MAESTRO

CRCE

2022

MOZILLA CAMPUS CLUB CRCE MAGAZINE

INTRODUCTION OF
EXECUTIVE COMMITTEE

" If everyone is moving forward together , then success takes care of itself " - Henry Ford

Teams build dreams. Together we can accomplish a job worth doing, and a success worth reaching. Individuals make a team work, and teamwork makes individuals succeed.

FACULTY INCHARGE

Prof. Prajakta Dhamanskar

Mozilla Campus Club CRCE is always motivated and work towards providing knowledge to students with the upcoming technologies . I am delighted to work with such enthusiastic team. I am proud to announce that our magazine " MAESTRO CRCE " is a result of their hard work and dedication. Our magazine dives into the world full of technologies.

I warmly congratulate the entire team for their valuable contribution in uncovering the magazine. I hope Mozilla Campus Club CRCE continue to achieve greater heights in future. My best wishes to the entire Mozilla Campus Club CRCE family.

INTRODUCTION OF

EXECUTIVE COMMITTEE

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INTRODUCTION OF

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ABOUT MOZILLA CAMPUS CLUB:

The Mozilla Campus Club CRCE of Fr. Conceicao Rodrigues College of Engineering, is an active student organization which organize various seminars, webinars and workshops to introduce you to open source technologies.

We also ensure the Internet is a global public resource, open and accessible to all and conduct seminars and workshops which introduces you to open source technologies and keep you updated with the latest technologies, help you learn new things and to keep the web free and open to all.

DEPARTMENT VISION

VISION:

To be a center of excellence in Computer Engineering education that will produce self-motivated, and globally competent individuals through holistic development.

MISSION:

- Build state-of-the-art infrastructure that can accommodate cutting-edge technology and is constantly updated in response to the needs.
- To emphasize on experiential learning in order to pursue academic excellence and inculcate research aptitude through high-quality research publication
- Enable the students to foster innovative ideas in pace with the emerging technologies.
- Encourage faculty members to pursue higher education/research and stay abreast with the latest technology.

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WRITTEN BY AMISHA GONSALVES

The Future Of

VIRTUAL REALITY

You may believe that you have used virtual reality, and you may have been quite impressed. There are some fantastic experiences out there (or rather, in there) today, especially if you're a gamer.

But in the coming years, we'll witness developments in VR that, like in all other technological areas, will render today's cutting-edge technology become Space Invaders. Even while the games will be incredible, the effects of this change will be much more widespread and affect our jobs, education, and social lives.

The most widely used VR applications now completely take over a user's senses (especially sight and hearing) to create an immersive experience that immerses them in a fully virtual environment that seems remarkably genuine. If you climb to a high point and look down, you might get vertigo. You'll have the temptation to dodge out of the path if you see something moving swiftly towards your head. To heighten the impression of immersion, VR developers will very soon extend this sensory hijacking to our other senses, such as touch and scent. The equipment we need to access these virtual worlds will also get lighter and cheaper, removing any friction that may currently constitute an obstacle.

One of the most influential technological revolutions over the next five years, in my opinion, will be extended reality (XR), which encompasses virtual reality (VR), augmented reality (AR), and mixed reality (MR). Other technological advancements, such as extremely fast networking, will make it possible for us to enjoy virtual reality as a cloud service, similar to how we already consume music and movies.

Additionally, artificial intelligence (AI) will provide us access to more customised virtual worlds to explore, as well as realistic virtual characters with whom we can interact and share our experiences.

VR IN EDUCATION AND TRAINING

With a significant number of startups and well-established businesses offering bundled experiences and services geared at schools, VR is already making great strides in education. The European Commission, HTC, and other organisations use Engage's technology to make remote learning possible. And a 2019 study indicated that medical students who received VR training were able to do several procedures more quickly and accurately than their classmates who received traditional training.

As new technologies are developed, these innovative teaching and learning strategies will become more successful. The Teslasuit, which employs a full-body suit to provide haptic feedback and enhance the immersion through the sensation of touch, is one that is likely to cause a stir. It also provides a variety of biometric sensors that allow for the measurement of the user's heart rate, sweat production, and other stress indicators. Although the suit is now utilised in NASA astronaut training, there are countless more applications for it.

It might be used to replicate a variety of risky or stressful situations safely for training purposes and track how we react to them. For instance, Walmart has utilised it to train its retail employees on how to handle situations that may arise on Black Friday, such as crowded stores with long lines of consumers. It will significantly reduce the financial risks associated with letting students and inexperienced recruits loose with pricey tools and machinery in any business, in addition to preparing us for dangerous scenarios.

VR IN SOCIALIZING

Several VR-based social networks, like VR Communicate, Altspace VR, and Rec Room, enable people to interact virtually with friends or complete strangers. The increased level of immersion made possible by recent technological advancements will make VR in other sectors, like gaming, more practical and appealing to general audiences throughout the course of the ensuing decade.

Due to its purchase of VR gear maker Oculus, Facebook has long had a presence in the industry and this year announced its Horizon platform. It allows users to build and share online communities where they may hang out, play games, or work on projects. It is currently in beta. While we will always make time to meet up with friends and loved ones in person, it's likely that more of our social interaction will shift online as our working and school lives become more dispersed. We will have more meaningful ways to connect with other people as technology advances in this area, just as we are no longer restricted from careers or educational opportunities due to an increasingly virtualized world.

AND OF COURSE – VR IN GAMES AND ENTERTAINMENT

Gaming is the "killer app" for VR, and the rapid technological advancement is a result of the vast market of consumers eager to pay for the most amazing and immersive entertainment experiences.

The most immersive experiences to date may be had at Sandbox VR's physical VR centres, which use equipment that is not just practical or economical for usage in our homes.

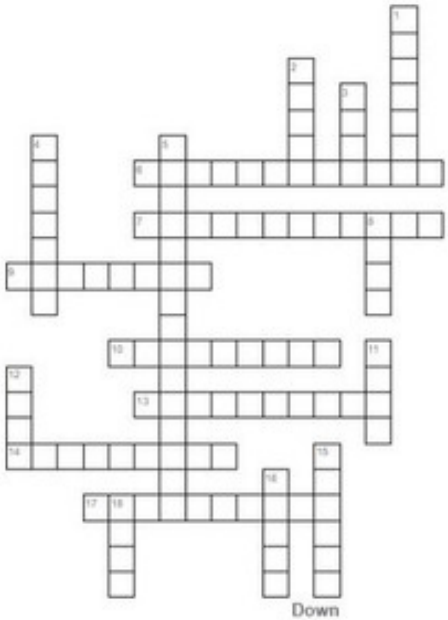
They provide five games - one licensed from Star Trek – that enable players team up or engage in combat in outer space, on spectral pirate ships, or amid a zombie apocalypse – all while wearing full-body haptic feedback suits.

In many respects, it seems sense that there would be two marketplaces for people to watch VR entertainment, at least in the beginning.

The most immersive and spectacular technology is bulky, expensive and technically challenging to use, so it makes more sense to offer it in specialised locations rather than at home. At least until we reach the point when we can have full-size Star Trek holodecks in our own houses, stay-at-home options will offer something that may be a little less stunning but more convenient.

