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DEPARTMENT OF COMPUTER SCIENCE
CYBER CREWS ASSOCIATION

itunlimitedmagazine@gmail.com
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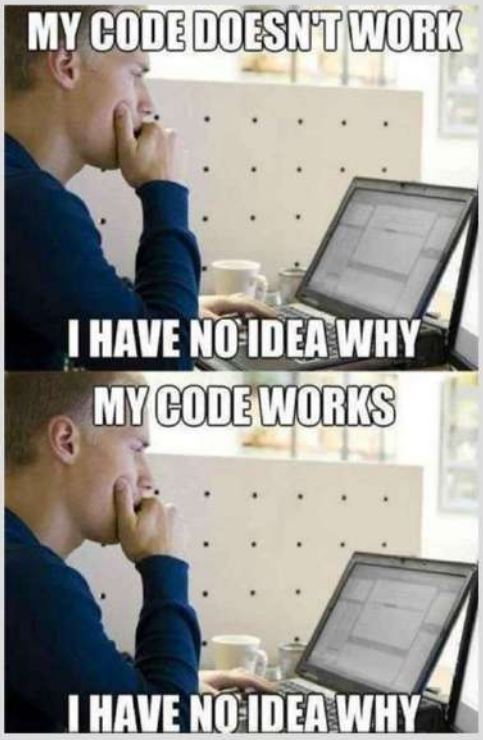
THOUGHTS OF THE ISSUE 72

Remember

Free Advice

Just For Fun



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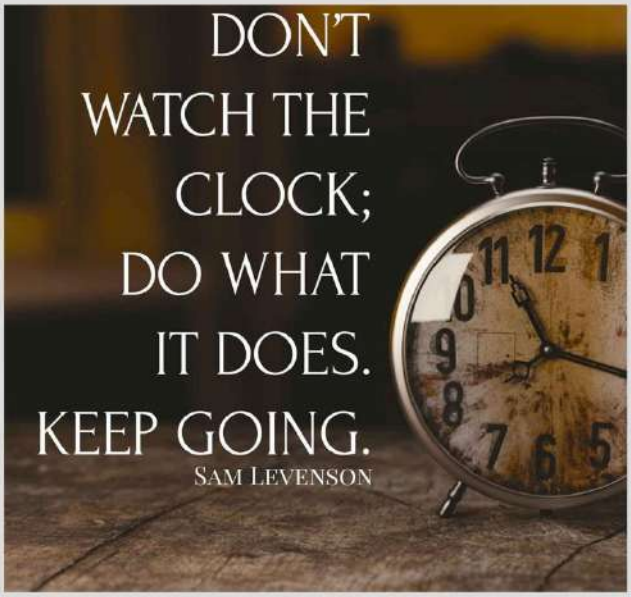

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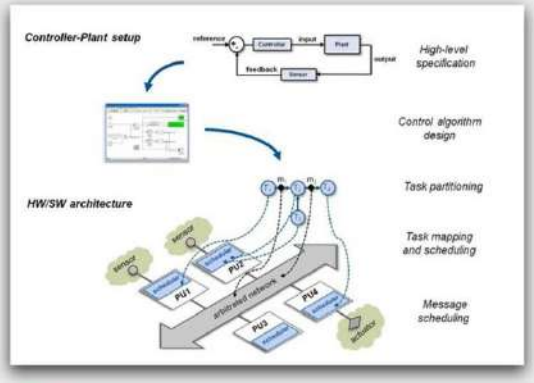

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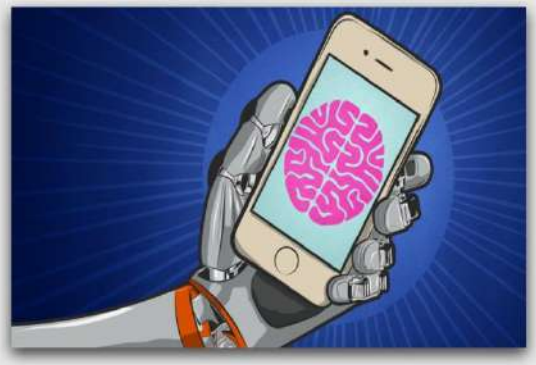

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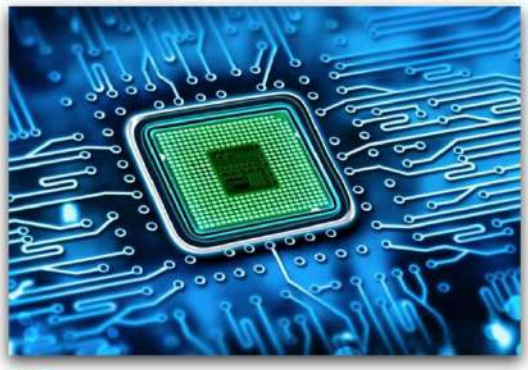

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APTITUDE TEST

PART- 20

Hi all, in this issue we are going to see more about Mechanical Reasoning, which is quite new to the students of Computer Science. Even though to have these questions is rare, let us have some ideas on it.

