
# When Good Discs Go Bad

Burning CDs and DVDs is the easy part. Knowing your data will be there when you go back to it days, months, or even years later—well, that's a bit harder. Not all discs are created equal, as Fred Byers, information technology specialist at the National Institute of Standards and Technology, can attest. Byers is part of a team heading up an independent study of DVD media quality. Based on the first wave of testing results, the situation is murky at best. "We've found the quality varies, depending upon the type of dye used to make the write-once discs and [on the] the manufacturer," reports Byers. Even discs from the same manufacturer, with the same brand, can test differently, Byers adds. "But there was more of a significant difference when you compared discs between manufacturers," he explains.

## DVD Media Quality: The First Tests

In the first phase of testing, completed late last year, NIST focused on the most popular media: write-once, single-layer DVD-R and +R discs. Rewritable discs will be tested in the second phase, slated to start this fall. An interesting footnote to the study's methodology: NIST uses media purchased off store shelves and via Web sites; and while researchers are tracking the media by brand, they are not tracking the specific factory source of the media tested. For example, a given manufacturer's discs could originate from different production lines, which could account for a variation in disc quality by the same manufacturer.

Hearing that there's a difference between the generic, unbranded 100-spindle value-pack of media purchased online and the branded offerings you might find on a Best Buy store shelf is not surprising. After all, as David Bunzel,

... continued overleaf ...

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An IEEE Student Branch Presentation

Extra Bits

- A software release is said to be **raped** if it has been damaged beyond repair during the ripping process.
- Finally the days of Electron microscopes seem to be at an end. The **Field -- Ion Microscope** is zooming to individual atoms capturing pictures more crisp and clear.
- Ever wondered?

  When you're in a vehicle going the speed of light, what will happen when you turn on the headlights?

... continued from first page ...

president of the Optical Storage Technology Association, points out: "With a generic product, there's no consumer recourse. It's buyer beware."

If a disc isn't properly manufactured, the consequences can be dire. At best, the disc will fail immediately during the burn process; this is a best-case scenario because then you know from the start that the disc is faulty. At worst, you may get an abundance of errors during the burn process. These errors won't interrupt the burning process, and since write-once and rewritable DVD media have built-in error correction to compensate for scratches and other abnormalities on the disc, any errors will be virtually invisible to you. Nor will these errors affect the playback of the disc—initially.

Down the road, however, such invisible-to-the-eye errors can reduce the effectiveness of a DVD's built-in error correction so that if some other issue develops on your disc, such as a scratch, you could end up with an unreadable disc when you go back to it months or years later. But what would cause such a wide disparity in media quality between branded discs from the same vendor? "We don't know why it's different—it could be a different dye, it could be a different manufacturing process," notes Byers. Nonetheless, at the same time, competitive forces are driving manufacturers to find ways to economize on production costs. And cost-cutting measures can result in discs that don't perform as well as those generated during an earlier production run.

### The Disc Rot Myth

Media obsolescence isn't the only thing people fear after committing a personal library's worth of data to CDs and DVDs. But some worries—namely, fear of disc rot—are not fully warranted. Like a bad seed, the myth of disc rot self-perpetuates, cropping up every now and again as a sudden and mortal threat to your copious collection of prerecorded and self-created discs. The myth was once rooted in fact. It is true that back in the 1980s, with the first generation of prerecorded audio CDs, the edges of the discs were not always sealed properly, which allowed moisture to get into the disc. Replicated, prerecorded discs use aluminum for the reflective layer; when moisture came into contact with the aluminum on prerecorded discs, explains Byers, it in turn oxidized, causing the aluminum to become dull. "That's where the term 'rot' started," he says.

But that problem was quickly identified and overcome. The manufacturers learned what was going on, so now the edges of discs are sealed with a lacquer. Though the problem is typically associated with CDs, Byers notes that the potential for interaction with oxygen is the same with both CD-ROMs and DVD-ROMs. The so-called rot issue does not apply to recordable discs. For one thing, recordable optical media do not use aluminum; instead, they use silver, and very rarely gold, or a silver-gold alloy, for the reflective layer. "If the silver comes into contact with pollution or high humidity, it could affect the silver, but the likelihood of that is less than the likelihood of moisture coming into contact with the aluminum on prerecorded discs," says Byers.

### Enduring Myth

The term rot has persisted, however inaccurately, as a means of identifying a plethora of problems with optical discs. "If you get a faulty disc and see a problem that you can visually see, you call it rot, but it could be the way the disc was manufactured," says Byers. "Or if it was subjected to extreme moisture and that moisture came into contact with the aluminum, it could be that the reflectivity has changed. It's not really rot, it's oxidation of aluminum."