Test your knowledge

1)CROSSWORD



Across

6 Online application used to make spreadsheets and graphs to display data
7 Online application used to make presentations and slideshows
9 This type of question in a Google Form allows you to pick more than one answer for a question
10 Control + U is used to _____ the selected text in a document
13 You can view responses in Google Forms by summary, by question, and by _____
14 This company swapped the R and Period keys on the keyboard to their current positions
17 The first form on data storage (used in the 18th century)

Down

1 This should be written first in an email
2 Google _____ has a purple logo
3 The colors that make up the Google logo are red, yellow, green, and _____
4 Vint Cerf and _____ are credited with inventing the internet
5 The first mobile phone (invented in 1983) *HINT: starts with M*
8 Google _____ has a blue logo
11 This tab is used to find keyboard shortcuts
12 How many different types of charts can you insert into Google Docs or Slides?
15 This tab is used to add a table to a document
16 Google Sheets has a _____ logo
18 Control + Z is used to _____ something in a document

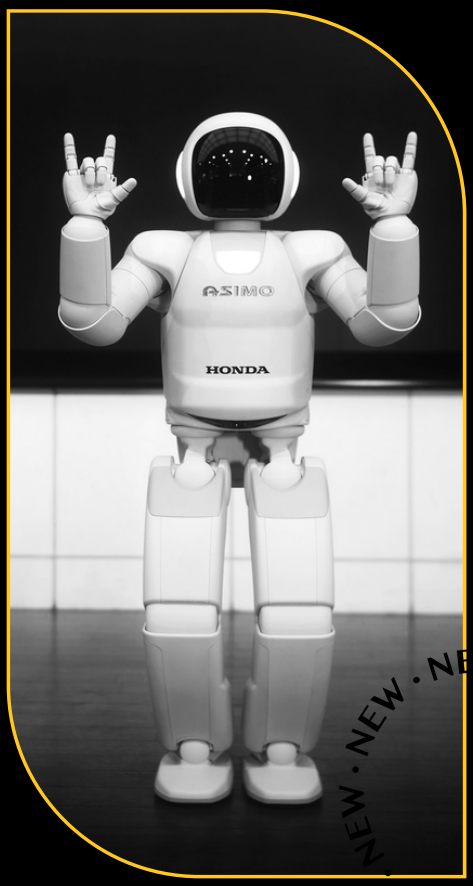
2) Problem Statement: Given two candles. Each of them burns for one hour. They burn unevenly in different parts though. In addition, let's have a box of matches. Measure 45 minutes and 15 minutes.

ARE ROBOTS GOING TO INCREASE

QUALITY OF LIFE

WRITTEN BY

SHOYDON ALPHONSO



Robots have the potential to boost the standard of our lives reception, at work. They need the potential to advance scientific discovery. They need the potential to power the economy and generally, build the planet higher. And nonetheless the target of artificial intelligence isn't to exchange humans by mechanizing and automating tasks, it's to search out ways in which for machines and humans to be simpler along. As an example, traveling to figure in your driverless automotive can obtain you time and can enable you to browse, to work... And currently imagine if these cars will learn. Imagine if they find out how you drive. And what if your automotive might speak along with your icebox, decipher that you're out of pet food and recommend wherever to prevent on your approach home? This can be the longer term work of pervasive robotics: the connected world of the many robots, operating with many of us, doing several tasks.

FOUR WAYS ROBOTS WILL IMPROVE OUR STANDARD OF LIVING:

THEY WILL FREE PEOPLE UP TO DO INTERESTING, CREATIVE WORK

Robots are often utilized in the geographical point to not replace humans, however to free them from the tedium of activity basic, low-level tasks. For instance, associate degree assistant's abilities square measure far better suited to things like coordinative schedules and managing correspondence than respondent basic queries from guests. Having robots take over those easy duties offers staff the time to concentrate on matters that have a demonstrable impact on the company's bottom line, matters that need each a lot of brain power and a lot of power to handle.

ROBOTS CAN PERFORM JOBS THAT HUMANS DON'T WANT TO DO

Certain jobs, like crop planting and gather, need an excellent deal of physical strength and natural virtue to perform. They conjointly tend to be more durable to fill: farmers round the world, from the US to New Zealand, have rumored difficulties to find enough labor to reap their crops. Farmers in France reportedly had to fly in employees from Republic of Ecuador, that is thousands of miles away, to herald turn out from the fields. Others have scaled back production as a result of they're merely unable to seek out enough folks.

In light-weight of this, some farms area unit mistreatment robots to perform an excellent deal of the work, from selecting berries to packaging dish to weeding the fields. particularly within the us, wherever fifty five p.c of farms have rumored labor shortages, such technology has become progressively necessary for making certain that they keep afloat – which no turn out goes to waste.

THEY ALLOW A GREATER NUMBER OF PEOPLE ACCESS TO GOODS OR SERVICES THEY WOULDN'T PREVIOUSLY HAVE BEEN ABLE TO AFFORD

There is no doubt that robots square measure an excellent deal additional economical than humans, particularly once it involves things like producing merchandise. Not solely square measure robots able to work with higher accuracy, that reduces the number of your time and materials wasted, will|they will|they'll} additionally work quicker (and longer) than humans can. Whereas this will have associate adverse impact on the roles that individuals deem, it also, by lower producing prices, makes the value of products cheaper. This, in turn, has the impact of constructing those merchandise, whether or not they be cars, clothing, or computers, additional accessible to a wider variety of individuals.

For example, a store that uses robots to form low may (in theory) lower the value for a espresso, as a result of less labor is required to run the shop. Or, to use a non-robotic (but still AI-related) example, a tool that's capable of translating between multiple languages makes travel additional accessible, as a result of it offers folks the liberty to maneuver concerning and knowledge things as they like, rather than adhering to the same old traveler track.

THEY WILL ALLOW WORKERS TO ACHIEVE A BETTER WORK-LIFE BALANCE

This is in many ways associate degree extension of the primary purpose. as a result of robots are going to be ready to take over a minimum of a number of people's everyday job functions, folks can have additional time off at their disposal. Of course, this is often forward that there area unit measures place in situ to assist staff who notice their jobs displaced by automation notice new positions and learn new skills which employers still acknowledge the worth that human staff wake a corporation.

Instead of considering robots strictly in terms of the folks they could replace, it's instructive to consider the advantages they'll bring. From additional fulfilling jobs to augmented access to merchandise and services antecedently solely out there to the rich, there's absolute confidence that this technology can have associate degree implausibly transformative impact on the planet at massive.

Test your knowledge

#3) CODING PUZZLE IN JAVA

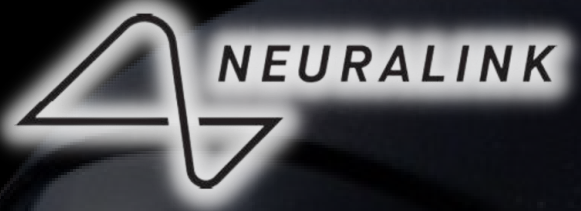
```
class CharToString
{
   public static void main(_____ args[])
   {
      char ch = 'a';
      String str = ____.to____(ch);
      System.out.____("String is: "+str);
   }
}
```

#4) CODING PUZZLE IN JAVA

```
System.out.println("Duplicate elements in given array are:
");
    for(int i = 0; i <_____; i++) {
     for(int j = i + 1; j < numbers.length; j++) {
       if(numbers[] == numbers[]) {
         System.out.println(numbers[j]);
       }
     }
    }
  }
}
```

What is Neuralink ? & science behind it

WRITTEN BY ANURAG THAKARE



Ø Introduction and History:

1943, a neurologist Warren McCulloch and a young mathematician Walter Pitts wrote a paper on how neurons might work; they modelled a simple neural network with electrical circuits. In 1957, John von Neumann suggested simple neuron functions by using telegraph relays and vacuum tube.

Recently, A company called Neuralink corporation develops a technology called Neuralink which helps to heal a person's brainly disorders. Neuralink has gone out of the bounds of current studies in neural network and has started to not just cure the patients but also connect them to digital devices and help them use these devices without the need of using any of their body parts.

This company is founded by genius businessman Elon musk on 2016, by the vision of helping humanity and to compete with AI in future

Ø Neuralink in Short:

Neuralink is chip which Is made of thousands of small threads. These threads are the electrode which are implanted into brain by surgical operations. Neuralink will setup electrodes which will read impulses, amplify them and send them to a machine which will then work accordingly. These electrodes support writing also which can help in treatment of brainly disorders. Neuralink is based on BMI technologies and natural neural network of brain

Ø Science behind Neuralink

There are 86 billion Neurons in our mind. Neurons send and receive information. Although neurons come in many different types, they generally have three parts: a dendrite which receives a signal, a cell body called a soma which computes the signal, and an axon which sends a signal out

Neurons Are Connected Through Synapses

The neurons of our brain connect to each other to send and receive signals through axon-dendrite connections called synapses.

Neurons Communicate Through Electric Signals

Action potentials cause synapses to release neurotransmitters. These small molecules bind to receptors on dendrites, opening channels that cause current to flow across the neuron's membrane. When a neuron receives the 'right' combination of spatiotemporal synaptic input, it initiates an action potential.