Mechanical reasoning tests measure your knowledge of straightforward mechanical and physical concepts. They do not measure your underlying mechanical aptitude in the same way that abstract reasoning questions measure your underlying intellectual ability. For example, you could sit an abstract reasoning test without having seen one before and still get a reasonable score. The same is not true of mechanical reasoning where your score will depend significantly on your knowledge of:

- Levers
- Pulleys
- Gears
- Springs
- Simple Electrical Circuits
- Tools
- Shop Arithmetic

You may have come across: levers, pulleys, gears, springs and simple circuits in elementary science and the questions on these topics are fairly straightforward. If elementary science classes seem like a long time ago then you may need to refresh your memory before attempting these questions. If you are taking a mechanical reasoning test as part of the selection process for the emergency services or the military then the questions

You can expect will tend to concentrate on principles rather than on making calculations. For example, you may be shown 3 diagrams of a lever and asked which one is the most efficient. If however, you are taking a test for a craft or technical job then you may be expected to calculate the actual force required to move a particular lever. In this case, knowing the principle is not enough, you need to know the formula.

This section also contains fault diagnosis questions which are used to select personnel for technical roles where they need to be able to find and repair faults in electronic control systems. The questions in fault diagnosis tests appear rather abstract and require pure logic to solve.

This is because when a fault develops in an electronically controlled system, there is often no physical clue as to the cause. In the absence of such a clue, for example an obviously burned-out component, the only way to diagnose the problem is by a process of logical elimination. This type of test is used extensively to select technical and maintenance personnel as well as to select for artificer (technical) roles within the armed forces where the ability to approach problems logically in order to find the cause of the fault is increasingly important.

What to expect in your mechanical aptitude test?

- A mechanical aptitude test includes a set of mechanical problems that must be completed in a predefined time.
- The time limit is designed so that only 1% to 5% of the population can correctly solve all the test questions within the allowed timeframe.
- Each test question has only one correct answer.
- Each test question offers you a mechanical scenario that might include acceleration, gravity, friction, pressure, moments, energy transformation, kinetic and potential energy, work and power, levers, pulleys, screws, gears, springs, etc.
- You should expect to have around 30 seconds to complete each test question.
- The level of complexity and difficulty of test questions depends on the position you are applying for. As an example, the test questions for candidates applying for managerial roles will be at a higher level of difficulty and complexity than those for candidates applying for entry-level roles.

Candidates applying for technical and mechanical roles are likely to be asked to complete a mechanical reasoning test. The level of difficulty and complexity of the test questions varies according to the required skills.

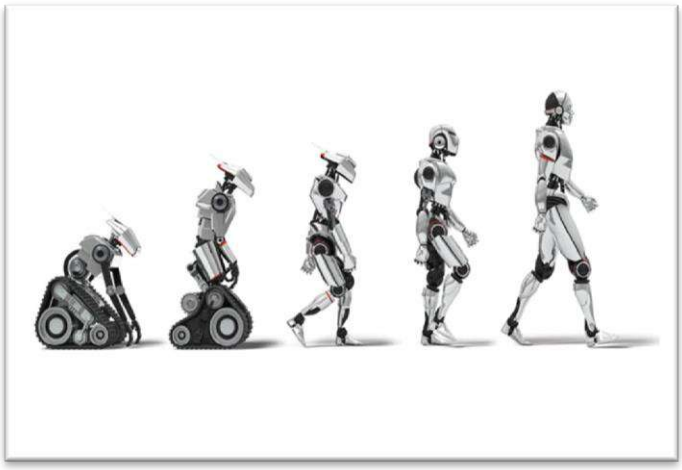
Improving your test score on the mechanical aptitude test can be achieved through developing simple factors to solve test problems, such as the right techniques and frameworks.

Meet you all in the next issue.....Keep practicing!! All the best!

Staff-Editor

Robotics

Robotics is an interdisciplinary branch of engineering and science that includes mechanical engineering, electronics engineering, information engineering, computer science, and others. Robotics deals with the design, construction, operation, and use of robots, as well as computer systems for their control, sensory feedback,and information processing.These technologies are used to develop machines that can substitute for humans and replicate human actions. Robots can be used in many situations and for lots of purposes, but today many are used in dangerous environments manufacturing processes, or where humans cannot survive. Robots can take on any form but some are made to resemble humans in appearance.



This is said to help in the acceptance of a robot in certain replicative behaviors usually performed by people. Such robots attempt to replicate walking, lifting, speech, cognition, and basically anything a human can do. Many of today's robots are inspired by nature, contributing to the field of bio-inspired robotics. Line follower is an autonomous robot which follows either black line in white are or white line in black area. Robot must be able to detect particular line and keep following it.

