed the F1 button over twenty minutes ago!"

L Manjula,
S Anitha,
II B.C.A.

NORMAL SYSTEM BOOTING PROCEDURE:

i. POST will starts first.

ii. ROM sets up the IVT, with the addresses of ROM-BIOS routines.

iii. ROM-BIOS perform RAM test & stores the result in the memory location at 0x412-0x414.

iv. ROM startup checks and initializes the I/O devices & stores the result in the memory location at 0x410.

v. Then checks for the non-standard equipment, if found they momentarily transfer control to ROM extension routines.

vi. ROM extension routines will check & initialize the non-standard equipments & handed over the control to ROM startup routines.

vii. ROM startup routines reads the system sequences from CMOSRAM(if the system is AT & above versions)

viii. Usually this sequence is in A:,C: indicating that the system would first attempt to boot from A: drive, if it fails then it will go for C:

ix. Normal system boot sequence may be changed. But in the case of XT boot sequence cannot be changed.

x. ROM startup routine called bootstrap Loader loads the contents of side 0, track 0, sector 1 of the first drive in the system boot sequence .(boot sequence may in A: /C:).

The above is the normal system booting procedure. Now we see how the floppy will boot from its drive.

Booting From Floppy:

(1). By using the Bootstrap Loader, move the head of the disk to track 0 & reads the contents of the physical sector of the disk into memory & gives control to them. Side 0, track 0, sector 1 has the Boot parameters & Disk Boot Strap Program.

Note:

Boot parameters -> first 3 bytes have jump instruction for jump to Disk Bootstrap Program.

Disk Boot Strap Program (DBP) -> to load IO>SYS into memory, but it will have the exact location of IO.SYS because which depends the FAT. The parameters are different from one type of disk to another. Using the data in the Boot Parameters it calculates the exact location of IO.SYS where the actual **OS** into memory starts. As soon as IO.SYS is loaded the DBP wiped out from the memory.

(2). DBP examines that the file is found or not, if present means loads into memory and passes control to it.
If not it will sends the following message:
Non system disk. Insert system disk and press any key.

(3). IO.SYS contains two modules: **Disk BIOS & SYSINIT.** This SYSINIT loads the file MSDOS.SYS from disk into memory and passes control to it.

(4). MSDOS.SYS loads some internal data structures and work areas and returns the control to SYSINIT. SYSINIT loads a file CONFIG.SYS file; it contains variety of commands that enable the user to customize the workings.

(5). SYSINIT loads the **Resident Portion** of the COMMAND.COM into memory and discards from the memory after transfer the control to this portion.

(6). The **Resident Portion** of COMMAND.COM loads the **Transient Portion** of it into high end of the memory i.e. top of the base memory. (This high end of the base memory will differ from system to system. The **Resident Portion** will finds out the high end of the base memory by taking the size of memory which was stored in the RAM test (0x413-0x414).

(7). The **Transient Portion** of COMMANS.COM executes the AUTOEXEC.BAT.