We Can Record Electrical Signals in the Brain

We place electrodes near neurons in order to detect action potentials. Recording from many neurons allows us to decode the information represented by those cells. In the movement-related areas of the brain, for example, neurons represent intended movements. There are neurons in the brain that carry information about everything we see, feel, touch, or think.

Ø Approach to use Neuralink

Neuralink will work in five major steps-

- Creation of threads
- Stitching of threads into the tissues
- Reading the signals and cleaning them
- Transmission of signals to amplifier
- Amplification of signals and transmission to the machine as of now the amplification and transmission of the signals happen via a USB-C port which is installed on a chip which is fitted into the brain of the subject (patient) along with a sensory device.

Ø Technologies used in Neuralink:-

1) Threads: "Threads" are the ultra-thin, flexible polymer which will contain the electrodes and will transfer the information and signals to the transmitter. These threads (4-6 μm) are thinner than a human hair

2)Robot & Neurosurgery: The "Robot" is designed with a sole purpose of inserting the threads in least invasive manner. Neuralink has developed a robotic insertion approach for inserting flexible probes (or threads), allowing fast and reliable insertion of large numbers of threads targeted to avoid vasculature and record from dispersed brain The threads on the Link are so fine and flexible that they can't be inserted by the human hand. Instead, they are building a robotic system that is designed to reliably and efficiently insert these threads exactly where the neurosurgeon wants them to be.

3) Neuralink app: The Neuralink app is being designed to allow you to control your keyboard and mouse directly with the activity of your brain, just by thinking about it.
With a Bluetooth connection, you would be able to potentially control any mouse or keyboard with your thoughts.

4) Electronics: The electronics are built around Neuralink's custom application specific integrated circuit (ASIC), which consists of 256 individually programmable amplifiers (analog pixels), on-chip analog-to-digital converters (ADCs), and peripheral control circuitry for serializing the digitized outputs

Ø Present and Future:

Currently the transplant was successfully conducted on rats, pigs and monkeys. Now, at the end of 2023 company says that they will conduct trials on humans.
As of now the device is being used on Lab Rats to analyse the results and make refinements in the device to read the correct input. As opposed to the previous projects, Neuralink uses ultra-thin and flexible threads which are much more capable for a long-life and a greater volume of data transferring. Even the composition of the material used is biocompatible so is non-harmful for the brain.

Ø Applications:

A Direct Link Between the Brain & Everyday Technology,
The initial goal of this technology is to help people with paralysis regain independence through the control of computers and mobile devices. These devices are therefore currently being designed to one day give people the ability to communicate more easily via text or speech synthesis, to follow their curiosity on the web, or to express their creativity through photography, art, or writing apps.

Test your knowledge

#5) RIDDLE

3 Ants and Triangle

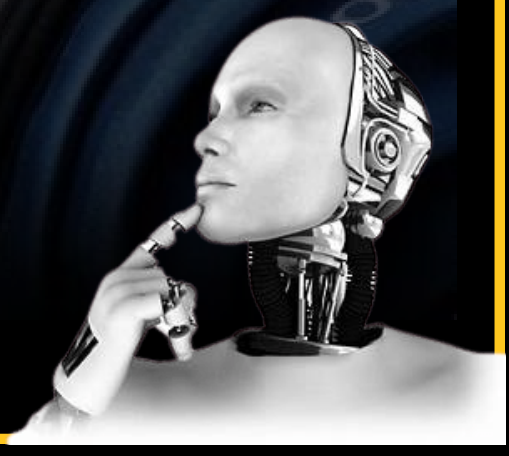
There are 3 ants sitting on three corners of a triangle. All ants randomly pick a direction and start moving along the edge of the triangle. What is the probability that any two ants collide?

#6) PROBLEM STATEMENT

A very hungry worm reaches a tree and eats the leaves in the following sequence:

·DAY 1: The worm eats 1 leaf
·DAY 2: TWICE(DAY 1)= 2 leaves
·DAY 3: TWICE(DAY 2)= 4 leaves
·DAY 4: TWICE(DAY 3)= 8 leaves
·and so on.....(up to 30 days)

The above eating sequence continues for 30 days and all the leaves finish on the 30th day. On which day did the worm finish exactly half of the total number of leaves?



NAVIGATING THE METAVERSE

WRITTEN BY

CRYSTAL FERNANDES

The term "METAVERSE" came into existence through author Neal Stephenson in his novel Snow Crash(1992) ahead of its time(pre-Internet and Pre-Worldwide Web. Described by Stephenson as an escapism from reality, this persistent virtual world touched every aspect of human existence, interactively affecting it as well. The metaverse doesn't compete with the internet, it builds on it. Internet growth has led to a multitude of services enabling the creation of the metaverse.

WHAT IS THE METAVERSE?

The metaverse lacks a consistent definition or description because the metaverse is majorly unbuilt. Typically defined by industry leaders according to their worldviews and/or capabilities as there is little agreement on how it will work.

- Microsoft CEO describes it as a platform that turns the "entire world into an app canvas" which could be brought about by their existing technology stack of cloud software and machine learning. Microsoft Teams lets users in different physical locations join collaborative and shared holographic experiences during virtual meetings. AI-driven tools on the platform provide avatars, session management, spatial rendering, synchronization across users, and "holoportation".
- Mark Zuckerberg concentrates on virtual reality alongside social experiences that connect individuals who live far apart (Similar to Facebook ideology).
- Epic Games' version wants to provide a communal space for users to interact with each other and brands without a news feed riddled with ads.

ACTUAL METAVERSE DEFINITION

The metaverse refers broadly to a digital ecosystem built on 3D technology, real-time collaboration software, and blockchain-based decentralized finance tools. A fully-functional, fully-integrated metaverse space won't exist until 2031, but eventually, it will offer online and virtual activities such as learning, creating, shopping, and interacting with friends in an online background.

TECHNOLOGIES THAT ALLOW THE METAVERSE TO BE ACCESSED

Technologies deemed significant to the evolution and expansion of the metaverse:

- Virtual reality: A simulated 3D environment that allows users to interact with virtual surroundings. The VR headset paired with gloves, vests, and full-body tracking suits permits a more realistic interaction with the virtual environment.
- Artificial intelligence: To create and develop avatars
- Internet of things: To seamlessly connect 3D spaces to the real world
- Extended reality: Uses AR, VR and MR to visualize and utilize data
- Augmented reality: Less immersive than VR. The real world is overlayed with digital overlays through a lens. Users can still interact with their real-world environment (eg: Pokémon Go)
- Brain-computer interfaces: To replace traditional hardware
- 3D modeling and reconstruction: To capture real objects and provide 3D prototypes
- Spatial and edge computing
- Blockchain: To decentralize the metaverse and secure digital content

HOW WILL THE METAVERSE AFFECT OUR FUTURE?

Medical Field

Can aid healthcare providers in giving a higher level of treatment to their patients and improve their accessibility without compromising care. Moreover, Metaverse could facilitate digital payments, simplify medical record storage, and enhance online care.

Workplace

A digital workspace can help employers eliminate commuting time for employees, redefine the meaning of "face-to-face" and allow remote meetings to be conducted more effectively.

Retail

Metaverse may allow people to try on clothing. The experience of shopping online would become much more interactive. As a result, companies will be able to offer unique experiences to their customers. Virtually testing new fashions might make users more comfortable experimenting in person.

HOW TO BUY LAND IN THE METAVERSE?

Through cryptocurrencies such as Ethereum or SAND. As far as owning virtual land is concerned, these two platforms are currently the most popular. Purchases of land are made directly on the platform, and any sales are recorded via NFT transfers. A capable wallet is required for storing this, such as Metamask or Binance.