The concept of creating machines that can operate autonomously dates back to classical times, but research into the functionality and potential uses of robots did not grow substantially until the 20th century. Throughout history, it has been frequently assumed that robots will one day be able to mimic human behavior and manage tasks in a human-like fashion.

Do you know?

Twitter posted a blank tweet from their official handle, which led to several users trolling the social media company via memes.

1. Telepresence

Physicians use robots to help them examine and treat patients in rural or remote locations, giving them a "telepresence" in the room. Specialists can be on call, via the robot, to answer questions and guide therapy from remote locations.

2. Surgical Assistants

These remote-controlled robots assist surgeons with performing operations, typically minimally invasive procedures. The ability to manipulate a highly sophisticated robotic arm by operating controls, seated at a workstation out of the operating room, is the hallmark of surgical robots.Additional applications for these surgical-assistant robots are continually being developed, as more advanced 3DHD technology gives surgeons the spatial references needed for highly complex surgery, including more enhanced natural stereo visualization, combined with augmented reality.

3. Rehabilitation Robots

These play a crucial role in the recovery of people with disabilities, including improved mobility, strength, coordination, and quality of life. These robots can be programmed to adapt to the condition of each patient as they recover from strokes, traumatic brain or spinal cord injuries, or neurobehavioral or neuromuscular diseases such as multiple sclerosis. Virtual reality integrated with rehabilitation robots can also improve balance, walking, and other motor functions.

4. Medical Transportation Robots

Supplies, medications, and meals are delivered to patients and staff by these robots, thereby optimizing communication between doctors, hospital staff members, and patients. "Most of these machines have highly dedicated capabilities for self-navigation throughout the facility.

A Cyber Physical System Architecture

Cyber-physical system (cps) is define as transformative for managing interconnected system between its physical assets and computational capabilities with recent developments that have resulted in higher availability and affordability of sensors, data acquisition system and computer networks, the competitive nature of today's industry force more factories to move toward implementing high-tech methodologies.

Consequently, the ever growing use of sensors and networked machines has resulted in the continuous generation of high volume data which is known as big data. In such an environment, cps can be further developed for managing Big Data and leveraging the interconnectivity of managing to reach the goal intelligent, resilient and self-adaptable machines.

CPS5C level architecture

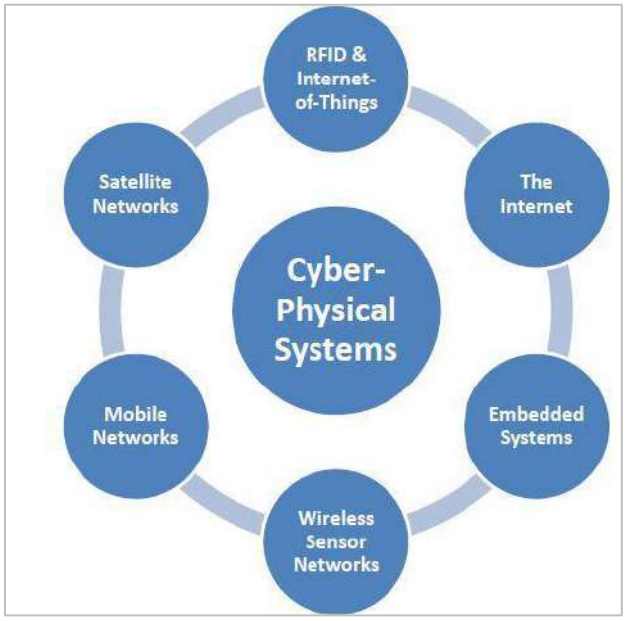
The proposed 5-level CPS structure, namely the 5C architecture, provides a step-by-step guideline for development and deploying a CPS for manufacturing application in general, a CPS for consists of two main functional components:

The advanced connectivity that ensures real-time data acquisition form the physical world and information feedback form the cyber space.

Intelligent data management, analytics and computational capability that constructs the cyber space. Meaningful information has to be inferred form the data. Currently, there are several tools and methodologies available for the data to information conversion level.

Design of PHM based CPS systems

The extreme advantage of cyber level PHM is the interconnection between machine health analytics through a machine-cyber interface (CPI) at the cyber level, which is conceptually similar to social network. Once the cyber-level infrastructure is in place, machine can register into the network and exchange information through cyber-interfaces.



Implementation of 5C CPS architecture for factories :

Implementing cps in today's factories offers several advantage that can be categorized in three stages of component, machine and production system that have been introduced. Considering a production line consists of numerous amount of machine tools, the advantages of a CPS enabled company at the aforementioned stages can be observed.