(8). Finally, **Transient Portion** of COMMAND.COM displays the DOS Prompt.
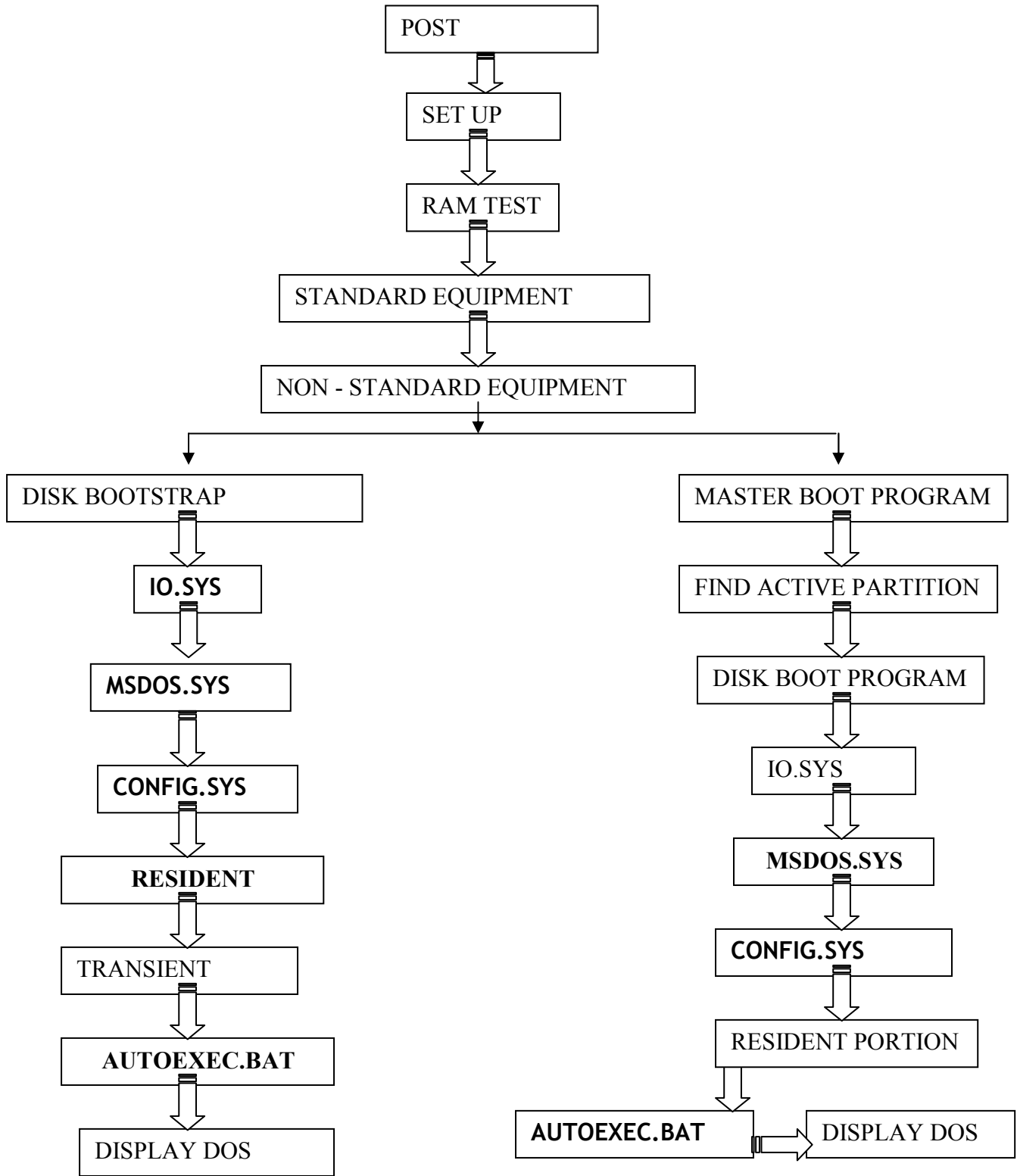
Booting From the Hard disk:

The above is the normal system booting procedure. Now we see how the hard disk will boot from its drive.

(1). It has various partitions with the OS. The partition table has the address of MBR i.e. in the side 0, sector 1, track 1.The partition?? is 64 bytes long. ROM Bootstrap loader lodes the partition table and the MBR into memory and pass the control to it.
(2). The MBR finds out the boot sector and loads it.
(3). The remaining will be as like the floppy booting.

ARCHITECTURE OF BOOTING THE OS

POST

↓

SET UP

↓

RAM TEST

↓

STANDARD EQUIPMENT

↓

NON - STANDARD EQUIPMENT

DISK BOOTSTRAP	MASTER BOOT PROGRAM
↓	↓
IO.SYS	FIND ACTIVE PARTITION
↓	↓
MSDOS.SYS	DISK BOOT PROGRAM
↓	↓
CONFIG.SYS	IO.SYS
↓	↓
RESIDENT	**MSDOS.SYS**
↓	↓
TRANSIENT	**CONFIG.SYS**
↓	↓
AUTOEXEC.BAT	RESIDENT PORTION
↓	↓
DISPLAY DOS	**AUTOEXEC.BAT** → DISPLAY DOS

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