TEST YOUR KNOWLEDGE

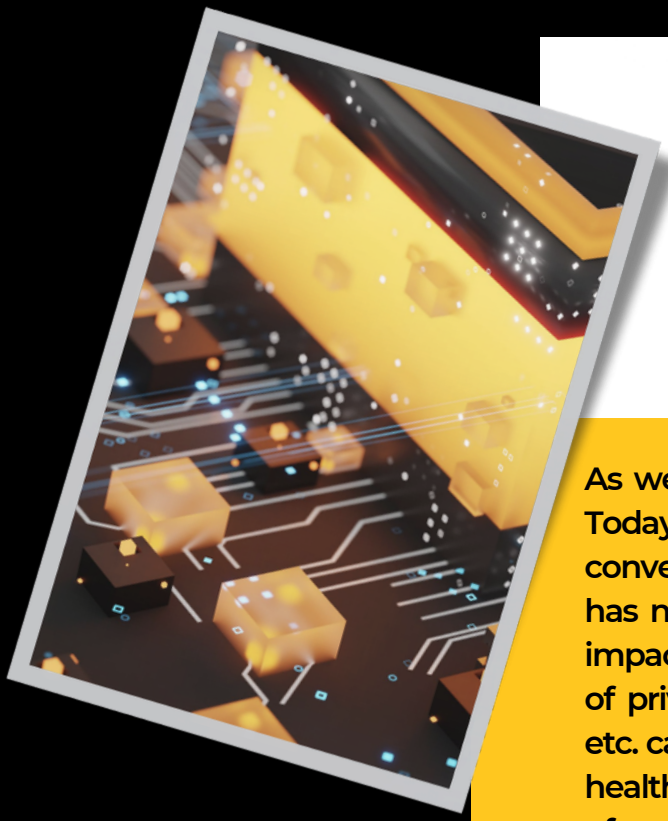
#7) CODING PUZZLE IN PYTHON

1. Python | Print elements from odd positions in a list
2. Python | Print list of prime numbers up to a 20
3. Python | Check whether a number is prime or not

IS TECHNOLOGY NEUTRAL

WRITTEN BY LISA GONSALVES

Technology has indeed been and continues to be a revolutionary factor in various industries and different aspects of human life. Numerous applications and inventions have shown significant change in people's lifestyle. It significantly shows how we, in certain aspects, have put comfort and luxury above the fact that the same is causing numerous other bad effects on environment and other people as well. Seeing the direction in which today's human race is headed, makes us wonder, 'Does technology by its own nature affects us humans negatively or is it human who abuse technology'.



Technological innovations have taken place in many fields, one of them being communications. The internet is the center of many peoples life in today's world. It has been a storehouse of knowledge and information. Using search engines like Google, getting answers to questions has become easy. Technology has increased mobility (vehicles), saved time and brought about significantly good change in various industries.

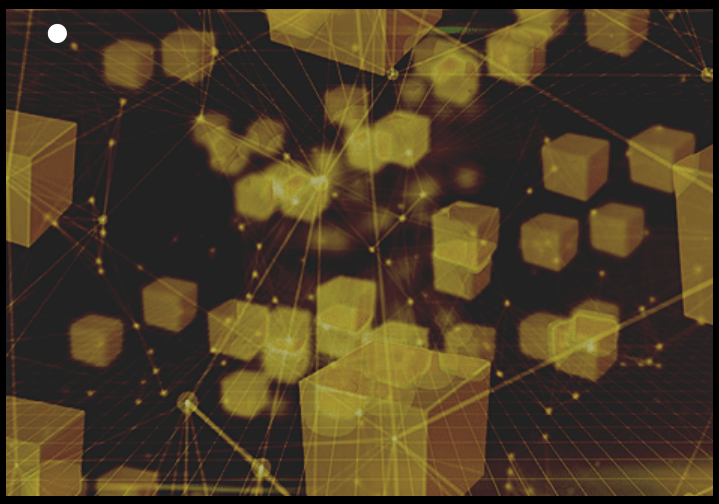
As well said by people, every coin has two sides. Today as we believe that technology is helpful and convenient many would disagree and say that it has negatively impacted many. Various negative impacts of technology includes cyberbullying, loss of privacy, ADHD, loss of job due to automation, etc. can be of great harm to an individual's mental health, leading to a ripple effect and affecting a lot of people. Speaking on economic terms, people not well versed with technology can face issues understanding and incorporating it in their daily habits. This difficulty can lead to various scams and frauds.

The use of technology is molded by various factors like circumstances, knowledge and creativity. Using technology affects things and organizations. It helps redefine tasks that were earlier difficult to carry out, good and bad. Coming across all these factors, we can surely see that technology on its own is quite neutral. Although the way people today are putting it into use can turn out to be of great harm in near future. Technology is like a tool and people have first and foremost the choice to use or not use.

IS TECHNOLOGY NEUTRAL * IS TECHNOLOGY NEUTRAL * IS TECHNOLOGY NEUTRAL

IS BLOCKCHAIN THE FUTURE

WRITTEN BY
Alton Dsilva



A single piece of technology—blockchain—is what is driving the third generation of the internet and is responsible for this revolution. This distributed, data-first, authoritative internet is built around a blockchain. Blockchain has several features that will enable this transformation such as Immutability, Authorization, Secure Timestamping, Neutrality, Accounting, Integrity, No Double Spend, Forgery Protection, Consistency and many more.

There are also other uses for blockchain technology that are unrelated to cryptocurrencies, even though it is most well-known for its part in the development of digital currencies over the past few years. In fact, some blockchain proponents think that the technology may have a much larger overall impact than cryptocurrencies alone and that its whole potential is only now being realised. As a result, it is probable that financial advisors and many other members of the investing community will come across blockchain technology more frequently in the years to come, whether it's associated with a particular cryptocurrency or used in a variety of different ways.

MONEY TRANSFER

Transfer apps for cryptocurrencies are now experiencing a spike in popularity, led by Bitcoin. While Bitcoin transactions take up to 10 minutes to complete, the newer technologies are much faster and may take up to 15 seconds to 5 minutes. Due to the time and money that blockchain may save, it is particularly well-liked in the industry. Blockchain technology has the capacity to offer a far quicker and less expensive cross-border payment option. Indeed, blockchain may enable charges that are only a fraction of that, as well as assured and real-time transaction processing rates, whereas typical money remittance expenses may be as high as 20% of the transfer amount.

Blockchain technology is one of the hottest trends that organisations must follow to stay competitive and is gaining popularity quickly. Everyone is interested in learning more about this new fad because it is creating significant breakthroughs and opening up new opportunities across many sectors, including banking, healthcare, cyber security, advertising, and finance.

When people hear the term 'Blockchain' they usually think of Bitcoin, NFTs and Cryptocurrency. We need to realize that blockchain is not just a technology or tool for cryptocurrencies, but a fundamentally new way to deal with data that will create a new iteration of the internet. In the first iteration of the internet the websites were static i.e., there was only one way communication between the consumer and the company. This was similar to the traditional media (newspaper, television). In the second iteration, the internet we are using right now, companies made it possible for users to share information and communicate with each other, all while collecting huge quantities of valuable information about the users likes and dislikes. These businesses are becoming incredibly powerful as a result of their information control. In the third iteration, the data will no longer be stored by the web pages or controlled by the companies. Instead end users will directly manage and control their data. The data and information will be stored in a distributed blockchain that will not be controlled by a single company.

INTERNET OF THINGS

The next logical explosion in blockchain applications is the Internet of Things (IoT). IoT offers a wide range of uses and several security issues, and as the number of IoT products rises, hackers will have more opportunities to steal your data via devices ranging from Amazon Alexa to smart thermostats. Blockchain-infused IoT through the use of technology's transparency and theoretical incorruptibility to keep things "smart," IoT adds an additional layer of security to avoid data breaches.

LOGISTICS & SUPPLY CHAIN MANAGEMENT

A significant issue in the shipping sector is the lack of transparency and communication brought on by the dense concentration of logistics firms. Over 500,000 shipping companies operate in the US, which leads to data siloing and transparency problems, according to a joint study by Accenture and logistics behemoth DHL. According to the paper, supply chain management and logistics are plagued by a number of issues that can be resolved by blockchain technology.

NFTS

Since cryptocurrencies, non-fungible tokens (NFTs) have been the most popular blockchain application. These digital products, which are already sweeping the globe, began to become more prevalent in the year 2021. NFTs are basically digital goods that are sold on a blockchain, allowing a single owner to assert full ownership rights, such as music, art, GIFs, and films. Consumers can now claim exclusive ownership over some of the most sought-after digital products available thanks to blockchain technology.

Along with these there are many more wide varieties of applications that are taking over the usual approach of data control and management and security. Also, there are lot of career paths that have been enabled due to Blockchain such as Blockchain Developer, Architect, UX Designer, etc. It would not be long before Blockchain will take over every industry.