Beyond the realm of defective discs, improper handling can cause otherwise good discs to go bad. Since there's little protection between the label side of a CD and the data layer itself, "scratches on the label side can scratch the metal, and that will ruin the data," says Byers. It's not an issue for DVDs, though, since the dye layer is sandwiched between two plastic layers. Byers observed a similar problem occurring with press-on labels: "For long-term storage, we recommend not using press-on labels on CDs; when these start to dry up, they can peel the metal right up, damaging data."



Vinod Dham

CEO Silico Spice
Father of Intel Chip

Vinod Dham and the Pentium chip are synonymous with each other. It is so because Vinod Dham is the creator of the Pentium chip, which runs almost 90% of the computers today. He is suitably known as the father of the Pentium processor. Vinod was born in Pune, India in 1950. He received his initial education at Pune. Vinod earned his bachelor's degree from the Delhi College of Engineering, in Electrical Engineering in the year 1971. After completing his engineering, Vinod worked briefly in Delhi for Continental Devices- a semiconductor company. To pursue advance studies, Vinod went to the US in the year 1975. There, he joined the University of Cincinnati to pursue a Masters in Electrical Engineering. After his masters, in 1977, Vinod joined the National Cash Register (NCR) at Dayton, Ohio. There, he worked as a team member of the NCR's memory design group. While working at the NCR, Vinod Dahm received many patents. It was during one of the presentations in Monterrey, California that Intel offered Vinod to work with it.

From the hills near Rawalpindi to the Valley, the Dhams have gone through a fascinating journey. Coming to India during Partition as refugees, Dham's father joined the army as a civilian. Dham was born in Pune (across the railway station in Cowasji Hospital, says Dham) as his father was posted there. His early education was in Pune and Dham considers himself a Puneite, speaking fluent Marathi.

"*The best thing that happened to me was joining Intel and the best thing that happened to me was leaving Intel*," says Dham in one of his crisp sound bytes that make him so popular with journalists.

"*Living in the Silicon Valley, if you do not do a startup, then something is wrong with you*," says , Vinod Dham, when asked why he left a high-profile career in Intel after having successfully completed the Pentium project. "In 1995, I was 45 and facing a midlife crisis. I could have ridden a Harley Davidson, or gone bungee jumping or done a startup. Since I am a pretty conservative guy I chose the last," he laughs

He joined Nexgen, which was a startup that was acquired by AMD later. After helping AMD seriously challenge Intel with its vastly popular K6, Dham left AMD and joined Silicon Spice, a startup, as chairman, president and CEO though others had founded it. "It has been the best part of my life, building teams, products, raising money, talking to customers and finally selling it to Broadcom, a company which might become tomorrow's Cisco," he says. Silicon Spice has been acquired by Broadcom for $1.2 billion and everybody, including some office staff, have become millionaires.

Photographs and certificates from Andy Grove and Craig Barret about 386, 486 and Pentium adorn Dham's office walls as well as one from Bill Clinton for being the presidential advisor on minorities. Noticeably his latest chip, Calisto - its very first copy that passed all tests - lies at the feet of a small Ganapati statue on his table.

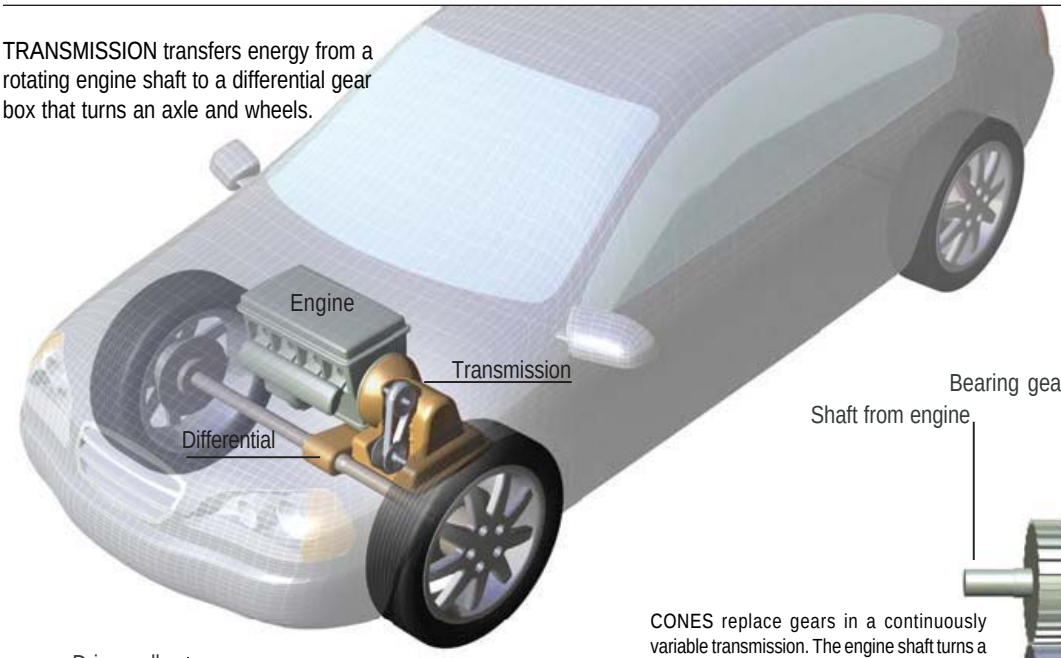
Dham's favourite hobby is carpentry and his favourite TV show is Home Improvement. 'Tool Man' Tim Taylor's Do It Yourself does not quite work. This hi-tech craftsman's chips sure do.