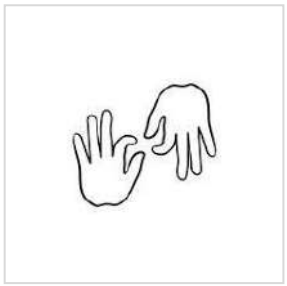
This level of knowledge not only guarantees a worry free and near zero downtime production, but also provides optimized planning and inventory management plans for factory management.

This presents a 5c architecture for cyber-physical systems in Industry 4.0 manufacturing system .It provides a viable and practical guideline fort manufacturing industry to implement CPS for better product quality and system reliability with more intelligent and resilient manufacturing equipment.

New AI App For Deaf Translation

Netherlands-based start-up has developed an Artificial Intelligence (AI) powered smart phone app for deaf and mute people, which it says offers a low-cost and superior approach to translating sign language into text and speech in real time. The easy-to-use innovative digital interpreter dubbed as "Google translator for the deaf and mute" works by placing a smart phone in front of the user while the app translates gestures or sign language into text and speech.

The app, called GnoSys, uses neural networks and computer vision to recognise the video of sign language speaker, and then smart algorithms translate it into speech. Affordable and always available interpreter services are in huge demand in the deaf community. Every day thousands of local businesses around the globe face problems with providing their services to deaf, said Konstantin Bondar, Co-Founder & CTO of Evalk, the company which developed the app.



According to the National Deaf Association (NAD), 18 million people are estimated to be deaf in India. The app is expected to hit the Indian market next year, Roman Wyhowski Founder & CEO Evalk told PTI. The new application can find use in a B2B setting, where businesses who want to employ deaf and mute employees can use it to convey employee messages to the end consumer, according to the company.

The pocket interpreter for the deaf relies on superior new technology: AI and neural networks. All the translation happens in the cloud. It just requires a camera on the device facing the signing person, and a connection to the internet, said Bondar. “Using only camera on your device, our system provides the same services only an experienced sign language interpreter could do," he said.

"All the translation is done by algorithms so that means we can differentiate on price as well, offering an inexpensive translation service which is handy and gives a lot of benefits to both deaf people, and businesses and service providers," Wyhowski added.

The service allows the user to pay for the day, for the week, or for the whole month costing one, four and 11 US dollars respectively, according to the company. The cost is USD 150 per month for small businesses, and USD 450 a month for medium and large-sized businesses.

The plan, Wyhowski noted, is to have a free app, which has limited amount of phrases per month/week you can use, just enough to satisfy the basic communication needs of deaf people with low income.

Working in collaboration with India Accelerator, the start-up is in touch with NAD and is gathering sign language data for India, he said."We have partnered with them already in order to know better how we can help deaf people in India," Wyhowski said. "Plus we plan to get in touch with Indian government, in order to know if some of the government spending on deaf people can be used to provide them with digital interpreter service, which can lead to higher employment of the deaf, and social equality," he said.

New Supercomputer with 1 Million Processors

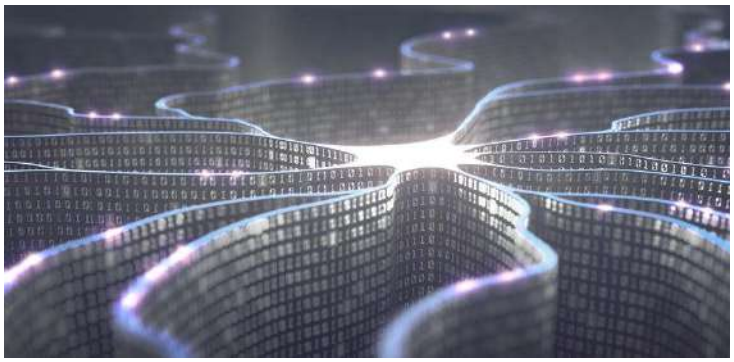
Researchers recently activated a computer capable of simulating brain activity more accurately than any other computer in the world can.

Scientists just activated the world's biggest "brain": a supercomputer with a million processing cores and 1,200 interconnected circuit boards that together operate like a human brain.

Ten years in the making, it is the world's largest neuromorphic computer a type of computer that mimics the firing of neurons scientists announced on Nov. 2.

Dubbed Spiking Neural Network Architecture, or Spinnaker, the computer powerhouse is located at the University of Manchester in the United Kingdom, and it rethinks the way conventional computers work.

But Spinnaker doesn't just "think" like a brain. It creates models of the neurons in human brains, and it simulates more neurons in real time than any other computer on Earth, according to the statement.



Double the processors

Since April 2016, Spinnaker has been simulating neuron activity using 500,000 core processors, but the upgraded machine has twice that capacity. With the support of the European Union's Human Brain Project an effort to construct a virtual human brain Spinnaker will continue to enable scientists to create detailed brain models. But now it has the capacity to perform 200 quadrillion actions simultaneously.