ABOUT

Since 2005, GSoC has brought together 36,000 students and mentors from over 133 countries worldwide. As of November 2022, over 800 open-source projects, from areas as diverse as operating systems and community services, have participated as mentoring organizations for the program. Successful students have widely reported that their participation in GSoC made them more attractive to potential employers and that the program has helped greatly when embarking on their technical careers. Many past students and GSoC Contributors continue to be involved in GSoC by becoming mentors themselves and helping new contributors learn about the exciting things their community is working on.

GSoC allows the students to participate in the actual code of the open-source company and suggest some changes in their code. Now, this is a very strong point in your resume many people may ask why? Well, this is because if the code is approved by Google to make changes in the open-source organization. It means that you can read and write programming languages. Now many multinational companies like Microsoft and Amazon in off-campus placements shall prefer students who have cracked GSoC over those who have not

PROGRAM GOALS

- The GSoC program has several goals:
- Inspire developers to begin participating in open-source development.
- Help open-source projects identify and bring in new developers.
- Get more open-source code written and released for the benefit of all.
- Give newer developers more exposure to real-world software development (for example, distributed development and version control, software licensing issues, testing, and communication best practices).

GOOGLE SUMMER OF CODE

WRITTEN BY SAHIL SHAIKH

You've listened to many people talking about it, and you might have seen posters and blog posts on it but now you want to know more! So here we go... It is an international, online annual program in which students work on free and open-source software coding projects during the summer and make money along the way. At least over 150 software organizations participate in GSoC every year. Google Summer of Code (GSoC) is an online program that helps open-source software organizations by bringing new contributors. The program began way back in 2005 and until 2021 it was focused on bringing various university students into open source. Starting in 2022, GSoC has expanded the program to welcome beginner contributors, students, and all beginner contributors to open-source who are 18 years and older to apply to the program as GSoC Contributors.

These GSoC Contributors will be writing code and becoming part of these open-source communities. Mentors will be provided by the organizations who shall act as guides through the entire process, from learning more about the community to helping GSoC Contributors in becoming familiar with the code base and various testing practices, and finally releasing their code for the world to use!

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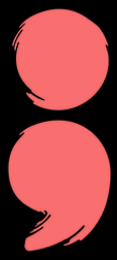
Test your knowledge

#8) Print a semicolon without using a semicolon in the program(in C)



#9) 10 Coins Puzzle

You are blindfolded and 10 coins are placed in front of you on the table. You are allowed to touch the coins but can't tell which way up they are by feel. You are told that there are 5 coins head up, and 5 coins tails up but not which ones are which. Can you make two piles of coins each with the same number of heads up? You can flip the coins any number of times.

Biometric Fingerprint Implementation for Attendance

WRITTEN BY PRATHAM KAMBLI

One of the most fascinating things about joining college is that, unlike school, you can actually get away with bunking classes. Or so one thinks, and wishes, but in most colleges, if one does not have the minimum criteria of 75% attendance, you are not allowed to sit for examinations. Compulsory attendance has been the most debated topic among college students.

Learning need not be inside the 4 walls of the classroom. For students who would want to take part in cultural and sports activities, doing internships, projects, getting the minimum required attendance becomes a hindrance. Therefore it should not become a parameter to judge the ability of the student. Can mere physical presence guarantee the intellectual ability of the student?

According to me, 75% attendance should not be made compulsory for students. This is because, for youngsters like ourselves, the most important thing to focus on is making a career, and getting a name for ourselves. One must enjoy life too, but not at the stake of his/her education, for which our parents spend their hard-earned money without even thinking twice. One can learn and develop skills not only in a classroom but also through courses, internships and projects.

Advancement in technology has made textual knowledge available in plenty, but it is the teaching, experiences and personal views of professors that enables students to truly understand concepts and remember them for a long time. Even though much emphasis is being given nowadays to practical application and experiential learning, one cannot ignore the importance of classroom education, and having a minimum attendance requirement ensures that wholesome learning takes place. A comfortable margin should be set up in such a way that it gives students enough incentive to attend classes, while simultaneously making allowances for the kind of learning that happens outside a classroom.

However, monitoring the attendance manually is a cumbersome issue to lecturers as students tend to manipulate the attendance by signing each other's attendance. It has been found that fingerprint biometrics is capable of monitoring attendance systematically and efficiently.

A biometric attendance system consists of a biometric device which captures the daily attendance of employees by scanning their fingerprints. The scanned fingerprint is mapped out on the basis of various coordinates defined within the software, which then accurately identifies the fingerprint. It keeps a track of the check in and check out timing of both students and teachers in the premises.

One can verify the students' attendance using fingerprint biometrics. Evolutionary prototyping models were used to develop the students' attendance system.

Students are required to thumbprint using the fingerprint device installed in the classroom to record the students' attendance. Their fingerprint images were captured by the fingerprint device and the images were then registered to the server for the attendance process. The implementation of fingerprint biometric has helped lecturers to monitor the attendance of the students more systematically, efficiently and ethically. By using the system embedded with biometrics, reporting on absenteeism is genuine and easy. Therefore, fingerprint biometrics is useful and helpful in keeping track and managing the attendance of the students.

Not only through fingerprint sensors to get a manual attendance, but we can also introduce other devices such as camera sensors to monitor who is actually paying attention in class, listening to the lecturer, participating, writing notes, etc as one parameter of just being present in the class should not be the minimum criteria for attendance and marks.

Test your knowledge

#10) RIDDLES

You are on the side of the river. You are given a m liter jug and a n liter jug where 0 < m < n. Both the jugs are initially empty. The jugs don't have markings to allow measuring smaller quantities. You have to use the jugs to measure d liters of water where d < n. Determine the minimum no of operations to be performed to obtain d liters of water in one of jug.

The operations you can perform are:

- Empty a Jug
- Fill a Jug
- Pour water from one jug to the other until one of the jugs is either empty or full.

TECH STARTUP

WRITTEN BY RISA ALMEIDA

"Don't start a company unless it's an obsession and something you love. If you have an exit strategy, it's not an obsession" is very justly quoted by an American Entrepreneur, Mark Cuban. The world is going crazy over startups. Every article you come across in the newspaper, every enthusiastic college student you run into, everybody is discussing about startups. But what are startups? How are they different from existing companies? And more importantly (considering the title), what are tech startups?

So, in simple words, a startup is an idea sown by an individual or a group of individuals with the dream of making it a large scale company. The focus of startups is on the products which are in need/demand in the present and the future. Now, tech startups are nothing but startups whose purpose is to bring technology products or services to market. Some popular tech startups are: oyo,paypal,cure.fit,WhiteHat Jr.

Growing up we've all heard stories of tech giants, how they started in garages and grew to become world's leading companies. At some point we would even want to have our own tech startups. And this is a great idea, but wanting to start your own company is not a child's play. You will need to keep the following things in mind

- Funding: It is not easy to get enough funds from big organizations for your project. Sometimes you might even have to spend some cash from your own pocket.
- Right team: It is very important to select the right people who share the same ideas and have enough knowledge to work on those ideas. Considering a team for a tech startup, should have engineers who are proficient in their work.
- Don't chase the money in the beginning: I know that the goal of starting your own company is to get rich, which is not a wrong idea. But in the initial years of the growth of your startup the financial results might disappoint you, so stay focused and enjoy the learning process, with time your financial growth will boom.

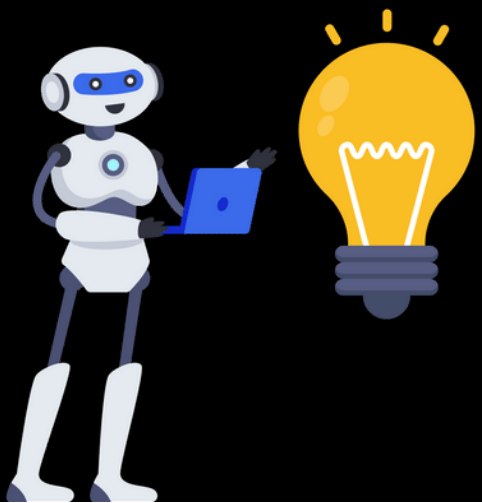
Now, while starting your own tech startup you will definitely face a lot of difficulties, maybe you won't even get good profit even after putting your blood, sweat and tears. But don't give up. Because, Google wasn't the first tech startup to build a search engine, it was just able to execute it's idea better than the other company and now it is a multinational tech company.