# No More Gears

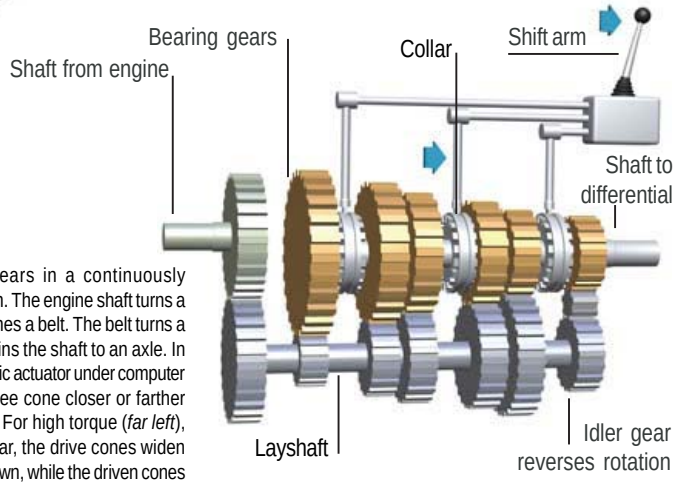
CONTINUOUSLY VARIABLE TRANSMISSION

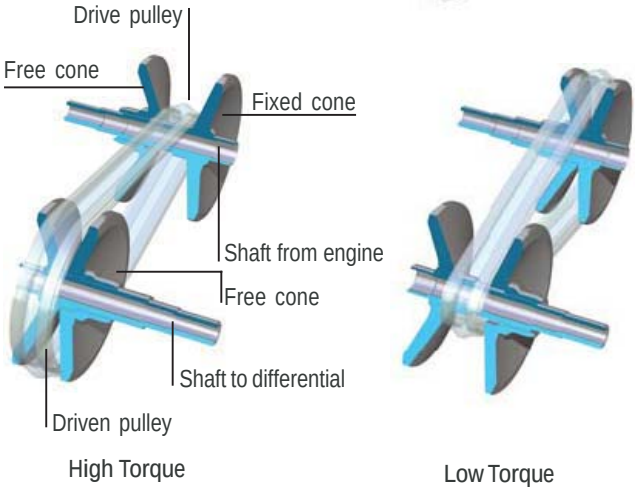
A car's engine can rev wildly, but the vehicle will not move until the driver puts it in gear. For a century, a box of gears called the transmission has transferred engine power to the wheels. In manual designs, the driver shifts the gears to deliver different torques. In automatics, hydraulics or servomotors do the work. A radically different scheme known as Continuously Variable Transmission (CVT) has lurked in the background for 50 years, however, and has recently made inroads in small and midsize cars and in hybrid vehicles. Several CVT configurations exist, all of which replace gears entirely. The dominant scheme utilizes two pairs of movable cones, under computer control, connected by a tough steel belt. Instead of a fixed number of gear ratios provided by a typical five speed manual or four-speed automatic, CVTs offer continuous change in the degree of torque transfer—the equivalent of an infinite number of gear ratios. As the car accelerates, the driver feels no lurch because no step occurs from one ratio to the next. The variable transfer speed also allows the engine to operate near its optimum output range over a variety of wheel speeds, improving fuel efficiency. The gear stick has positions for park, reverse, neutral and drive. That's it. CVTs have caught on in part because of improvements in the belt and cone materials. "It has required a lot of know-how," says Hendrik De Leeuw, CVT product manager at supplier Bosch in Farmington Hills, Mich. "The efficiency gains occur primarily at lower vehicle speeds and during acceleration and deceleration," notes John German, energy expert at American Honda Motor in Ann Arbor. When cruising at higher speeds, he observes, "there is a fair amount of friction loss in the belt itself." Some skeptics also claim belts struggle to accelerate big cars quickly. But De Leeuw says CVTs will continue to move into larger cars; Nissan is using them in its Murano sports wagon. Still, the hottest market is in Asia, where most people drive small cars in traffic-congested areas. Other automakers remain dubious, at least for the U.S. market. In 2004 General Motors ended its brief use of CVTs in the Saturn Vue in favor of new, six-speed automatic transmissions that offer smaller gear steps and energy losses, states spokesman Nick Richards.