While some other computers may rival Spinnaker in the number of processors they contain, what sets this platform apart is the infrastructure connecting those processors. In the human brain, 100 billion neurons simultaneously fire and transmit signals to thousands of destinations. Spinnaker's architecture supports an exceptional level of communication among its processors, behaving much like a brain's neural network .

Mind over matter

Previously, when Spinnaker was operating with only 500,000 processors, it modeled 80,000 neurons in the cortex, the brain region that moderates data from the senses. Another Spinnaker simulation of the basal ganglia, a brain area affected by Parkinson's disease, hints at the computer's potential as a tool for studying brain disorders, according to the statement.

Spinnaker can also control a mobile robot called Spomnibot, which uses the computer to interpret data from the robot's vision sensors and make navigation choices in real time, university representatives said.

With all its computing power and brain-like capabilities, how close is Spinnaker to behaving like a real human brain. For now, exactly simulating a human brain is simply not possible. An advanced machine such as Spinnaker can still manage only a fraction of the communication performed by a human brain, and supercomputers have a long way to go before they can think for themselves,

Even with a million processors, we can only approach 1 percent of the scale of the human brain, and that's with a lot of simplifying assumptions.However, Spinnaker could mimic the function of a mouse brain, which is 1,000 times smaller than a human brain.

The Second Graphical Processor Hitachi

With the advent of large-scale integrated circuits coming into their own in the late 1970s and early 1980s, fueling the PC revolution and several other developments, came a succession of remarkably powerful graphics controllers.

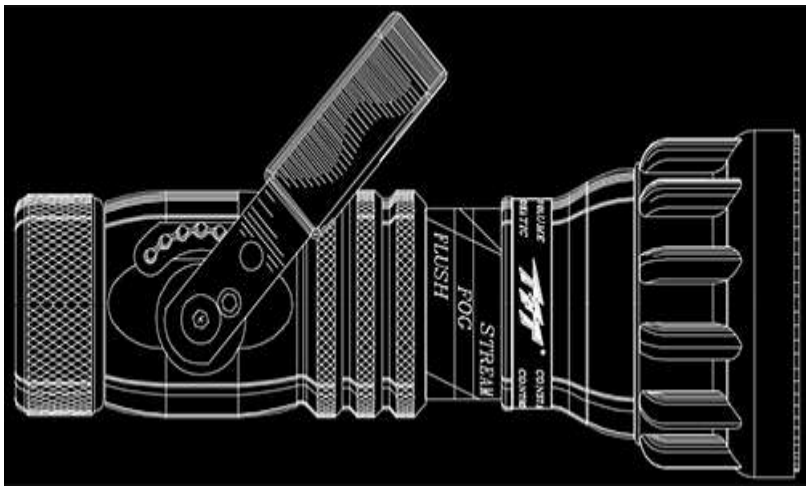
Hitachi did NEC one better and introduced their HD63484 ACRTC Advanced CRT Controller chips in 1984. It could support a resolution up to 4096 × 4096 in a 1-bit mode within a 2 Mbyte display (frame) memory. The ACRTC also proved to be very popular and found a home in dozens of products from terminals to PC graphics boards.

However, it was only 1-bit deep, but it offered a unique (at the time) interleaved access mode for "flash less" displays. If you wanted 16-bit color (which it supported) than you would have to drop down to 1024 × 1024 resolution, which was astounding at the time and only a few monitors could support it. However, the super high-resolution monochrome was targeted at the emerging bit-mapped desktop publishing market.

The ARTC could support up to 2 Mbyte of video RAM and offered an asynchronous DMA bus interface that could be mapped to the PC ISA-16, VME or the P1014 16-bit busses, and according to the company, was optimized for the 68999 MPU family and the 68459 DMAC.

The chip offered a high-level command which reduced software development costs. In this way, the ACRTC converted logical x - y coordinates to physical frame buffer addresses. It supported 38 commands, including line, rectangle, polyline, polygon, circle, ellipse, arc, ellipse arc, filled rectangle, paint, pattern and copy.

You could control four hardware windows with the ARTC, zooming and smooth scrolling in both vertical and horizontal directions. And it offered the capability of displaying up to 256 colors and the maximum drawing speed of 2 million pixel per second in monochrome and color applications which proved to be useful in high performance CAD terminals and workstations of the time.