So, go ahead and execute your ideas of a good startup and always remember, "Opportunities are everywhere around you".

Test your knowledge

#11) 3 cuts to cut the round cake into 8 equal pieces
You have a birthday cake and have to cut it into 8 equal pieces by making 3 cuts only. How do you do it?

#12) Alok has three daughters. His friend Shyam wants to know the ages of his daughters. Alok gives him first hint.
1) The product of their ages is 72.
Shyam says this is not enough information Alok gives him a second hint.
2) The sum of their ages is equal to my house number.
Shyam goes out and looks at the house number and tells “I still do not have enough information to determine the ages”.
Alok admits that Shyam can not guess and gives him the third hint
3) The oldest girl likes strawberry ice cream.
Shyam is able to guess after the third hint. Can you guess what are the ages of the three daughters?



THE WORLD CHANGING RACE TO DEVELOP THE QUANTUM COMPUTER

WRITTEN BY

GODSEE ALMEIDA

An emerging technology based on quantum mechanics, quantum computing solves problems too complex for classical computers by utilizing the laws of quantum mechanics. Though it may sound like science fiction, quantum computing is currently a fact and will be used to power the next generation of supercomputers.

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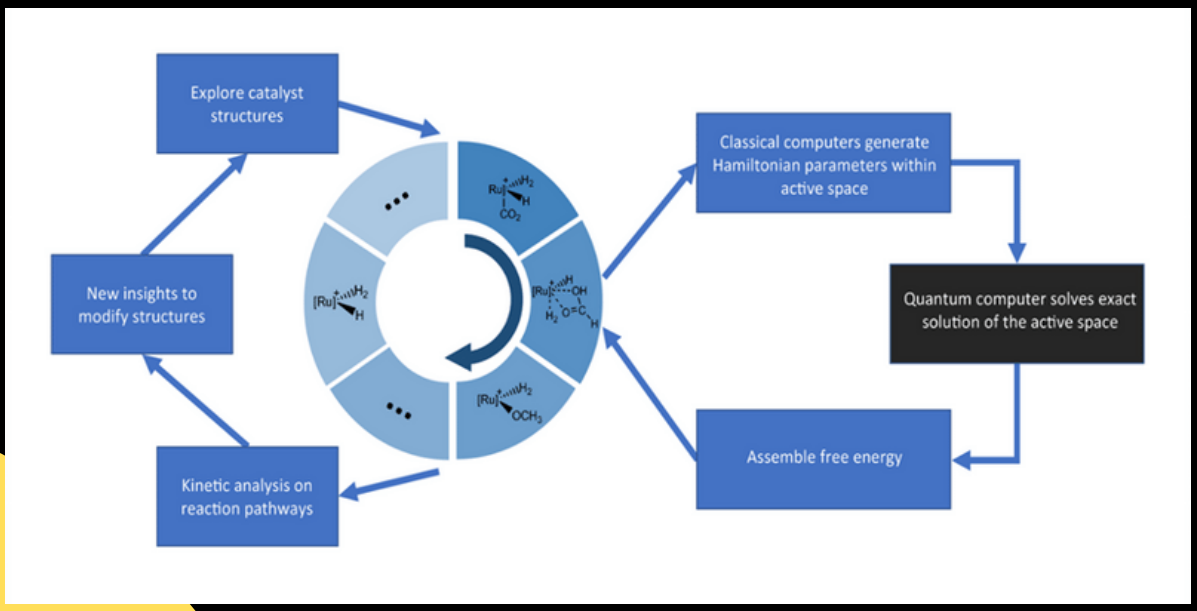
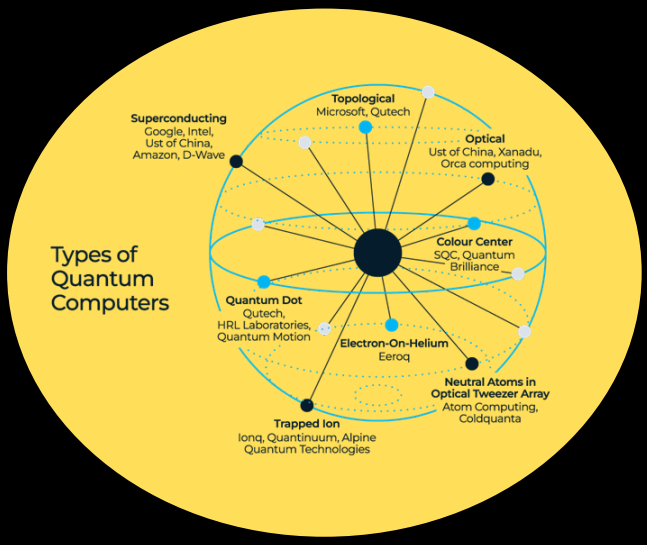


An emerging technology based on quantum mechanics, quantum computing solves problems too complex for classical computers by utilizing the laws of quantum mechanics. Though it may sound like science fiction, quantum computing is currently a fact and will be used to power the next generation of supercomputers.



The route is also being paved by private sector IT behemoths like IBM, Microsoft, Google, Amazon, Alibaba, and Baidu in addition to colleges. Start-ups are also tackling some of the obstacles that need to be removed for quantum computing to realise its full potential. By executing a computation that would have been very hard for even the most powerful conventional supercomputer, Google's Californian research lab became the first to achieve "quantum supremacy" in October 2019. A computation that would have taken the most powerful supercomputer in the world 10,000 years was completed by Google's 53-qubit Sycamore processor in 200 seconds.

Only 14 months later, the University of Science and Technology of China claimed that their Jiuzhang quantum computer was 10 billion times faster than Google's.

BENEFITS OF QUANTUM COMPUTERS

• Faster computations:

These computers have a substantially higher computational speed than regular computers. Supercomputers cannot match the computing capacity of quantum computers. Compared to regular computers and supercomputers, they can process data at a rate of 1000 times quicker. Quantum computers are capable of doing computations that would take a conventional computer a thousand years to complete.

• Simulator-friendly:

Quantum computers are the finest for performing data simulation computing. Numerous algorithms have been developed that can simulate a variety of phenomena, including chemical simulations and weather forecasts, among others.

· Development of medicines:

In the sphere of medicine, these computers can perform better. They have the ability to identify disorders and develop drug formulas. With the use of these computers, several illnesses may be identified and examined in academic labs.

Search on Google for:
Google refines searches with the aid of quantum computers. These machines now allow Google searches to be completed more quickly. Quantum computing allows for the populating of the most pertinent findings.

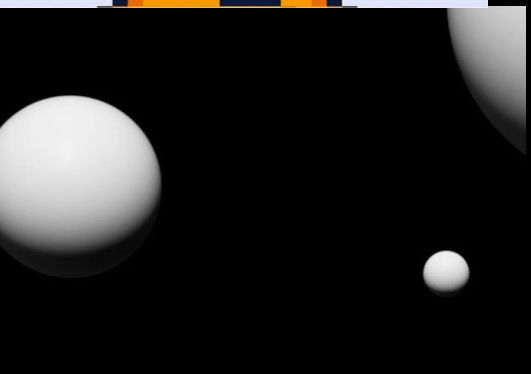
·Superior privacy:
These computers have excellent cryptographic capabilities and can produce high encryption. The security of quantum computers cannot be compromised. China just launched a quantum computer satellite, and China asserted that this satellite cannot be compromised.

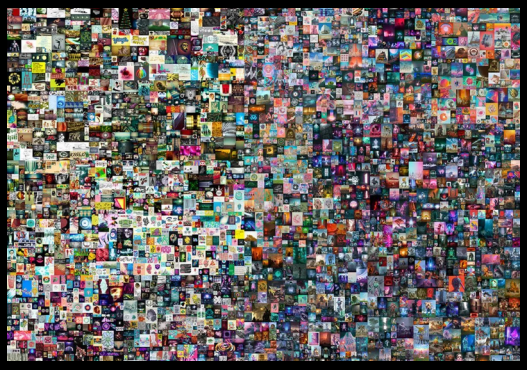
·Used to create radar:
Radar missile development employs quantum computing as well. This technique can be used to increase the accuracy of radar weapons.