**TRANSMISSION** transfers energy from a rotating engine shaft to a differential gear box that turns an axle and wheels.

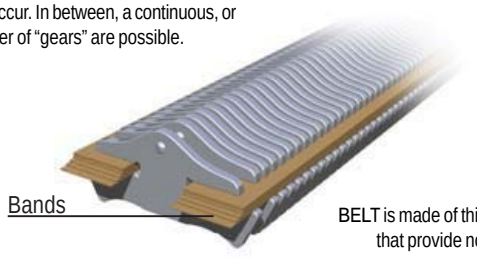



**GEARS** in the lay shaft of a manual transmission (*five-speed shown below*) are turned by the engine. They subsequently move bearing gears that spin freely. Pushing the shift arm into "first" inserts a collar on the differential shaft into the first bearing gear, and they rotate together. Pulling the arm back places the collar into the second gear. Separate shift arms engage third and fourth gear and fi fth gear and reverse. Lower gears create higher torque at slower wheel speed.




**CONES** replace gears in a continuously variable transmission. The engine shaft turns a drive pulley that pushes a belt. The belt turns a driven pulley that spins the shaft to an axle. In each pulley, a hydraulic actuator under computer control moves the free cone closer or farther from the fixed cone. For high torque (*far left*), equivalent to low gear, the drive cones widen and the belt slides down, while the driven cones tighten and the belt slides up. For low torque and high speed (*near left*), the opposite movements occur. In between, a continuous, or infinite, number of "gears" are possible.




**BELT** is made of thin steel bands and cross members that provide not only durability but also flexibility.

# Processor Systems - Procsys

## Profile

ProcSys was established in 1973. Significant industry expert in Wireless, Telecom, Computing, Peripherals, Networking, Broadband, Audio/Video & Storage. Highspeed, multi-layered board design, FPGA /PLD and SoC design, Embedded Software, firmware, system software and drivers, Mechanical Design.

ProcSys is an ISO 9001 certified, technology and engineering services company based out of Bangalore, India. ProcSys was founded in 1973 and is recognized as EHTP (Electronics Hardware Technology Park) and STPI (Software Technology Parks of India). ProcSys serves global customer base spread across the USA, Japan and the Asia Pacific.

In general, we expect our prospective ProcSysians to possess expertise in any of the following skills:

- System design: Telecom, Broadband, storage, Aerospace and consumer
- Board design: High-speed and high-density
- FPGA: Verilog/VHDL, RTL and verification
- Embedded software design: VxWorks, WinCE and Embedded Linux
- Embedded software design: Micro-code, BSPs, device drivers and protocol stacks
- Embedded software design: SNMP and applications
- Network management: EMS, DM and NMS
- Application software: Configuration, provisioning and automation
- Mechanical design and product styling.

ProcSys has formed active alliances with some of the best players in the industry in order to maximize the mutual gains.

- Xilinx Alliance Program Member
- Altera Design Services Partner
- AMCC PowerPC Partner

## Selection Procedure

Eventhough the company is electronics based, the interview and test is mainly focused on C, along with Electronics.
The placements tests are common for all branches and the bifurcation for Hardware and Software side are done by the panel.

The test comprises of:

1. Written test
2. Technical Interview
3. HR interview

This is the most common scenario. It can change in accordane with the place of visit and requirement.

## From An Achiever

Hai,

It has been a great learning experience at procsys for me. I have been able to get familiar with many new technologies and platforms. The working environment here is very friendly albeit a proper office you would expect in a software company. The seniors here are very friendly and I have never felt out of place here. I am enjoying my work here even though it can get hectic at times.