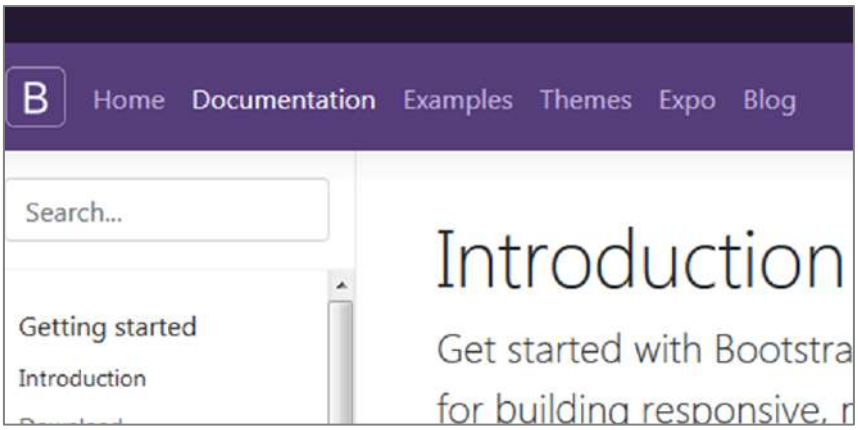
The chip was very popular and got designed into several long-lifetime products. In order to provide a continued supply, clones of the chip developed using innovASIC's MILES — Managed IC Lifetime Extension System, cloning technology.

This was in the early days of the PC and IBM had cleverly designed an expansion bus architecture that was only 8-bits wide in the original 1981 version of the PC, but by 1984 with the introduction of the PC AT, the bus got extended to 16-bits. With that came a flurry of graphics add in boards (AIBs), and the first generation of them used the NEC µ7220. By 1986 there were 88 AIBs and the Hitachi was displacing the µ7220, appearing in 22% of the AIBs. The ARTC was a breakthrough chip and by 1988 there were 194 AIBs being offered, and 24% of them had adopted the HD63484.

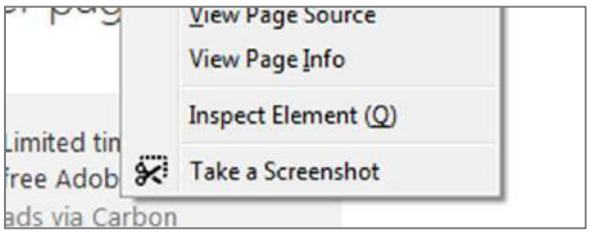
Learn A Tool

How to get color as hex code from browser?

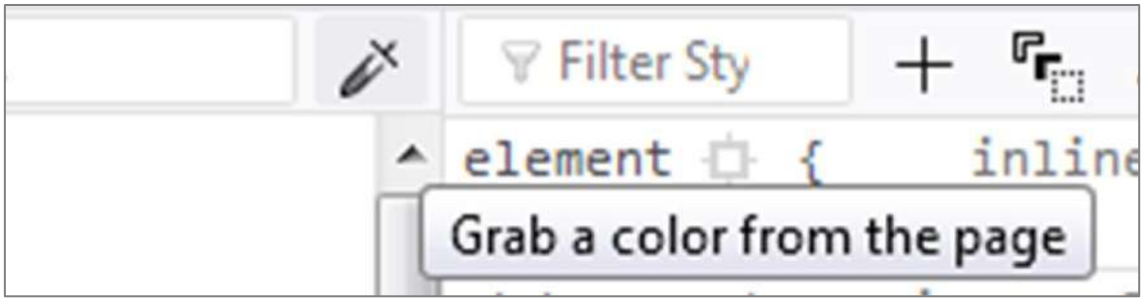
Step 1: open the website where you want to pick color.



Step 2: Right click on that website and choose inspect element (q).

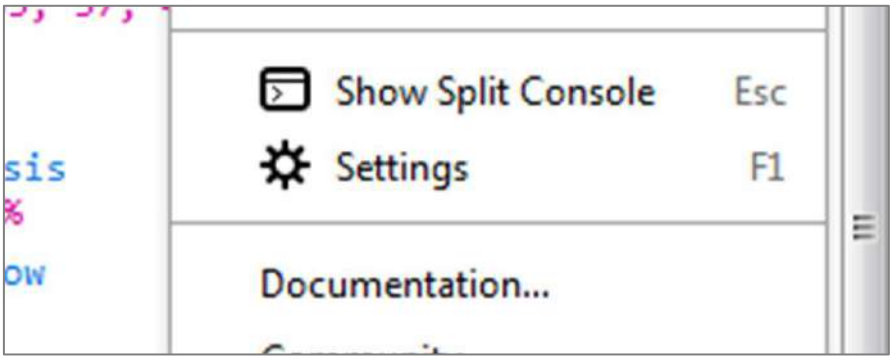


Step 3: Click on grab color icon from inspect element window.



Step 4: If you don't have the icon then click on 3 dots on the right side.