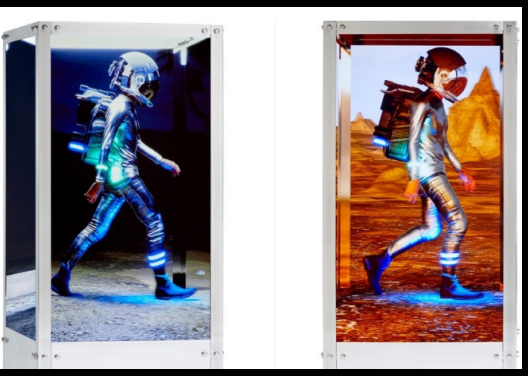
·Artificial intelligence uses:
Artificial intelligence functions nicely on these kinds of machines. They have greater decision-making precision than regular computers. These computers help scientists conduct better research.

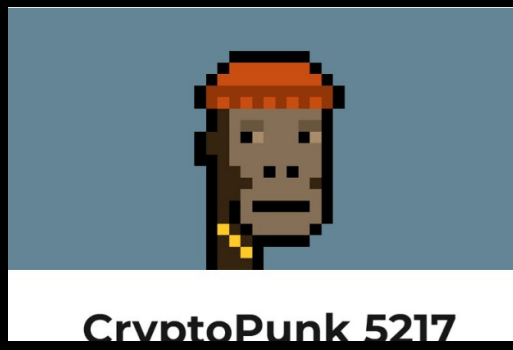
·Machine learning:
Machine learning approaches work well for applying quantum computing. Users can utilise less code and improve results using machine learning.

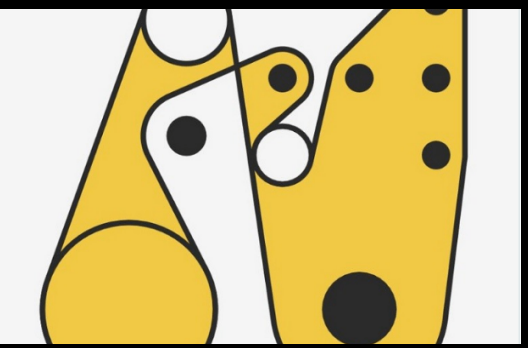
POPULAR NFTS OF 2022

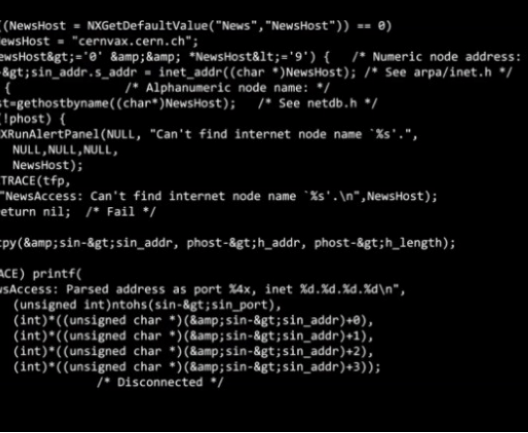












WRITTEN BY DIVYA JUNGHARE

INFORMATION LOSING ITS VALUE

We all like to accomplish a task. Achieving what you planned for, releases certain level of dopamine in one's body. In order to make these day-to-day tasks a cakewalk many innovative ideas are emerging each day. The onset of these innovative ideas was setup back in 1992 by Martin Koster who was a software developer at Nexor. He built some software to manage and index the emerging web.

His work, called ALIWEB, is acknowledged as the world's first search engine. Time passed by and such engines became a common thing a few could be named as google, Yahoo!, baidu, yandex, DuckDuckGo, etc.But along with the rise of these technological aids ripened the fruit of data cloning. People started to upload information about whatever they had knowledge on. Data Cloning, sometimes called Data Virtualization, is a method of copying data from a source data to a target database .

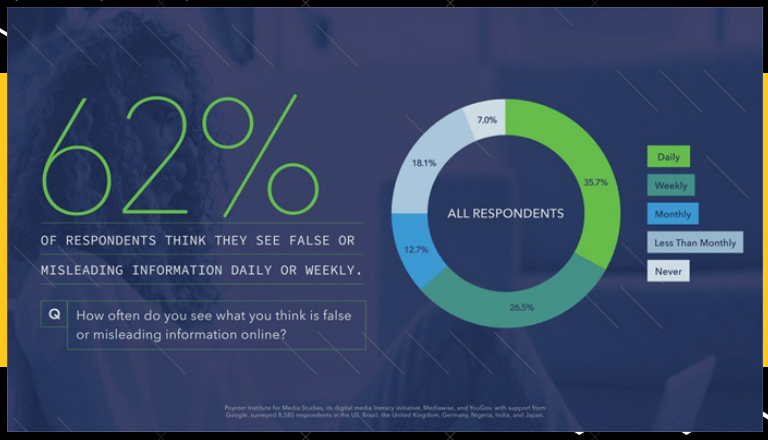
Soon people started developing techniques to make a living out of this information. This attracted attention of many people and in consequence others started copying the content in order to make money. With the growing population and exposure to more and more internet services accessing this information became an easy task.

Increased cloning of data/ information resulted in following two major setbacks:

1. Lack of uniqueness in information
2. Degraded creativity and thinking capability.

Copying information on a large scale degraded the value of information one had. Same information on a particular topic is present on internet on different websites. Adding few new lines doesn't make the content unique. As said:

"CONTENT IS ANYTHING THAT ADDS VALUE TO THE READERS LIFE."



But in today's world the scenario of copying things is neither adding value to the reader's life nor to the person who is copying the content. A real innovative content is which is useful, enjoyable and inspired.

Moreover, copying a set of data recklessly without verifying if its facts or not is also an increasing concern. A survey was conducted on more than 8500 people of different ages in United States, Brazil, Germany, India and Japan and were asked a wide range of questions aimed at accessing information. Those included queries about everything from investigating a post they see online to the reasons why anyone must have shared it at the first place. This survey found that 62% of respondents see a false or misleading information. Roughly 50% of all Gen X, millennial and Gen Z respondents said they are concerned about this misleading information exposed to their families.

To solve or limit these problems we are again taking the help of technological aids like the feature of Plagiarism Check to see exactly how much amount of information is copied and what amount of it is the real work. Many other tools like Grammarly ,WhiteSmoke, Reverso, etc are made so as to help the writer to make unique contents.

Most popular memes of 2022

1

1.3 B views

2

1.2 B views

3

1 B views

4

950 M views

5

890 M views

6

840 M views

7

810 M views

8

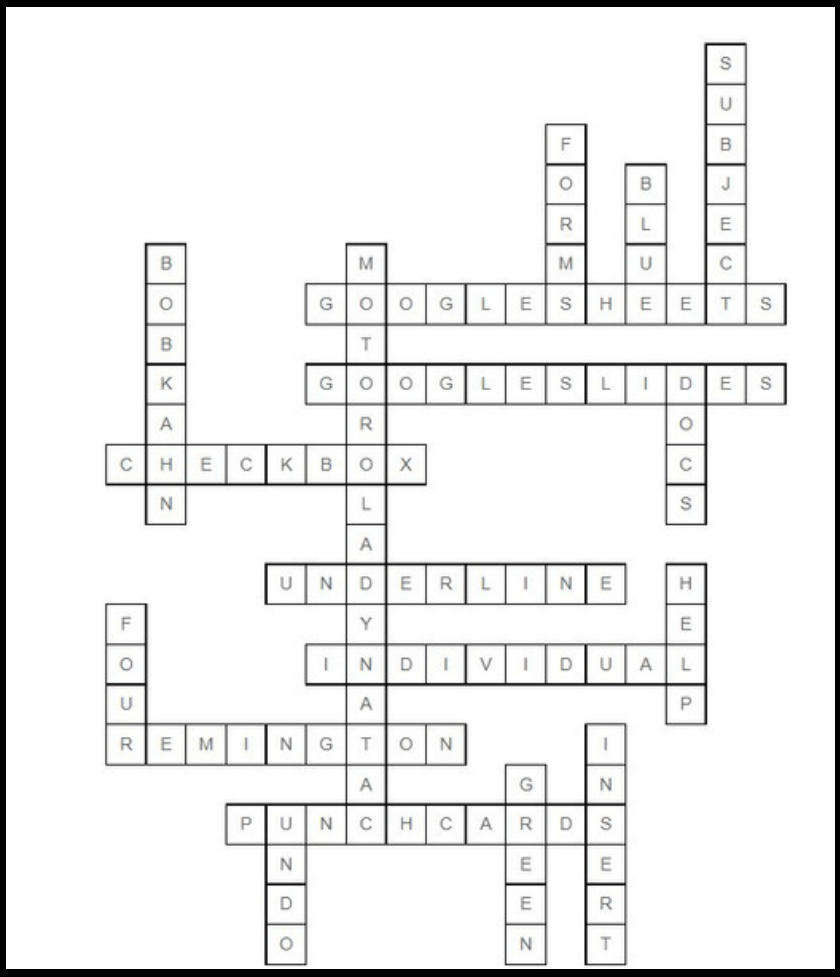
800 M views

9

750 M views

Ans section

1)