-- Ms. Minimol Thomas
Alumni
CSE 2006 Batch

## Sample Questions

1.
```
main() {
        char s[ ]="man";  int i;
        for(i=0;s[ i ];i++)
                printf("\n%c%c%c%c",s[ i ],*(s+i),*(i+s),i[s]); }
```
Answer: mmmm aaaa nnnn

2.
```
main() {
        float me = 1.1;  double you = 1.1;
        if(me==you)
                printf("I love U");
        else
                printf("I hate U"); }
```
Answer: I hate U

3.
```
main() {
        static int var = 5;
        printf("%d ",var—);
        if(var)
                main();  }
```
Answer: 5 4 3 2 1

4.
```
main() {
        int a= 0;int b = 20;char x =1;char y =10;
        if(a,b,x,y)
                printf("hello");    }
```
Answer: hello

## Interview Questions

1. Give your Family backgroud.
2. Do you have any other offer in hand ?
3. Suppose there are a few systems all connected through some technique and are independent of each other. Each system identifies the other(s) by it's name but actually the name has to be mapped with some logical number. Devise a mechanism to implement it.
4. Suppose there is round robin scheduling in some multi-processing environment. There are only three processes in the system. First one is to be alloted 25 % of the total CPU time, second one is to be given 50 % of CPU time and third one is to be given rest of the CPU time in that order. Their is no other facility available at OS level. How will you accomplish it ?
5. What is a B-tree ?
6. What are signals ?
7. What are interrupts ?
8. What is a tree ? Design a data-structure for tree.

## National Programme On Technology Enhanced Learning

Funded By the Ministry of Human Resource Development (MHRD)
Government of India

IITs have decided to reach out to the budding professionals through out the length and breadth of India by means of a programme which they recently initiated called National Programme on Technology Enhanced Learning. They intend to offer course materials online.

It is for the first time the IITs have taken up an initiative of starting online teaching and that too targeting the engineering stream where it is very difficult to find appropriate study material covering every topic in which the course syllabus lists. Professors from all the IITs have provided course materials for each chapter of each subject. Every chapter has been described with diagrams and charts. What you get is an exhaustive study material prepared by some of the best in the field of teaching.

To be on the receiving end:-

Everything is just a click way. One has to register at the link provided below and can access the course material free of cost.

Please spread this message to everyone, as many can benefit from this program taken up by the Government of India and IIT.

Currently the project is being conducted as a trial to understand the various aspects of the programme. Hence I request everyone to register at the link given without any delay.

1 Type the following address on your browser

*http://www.nptel.iitm.ac.in*

2 Click on *Courses* link

3 Sign up as a NEW USER -- furnish the required information

4 Congratulations! You are now ready to access any course material.

NPTEL covers a lot of ground. They are trying to become the ultimate destination for every students of India. The following are the Courses are offered under the NPTEL Programme:

- Core Sciences and Engineering
- Civil Engineering
- Computer Science and Engineering
- Electrical Engineering
- Electronics and Communication Engineering

Mr. Renju Thomas Phillip
$S_7$ Polymer

## Coolest Gadgets

Motorola is taking thin to another level with the new Motorola Q (price: www.motorola.com) smartphone, which is just 11.5mm thick. The Q uses CDMA technology, which means it will likely be sold by Sprint Nextel or Verizon Wireless in the U.S. This smartphone runs Windows Mobile 5.0 and has a full QWERTY keyboard, along with a 1.3MP camera and a miniSD expansion slot.


The BlackBerry PEARL is slimmer than a closed RAZR, this is the first Berry with a camera and music/video players. The Pearl looks elegantblack with chrome accentsand slips easily into any pocket.Of course, something had to go to make the Pearl this tiny, and thats the keypad. The device comes with RIMs hybrid SureType keyboard, which puts two letters on each key and relies on predictive text to guess what you meant to type. And the keys are really, really small.

PROS: The first Black- Berry with a camera as well as music and video players. Sharp screen. Very pretty.

CONS: Tiny keys. Music and video players lack navigation and good PC sync options.

A quad-band world phone, the Pearl has strong reception and sharp, clear audio. The speakerphone is loud enough for indoor and in-car use. The new 1.3-megapixel camera, an MP3/AAC music player, and an MPEG-4 video player are all of startlingly high quality. But RIMs desktop suite handles multimedia rather clumsily. For example, theres no easy way to reformat songs, videos, or pictures for optimal playback on the phone. The BlackBerrys traditional push e-mail features remain very strong, with the ability to merge POP3/IMAP, Yahoo! Mail, and corporate accounts. Web browsing also works well on the phones small, bright 240-by-260 screen. As long as you can cope with the small hybrid keyboard, the Pearl is a classier, more powerful alternative to the Sidekick and to other BlackBerry models.

Give it a Thought 10111011010101001010101011011101010

"If you go through life convinced that your way is always best, all the new ideas in the world will pass you by."

-- Akio Morita
Founder of Sony

# YAHOO!

## Charting The Growth Of An Internet Colossus

Do you Yahoo!? If you use the Internet, the answer to that ad slogan is most likely "yes." Yahoo! is consistently ranked as the No. 1 English language site at Alexa.com and also consistently ranks as the No. 1 Internet brand according to Nielson Net- Ratings reports. Over the past 12 years, the site has grown from the grassroots dream of a few tech geeks into an international Internet giant that measures its profits in billions of dollars, constantly evolving in the face of competitors and an ever-expanding Internet. Everyone Yahoo!'s, and here's why.