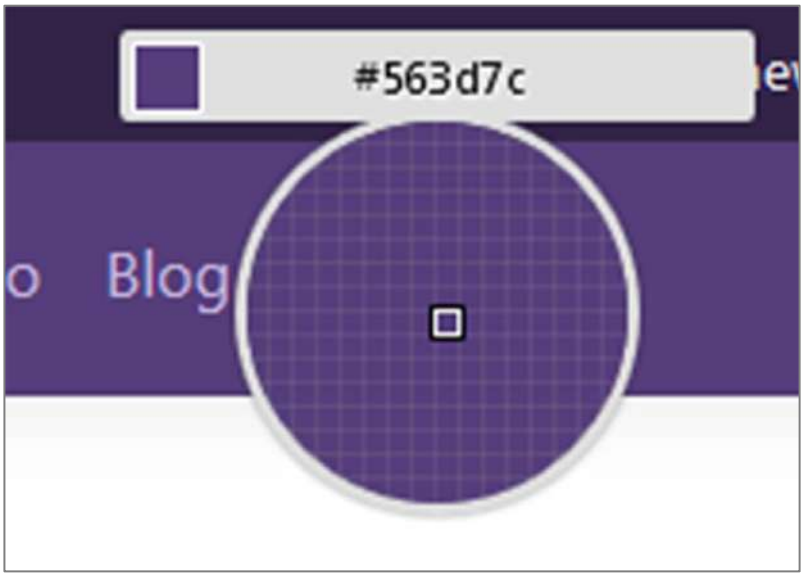
Step 5: Then click settings, scroll down the settings tab and check on grab color option.



Step 7: Now select the inspect element tab.

Step 8: Click on the grab color tool icon.

Step 9: Place the tool on the area of the website where you want to pick color and click on it, then the hex code for the color will be copied.



Step 10: So now you can use the copied hex code of color in your web design project.

Review Box

Setup is easy on all the main platforms, thanks to custom clients for iOS, Android, Mac and Windows, as well as a browser extension. But if you're hoping to get the service working on routers, games consoles, Chromebooks, Linux, or anything else even slightly non-standard, there's almost no help to
be found.
Still, if you're happy with the regular apps, TunnelBear's support for up to five simultaneous connections means you'll be able to have most of your devices running at the same time.

While TunnelBear's free account restricts you to a horribly limited 500MB of traffic a month, TunnelBear’s special TechRadar plan offers a far more generous 5GB. That gives you many more browsing options, and for instancecould allow you to watch 20 minutes of streaming 480p video every day, andstill have some browsing time left over.

TunnelBear's Privacy Policy is one of the most thorough we've seen from any VPN provider, with in-depth information on everything the service collects, and everything it doesn't. (We do mean thorough, too - details go right down to the names, purposes and expiry dates of the cookies used by TunnelBear.com.)

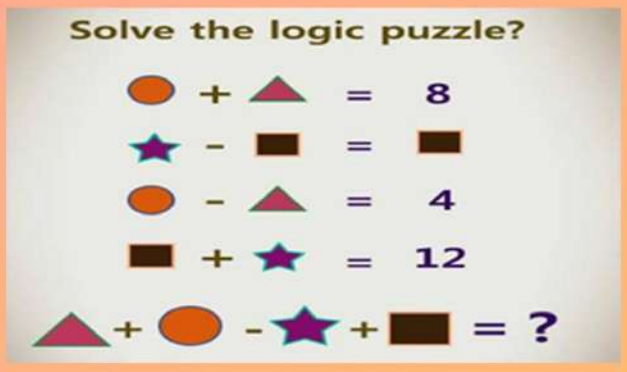
The logging policy is clearly described, with TunnelBear explaining that itdoes not collect "IP addresses visiting our website", "IP addresses upon service connection", "DNS Queries while connected", "Any information about the applications, services or websites our users use while connected to our Service." Sounds good to us.

MIND PUNCH

1. Which common words ending in "our" are spelled the same in England and America?

2. You have 10 coins....arrange them in straight lines such that each line contains 4 coins ?

3. Solve the logical puzzle?
   a) 2 c)8 b) 4 d)0



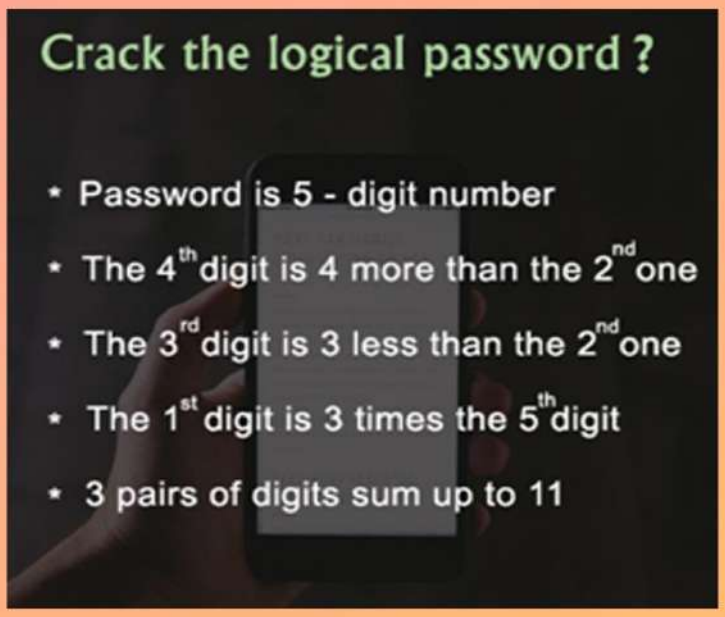
4. What do the following words have in common ?
   last,pet, ball,poll ,bug