2)

• Step1: Both ends of the first candle should be lit, but only one end of the second candle should be lit. After the first candle has burned fully in 30 minutes, the remaining time is 30 minutes to burn the other candle with one end unburned.

• Step2: Now lit both the ends of the 30-min(remaining) length of candle 2, it will burn in 15 minutes. Now let's have a look at the solution candle-wise.

• Candle1: The first candle is lit from the end, So it will be completely burned in 30 minutes.

• Candle2: After 30 minutes, the two candles will be half burned. Now, let's lit the second end also and candle 2 will be burned completely in 15 minutes.

3) Coding in JAVA

String

Character

String

println

4) Coding in JAVA
New
Numbers.length
i
j

5) Ants and Triangle
Collision doesn't happen only in following two cases:
(i) All ants move in counter-clockwise direction.

(ii) All ants move in clockwise direction.

Since every ant has two choices (pick either of two edges going through the corner on which ant is initially sitting), there are total 23 possibilities.
Out of 23 possibilities, only 2 don't cause collision. So, the probability of collision is 6/8 and the probability of non-collision is 2/8.

6) If the answer is 29, then please try again.
• In order to make the calculations simpler let's consider the total time duration as 4 days instead of 30 days.
• DAY 1: 1 leaf
• DAY 2: 2 leaves
• DAY 3: 4 leaves
• DAY 4: 8 leaves
• All the leaves are finished on the 4th day. Therefore, the total number of leaves is (1 + 2 + 4 + 8 = 15).
• Half of the total number of leaves on the tree is (15/2 = 7.5).
• At the end of day 3, the worm can finish a total of 7 leaves.
• Therefore, exactly half of the total number of leaves on the tree can be finished only on day 4 i.e. the last day.
• Therefore, in the given riddle, where total time duration is 30 days.
• The worm finishes exactly half of the total number of leaves on Day 30 i.e. the last day.

7)

- **Python | Print elements from odd positions in a list arr = [1, 2, 3, 4, 5];**

print("Elements of given array present on odd position:
");
#Loop through the array by incrementing the value of i
by 2

for i in range(0, len(arr), 2):
print(arr[i]);
}

- **Python | Print list of prime numbers up to a 20**

lower_value = int(input ("Please, Enter the Lowest Range Value: "))
upper_value = int(input ("Please, Enter the Upper Range
Value: "))
print ("The Prime Numbers in the range are: ")
for number in range (lower_value, upper_value + 1):
if number > 1:
for i in range (2, number):
if (number % i) == 0:
break
else:
print (number)

Ans section

- **Python | Check whether a number is prime or not num = 11**

```
# If given number is greater than 1
if num > 1:
# Iterate from 2 to n / 2
for i in range(2, int(num/2)+1):
# If num is divisible by any number
between
# 2 and n / 2, it is not prime
if (num % i) == 0:
print(num, "is not a prime number")
break
else:
print(num, "is a prime number")
else:
print(num, "is not a prime number")
```

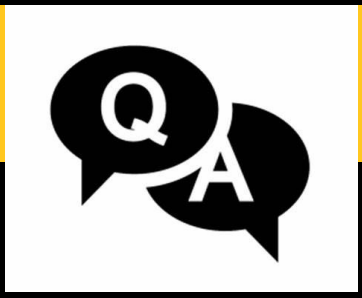
8) #include <stdio.h>

```
int main(void) {
   //prints the character with ascii value 59, i.e., semicolon
   if (printf("%c ", 59)) {
     //prints semicolon
   }
   return 0;
}
;
```

9) 10 Coins Puzzle
Yes, it is possible

Explanation:
Make 2 piles with an equal number of coins. Now, flip all the coins in one of the piles.
Let's consider a simple case:
P1: H T T T T
P2: H H H H T
By flipping P1
P1: T H H H H
P2: H H H H T
P1(heads) = P2(heads)

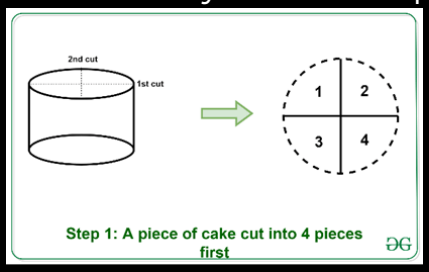
Ans section

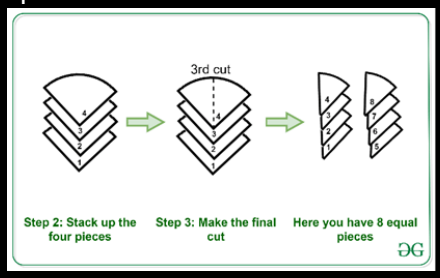


10) Fill the m litre jug and empty it into n liter jug.
2. Whenever the m liter jug becomes empty fill it.
3. Whenever the n liter jug becomes full empty it.
4. Repeat steps 1,2,3 till either n liter jug or the m liter jug contains d litres of water.
Each of steps 1, 2 and 3 are counted as one operation that we perform. Let us say algorithm 1 achieves the task in C1 no of operations.
successive pouring steps are:
(0,0)->(3,0)->(0,3)->(3,3)->(1,5)->(1,0)->(0,1)->(3,1)->(0,4)
Hence the no of operations you need to perform are 8.

11) 3 cuts to cut the round cake into 8 equal pieces
There are various methods to complete this task. One of them being:
Step 1: Cut the cake into quarters (4 pieces) using 2 of the cuts – one horizontally down the centre of the cake and the other vertically down the centre of the cake. This will leave you with 4 pieces (or slices) of cake.

Step 2: Then take all 4 pieces and arrange them in a stack that is 4 pieces high.
Step 3: Finally, you can just cut that stack of 4 pieces in half – using your third and final cut – and then you will end up with 8 pieces of cake!





12) 1) Product of ages is 72
Below are all possibilities to get 72 from product of three different ages:
1 * 1 * 72 = 72
1 * 2 * 36 = 72
1 * 3 * 24 = 72
1 * 4 * 18 = 72
1 * 6 * 12 = 72
1 * 8 * 9 = 72
2 * 2 * 18 = 72
2 * 3 * 12 = 72
2 * 4 * 9 = 72
2 * 6 * 6 = 72
3 * 3 * 8 = 72
3 * 4 * 6 = 72
2) Sum of the ages is given
1 + 1 + 72 = 74
1 + 2 + 36 = 39
1 + 3 + 24 = 28
1 + 4 + 18 = 23
1 + 6 + 12 = 19
1 + 8 + 9 = 18
2 + 2 + 18 = 22
2 + 3 + 12 = 17
2 + 4 + 9 = 15
2 + 6 + 6 = 14
3 + 3 + 8 = 14
3 + 4 + 6 = 13
All sums are unique except 14. So the age sum must have been 14, otherwise, Shyam would have guessed the ages from hint 2 only.
So we have two possible combinations to get a sum of 14
2 + 6 + 6 = 14
3 + 3 + 8 = 14
3) Alok has the oldest girl (not two!!). So the ages must be 3, 3 and 8.