### Salad Days

Yahoo! has been around since January 1994, which doesn't seem all that impressive until you put it in perspective. Back then, most people were still using MS-DOS and Windows 3.1. The Internet was a luxury that few people outside of the military or educational institutions had access to, but it was still growing at a tremendous rate. This was mainly due to the release of Mosaic 1.0 in April 1993, which was the first real Web browser. According to statistics compiled by Matthew Gray of the Massachusetts Institute of Technology, there were only about 130 Web sites in June of 1993, with only 1.5% of those sites belonging to .com domains. By June 1994 that number had grown to approximately 2,738 Web sites (13.5% were .com sites) and by the end of 1994 there were more than 10,000 Web sites (with .coms accounting for about a third of that figure).

Before Yahoo! went live, finding information on the Internet was a crapshoot. There was Archie (named by removing the "v" from "archive"), but that only indexed FTP (File Transfer Protocol) sites, which were very popular at the time because they offered the easiest way to share files across the Internet. Most university, library, company, and research computers used a technology called Gopher to organize the contents of their servers into hierarchical lists, but there was no way to search all of the servers at once. Home users were still dialing into BBS (Bulletin Board System) message boards, which let users chat send email, and share files locally, but again there was no way to search every BBS in the nation.

Even when Archie, Gopher, and BBS computers were eventually connected to the Internet, there was no good way to find out about them. It seems ridiculous to today's Internet users, but imagine loading up your Web browser and suddenly discovering that every search engine is gone. The only way to connect to another computer on the Internet in that case is to type its exact domain name into your Web browser, but how do you find out the domain names for the Web sites you want to visit?

That's the situation Jerry Yang and David Filo—two electrical engineering doctorate candidates at Stanford— faced in 1994. To keep track of their favorite sites, they created a list that they maintained for their personal use. Eventually the list got so long that the two decided to break it down into various categories,

David Filo
Co Founder

Jerry Yang
Co Founder

Terry Semel
CEO

Farzad Nazem
CTO

and then they made the fateful move of turning their catalog of favorites into a Web site called Jerry and David's Guide to the World Wide Web. Back then, the Internet was used by a relatively small number of people, and any site as useful as Jerry and David's Guide to the World Wide Web was bookmarked by pretty much everybody. As the site grew in size and popularity (thanks to word-of-mouth advertising), Yang and Filo knew they were on to something and decided to take their idea to the next level. They gave it a new name—Yahoo!—which the company claims is an acronym for Yet Another Hierarchical Officious Oracle, although Yang and Filo have denied that claim at various times over the years and may have just liked the way the word sounded. They also spurned buyout offers from a number of companies that would have made them instant millionaires and instead secured their own venture capital so they could continue to helm the company.

By March 1995 Yahoo! was incorporated. Just over a year later on April 12, 1996, the company successfully went public. Yang and Filo still haven't completed their doctorates, but by way of compensation they are now billionaires who still work at the company they created: Yang serves as Co-Founder, Chief Yahoo!, and Director, and Filo serves as Co-founder and Chief Yahoo!. Amazingly, while most of Yahoo!'s underlying technology has changed since 1994, one thing remains the same: A team of editors still maintains the Yahoo! directory, rather than a program. If you want to submit a site for inclusion, someone at Yahoo! still needs to visit it and make the call.

### Yahoo! Today

Much has happened since Yang and Filo decided to keep a list of their favorite Web sites. Today Yahoo! is an enormous company with a market cap of more than $50 billion. In an average month, the site delivers about 73 billion Web pages to 345 million worldwide users, and it has evolved from a simple directory of sites into a full-fledged Web portal designed as a one-stop-shop to suit the needs of nearly any visitor.

The company's goal now is to "provide users with the information they want, when they want it, how they want it, and on any device," and it's accomplishing that in a variety of ways. The company's search engine has received major improvements over the years to sift through the billions of Web pages. Yahoo! also provides reams of its own content, much of it licensed from respected publications such as *Consumer Reports, Sports Illustrated, Business Week Online, Reuters, the Associated Press*, and many others.

There's a lot to like about Yahoo!, but perhaps the main reason for the site's popularity is the staggering number of services it offers to users. At last count, anyone with a Yahoo! account can access nearly 120 services, and that number is growing all of the time as Yahoo! snaps up tech companies and continues to research its own technologies.