5. Logic challenge ?
   a) 40 b)20 c)2 d)36

6.The same five-letter word can be added to either the front or back, but not both, of the following words to create four new word. Can you determine what the five-letter word's identity is ?

Key wall gem washed

7.Crack the logical password of the mobile?



8.'Rhythm of eyes' city name in India ?

a) Chennai b) Nainital c) Srinagar d) Karnataka

9. Poor people have it.
Rich people need it.
If you eat it you die.
What is it?

a) Money b) Brain c) Luxury items d) Nothing

10. 24 S in an IF?

IT VITA

1. When is National IT Professional day celebtrated ?

2. Who is the creator of Swift languae ?

3. Who is the father of Java ?

4. Expand DDR ?

5. What is PCI ?

6. When was the first paging system used ?

7. Which is the World's fastest Super computer?

8. The place where accessories are connected in computer is known as ?

9. The first search engine created was ?

10. Whic is the India's first supercomputer ?

11. First computervirus is known as ?

12. What is the maximum size of a word document ?

13. Data moves through the network in a structure called ?

14. What is e-zine ?

15. What is Blue Brain project ?

Famous & Favorite

Guido Van Rossum, the most innovative and talented man, he wanted everyone to be a programmer. Born in Haarlem, Netherlands, received a master degree in Computer Sciencein 1982. Just Van Rossum, his brother is a programmer, he has designed the typeface used in "python powered" logo.Van Rossum wrote and contributed a glob () routine to BSD

Unix in 1986 and developed the ABC programming language Van Rossum created Grail, a web browser written in Python. He has worked for various research institutes like Centrum Wiskunde & Informatics (CWI) in the Netherlands, National institute of Standards and Technology in US and the Corporation for National Research Initiatives (CNRI).

In 1996,Van Rossum submitted a proposal to DARPA called "Computer Programming for Everybody "with few goals listed below for Python: An easy and intuitive language, open source, easy understandable code, suitable for everyday tasks.

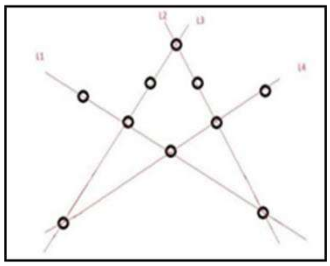
In 2000, he started to work for Zope corporation, in 2003 Van Rossum left Zope, there he worked on programminglanguage for organization. In 2005, Van Rossum worked at Google, spent half of his time developing the Python language till December 2012. Later on, in January 2013 Rossum started working for Dropbox. Python has grown popular and is the second most popular language on GitHub. Python is one among the 10 most mentioned languages for job postings.

BORN	**31 JANUARY 1956**
EDUCATION	Master's in mathematics and computer science
OCCUPATION	Computer programmer , author
FAMOUS QUOTE	*'A designer knows he has achieved perfection not when there is nothing left to add, but when there is nothing left to take away"*

Solutions

1.Amour, Glamour, Paramour

2)



3) B) 4

4) You can substitute any vowel into each of those words an still form a word:Last-Lest-List-Lost-Lust

5) C) 2

Explanation:
In the starting it is given that couple went to the movie and no other went with them. So total members went to movie is only 2.

6) The word you need is STONE.

Keystone
Stonewall
Gemstone

7) 65292

Explanation:
1st digit is 3*2=6
3rd digit is 5-3=2
4th digit is 5+4=9
6+5=2+9=9+2=11

8) B) Nainital
The other city names are:
No zip- Chennai
Mr. city- Srinagar
Do Acting- Karnataka.

9) Nothing

Explanation
Poor people have nothing
Rich people need nothing
If you eat nothing you die.

10. 24 S in an IF means 24 spokes in an Indian flag.

1) Third Tuesday in September

2) Chris Lattner

3) James Gosling

4) Double Data Rate

5) Pheripheral Component Interconnect

6) In 1957

7) Sunway TaihuLight

8) Port

9) Archie

10) PARAM 8000

11) Creeper Virus

12) 32MB

13) Packets

14) Electronic Magazines

15) Cloning f human brain

SENSE OF GRATITUDE

The Editorial Board expresses its sincere gratitude to all those who are responsible, either by being on the stage or behind the screen for the successful launch of the magazine …….!!!