## What is dark matter, and how is it affecting the universe?

Dark matter is a proposed solution to an as yet unresolved phenomenon—the mismatch between measurements of the gravitational mass and the luminous mass (the mass contributed by light-emitting matter) of galaxies and clusters, gravitationally bound groups of galaxies. This disparity suggests the presence of matter in the universe that does not efficiently produce light—hence, it is invisible, or "dark." We can determine the gravitational mass of an object, such as a star, by measuring the velocity and radius of the orbits of its satellites.

To find the luminous mass of a galaxy, we use the known relations between stellar mass, color and luminosity to translate the observed colors and intensity of light from the galaxy into the total mass of its constituent stars. This mass-to-light comparison indicates that the gravitational mass of galaxies and clusters far exceeds the luminous mass. Thus, more matter exists than we can see. Other indicators, including recent NASA measurements of the cosmic microwave background radiation (which provides a glimpse of the universe at an early age), give us further information: dark matter outweighs normal matter by a factor of 6 to 1.

What could dark matter be? Many physicists and astronomers suspect it is a type of particle that they have not yet been able to detect. The prototypical dark matter candidate is something like a neutrino—a particle that is similar to an electron but has a much smaller mass and no electric charge. All known types of neutrinos, however, are too light and too rare to fit the theoretical description of dark matter.

How does dark matter affect the universe? It must be the basic building block of the largest structures in the universe: galaxies and clusters. And dark matter does not just explain the behavior of distant bodies in the cosmos; it must be abundant within our galaxy as well. Estimates of the Milky Way's makeup predict that our solar system is immersed in a fine sea of dark matter with a density as high as roughly 105 particles per cubic meter. As Earth travels around the sun, moreover, we experience dark "seasons" as we move with or against the flow of this dark sea.

## Does the moon also have a tidal effect on Earth's atmosphere?

The short answer is yes. At various times this question has occupied such famous scientists as English physicist Isaac Newton and French mathematician Pierre-Simon Laplace, whose theory describing the behaviors of oceans predicted the existence of atmospheric tides two centuries ago.

First, let us consider how ocean tides occur. At the point on the ocean's surface closest to the moon, the moon's gravitational force is strongest, pulling the ocean toward it. On the opposite side of Earth the moon's attractive force is weakest, which allows the ocean to bulge outward again, in this case away from the moon. Now think of the atmosphere as an ocean whose seafloor is Earth's surface.

Laplace's theory predicts two atmospheric pressure maxima—peaks in the amount of atmospheric material overhead—per lunar day corresponding to the two ocean bulges. As the ocean swells, so does the atmosphere above it. Surprisingly, observations show that the sun causes much stronger semi daily atmospheric tides, although the solar gravitational influence is less than half that of the moon. Laplace suggested that the strong solar tide was primarily generated by solar heating and not by solar gravity—a hypothesis that scientists finally confirmed in the 1960s.

## The Beat Goes On

Most vertebrates can live only minutes without oxygen, with some, such as freshwater turtles, able to slow their hearts drastically to survive. The crucian carp (*Carassius carassius*), a relative of the goldfish, can live on almost no oxygen for at least five days with a perfectly beating heart.

Low Oxygen : no problem

The carp can do so by transforming lactic acid, a damaging metabolic waste product, into much less harmful ethanol—the alcohol found in beer. Scientists at Simon Fraser University and the University of Oslo think the carp's heart may help circulate ethanol through its gills and out into the water (giving new meaning to "drunk to the gills"). This ability helps the carp survive the Scandinavian winter and could provide clues to sustain people not getting enough oxygen during heart attacks or strokes.

## Why is life expectancy longer for women than it is for men?

Both biological and social factors affect life expectancy. Biology strikes first: during the 12 months of infancy (in the absence of any outside influence), male mortality is typically 25 to 30 percent greater than female mortality. Some 105 males are born for every 100 females, ensuring that the number of men and women will be about the same at reproductive age. Hormones also play a role in longevity. The female hormone estrogen helps to eliminate "bad" cholesterol (LDL) and thus may offer some protection against heart disease. In contrast, testosterone, found in greater amounts in males, may make men more likely to engage in violence and risk-taking behavior. The female body's ability to adapt to pregnancy and breast-feeding appears to help women manage excess calories more easily than men do. Finally, women gain an additional biological advantage because of their two X chromosomes. If a gene mutation occurs on one X, women's second X chromosome can compensate.

In comparison, all the genes on men's sole X chromosome are expressed, even if they are deleterious. Biology is not the whole story, however: social factors contribute a great deal to longevity. Although male and female life habits have been converging in the industrial world, this convergence is not absolute. Females tend to smoke fewer cigarettes, drink less alcohol and drive more carefully. On average, their professional activities are less prejudicial to their health. In the past, women's social status and life conditions, such as the hardships associated with childbirth, nullified their biological advantage. (In some countries, this effect continues today. Women lived only 0.1 year longer than men in Bangladesh in the 1990s, and women in India lived 0.6 year longer then men did.) But today, at least in industrial countries, economic and social advances have largely erased status inequalities, and women's life expectancy is longer than that of men. For example, in the 1990s U.S. women lived 6.7 years longer than U.S. men, and women in the U.K. and France lived 5.3 years and 7.8 years longer, respectively, than the men in those countries.

## Puzzles to Puzzle You

Once and for ever go through these puzzles before they get on your nerve. Good luck.

```
1. main()
{     char *p1="Name"; char *p2; p2=(char *)malloc(20);
      while(*p2++=*p1++);
      printf("%s\n",p2);       }
2. main()
{     int x=20,y=35;
      x = y++ + x++;     y = ++y + ++x;
      printf("%d %d\n",x,y);   }
3. main()
{     int x=5;
      printf("%d %d %d\n",x,x<<2,x>>2);    }
4. #define swap1(a,b) a=a+b;b=a-b;a=a-b;
main()
{     int x=5,y=10;
      swap1(x,y); printf("%d %d\n",x,y);
      swap2(x,y); printf("%d %d\n",x,y);   }

int swap2(int a,int b)
{     int temp;   temp=a;
      b=a;  a=temp;  return;  }
5. main()
{     char *ptr = "UCE Thodupuzha";
      (*ptr)++;   printf("%s\n",ptr);
      ptr++;      printf("%s\n",ptr);      }
6. main()
{     char s1[]="Ramco";       char s2[]="Systems";
      s1=s2;      printf("%s",s1);   }
7. main()
{     char *p1;char *p2;
      p1=(char *) malloc(25); p2=(char *) malloc(25);
      strcpy(p1,"UCE"); strcpy(p2,"Thodupuzha");
      strcat(p1,p2);     printf("%s",p1);   }
```

Answers :-(1). An empty String (2). 57  94 (3). 5 20 1 (4). 10  5 \n  10  5 (5). UCE Thodupuzha CE Thodupuzha
(6). Lvalue required (7). UCEThodupuzha

## Quiz Time

Mr. Anish Karim C
$S_7$ CSE

1. Who invented E-mail (Electronic mail)?
2. Who developed Yahoo!?
3. Who is considered the father of the Internet?
4. Who was the father of WWW(World Wide Web)?
5. Who founded Amazon?
6.Who formed Red Hat?
7. Who founded Netscape?
8. Who developed Mosaic(the first browser)?
9. Who founded IBM(Industrial Business Machines)?
10. Which person is credited with creating Jini?

Answers

1 Ray Tomlinson
2 David Filo & Jerry Yang
3 Leonard Kleinrock
4 Tim Berners-Lee
5 Jeff Bezoz
6 Marc Ewing
7 Marc Andresen & Eric Bina
8 Marc Andersen
9 Thomas J.Watson Sr.
10 Bill Joy

## Mind Bogglers

Solve the Su do ku:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 8 | | | | 2 | | | |
| | | | 5 | | | | | 3 |
| | 6 | | 3 | 7 | | 9 | | 4 |
| | | 5 | 4 | | | | 1 | |
| 4 | | | | 8 | 7 | | | 6 |
| 8 | | 2 | | | | | | 9 |
| | 4 | 6 | | 2 | 1 | | | |
| | | | | | | | 3 | 8 |
| | 2 | | | | | | | |

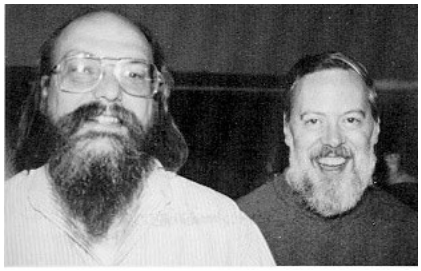
A mind game and a puzzle that you solve with reasoning and logic. Fill in the grid with digits in such a manner that every row, every column and every 3x3 box accomodates the digits 1 to 9, without repeating any.

Hard

*Answer will be published in the next issue

*We apologise to our readers for the error that occured in last issue. The correct Su Do Ku is given in this issue. -- **Editor***

## Guess Who



Hints:-

1. AT & T
2. Let Us C
3. Colonel
4. 2038

Answer :- (left to right)
Ken Thompson and Dennis Ritchie
Creators of UNIX

## Album

Chairman and Chief Mentor of **Infosys** Technologies Ltd. **Mr. Narayana Murthy** (*extreme left*) seen here with some of his collegues when it was founded in 1981

## Cartoon Corner


"While I'm sending e-mail, trading socks, and communicating with clients, my feet are just wasting time. What have you got to make my feet more productive?"

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