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Index

Sl. No	Topic	Author	Page Number
1	Digital Foot print	HC/RO Avinash	2-3
2	5G Technology	HC/RO S.K Mohanty	4-5
3	Unified Payments Interface (UPI)	ASI/T Vivek Kumar Dubey	6-7
4	Biological-weapons	HC/RO S.K Mohanty	8-9
5	Hacking	HC/RO S.K Mohanty	10-11
6	Big Data	R & D	12-16
7	Tech –Terms	R & D	17
8	Quiz	R & D	18-19

DIGITAL FOOTPRINT

What is digital footprint?

A digital footprint is the data that's left behind whenever we use a digital service, or whenever someone posts information about us onto a digital forum, such as a social network. Digital footprint is all the stuff we leave our behind while we use the Internet. Comments on social media, Skype calls, app use and email records- it's part of our online history and can potentially be seen by other people, or tracked in a database.



Type of digital footprint: - There are two types of footprint, active and passive.

Active Footprint:-

Information that an individual purposely shares with the public or network of contacts such as a blog post, comment on social media etc. known as active footprint.

Passive Footprint:-

A passive digital footprint is unintended by the user. For example, a shopper on an ecommerce site inadvertently provides the site information about their preferences and lifestyle by the products they browse.

Examples of digital footprints:-

- Our search history.
- Text messages, including deleted messages.
- Photos and videos, including deleted ones.
- Tagged photos, even those you never wanted online.
- Likes/loves on sites like Facebook and Instagram.
- Browsing history, even when we are on 'Incognito' mode.

Dangers of digital footprint:-

Risks that can be mitigated through digital footprint monitoring

- Cyber Threats.
- Executive Threats.
- Data Exposure.
- Domain Phishing.
- Brand Impersonation.
- Location Threats.

Benefits of digital footprints:-

As we know that every coin has two faces, similarly digital footprint also has some positive impact in our life. By monitoring digital footprints we can get following benefits from it.

- Fraudulent activities can be tracked down using digital footprints.
- Companies can recommend items to users based on the customers' preferences.
- Personalization.
- The convenience of stored information that can be retrieved quickly.
- Recruiters can find the right candidates for job positions using digital footprints.

Tips for protection of digital footprint:-

As we can never remove ourself completely from the internet, but there are ways to minimize our online footprint, which would lower the chances of our data getting out there.

- Limit the types of data we share.
- Don't enter personal data on public Wi-Fi.
- Delete old accounts.
- Don't login any site with social media account like Facebook.
- Use an identity protection service.
- Limit sharing on social media.
- Always update the software.
- Act fast after a breach.

Pros

- Fraudulent activities can be tracked down using digital footprints.
- Companies can recommend items to users based on the customers' preferences.
- Personalization.
- The convenience of stored information that can be retrieved quickly.
- Recruiters can find the right candidates for job positions using digital footprints.

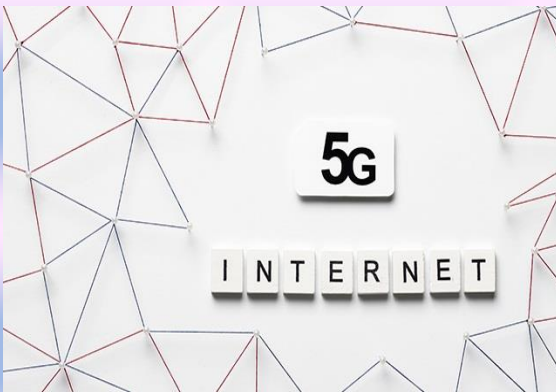


5G TECHNOLOGY

Changes come in our life with the introduction of 5G technology

Technology has changed our lives completely and everyone is experiencing it. Where we are today, everything is available at one click and the Internet has played an important role in it. This trend will continue even further and we will soon see that the Internet is changing our lives completely and bringing everything closer to you. Just waiting for 5G wireless technology to be launched in India. Fast work is also being done in this direction Airtel is playing the role of a leader in it. Recently Airtel has successfully demonstrated this technology on a commercial network in Hyderabad.

High speed internet:-



The most asked question about 5G is how much its speed will be. Talking about its speed, 4GB of 4K video will be downloaded in just three minutes. Means you Mbps to Gbps are going to enter the world. You will be able to download HD video or any file faster.

Apart from this, the speed of data transfer will also increase manifold. 10 to 100 times faster than 4G. You will be able to do all that through 5G technology, which you can not do in 4G.

More devices will be connected :-



When we came from 3G to 4G, we saw that the scope of the Internet has increased. Where before we were able to browse through the phone, now we can do shopping, streaming, gaming and many things. 5G were to be followed earlier work, it will only improve, as well as the Internet with a new way to connect devices together. Apart from the phone, your freeze , TV , AC and other household

items will also be connected to the Internet. You can get these items from anywhere (Internet of Things) Can control from your smartphone. Your smart watch may share all the details of your pulse in the future with your doctor.

Audiences will be part of ' Action ':- With 5G, the distance between the film and the audience will be seen to be over. The ultra-fast speed and low latency of 5G, when combined with virtual reality (VR), will give viewers a chance to watch movies in a new way. It is also possible that you can enjoy the premiere event of the film sitting at home, and you will feel exactly as if you are watching the film sitting with the stars of the film world.



Every task will be fast without delay:-

The latency problem that was occurring while using the Internet, will now be overcome with 5G, because users get low latency in it. If the page is not loading on the application or web, latency is the biggest factor behind it. The time it takes the response after the command and then you give, adds latency that time. The higher it is, the more delayed the response. If its latency is low or low, you will get immediate response. With the arrival of 5G, the page will load faster, connectivity will increase and response will also be available quickly. Meaning, you will not have to wait anymore.

Prospects has been increased in the field of business:-

After the arrival of 4G, many new companies saw the possibilities and launched their application and the customer was given better service through the phone. 5G technology will increase such business even faster. New types of businesses and jobs will be generated.

**You will get better service:-**

5G technology has come in some countries of the world and in India it is also being worked on rapidly, because we know that the future also belongs to it. Telecom companies are continuously working to provide the best service to its customers through 5G. India's first telecom operator, which commercial network in Hyderabad 1800 MHz live band 5G is performed successfully service. Dynamic spectrum sharing technology was used for this. Airtel's successful test and performance proves that it will be able to offer 5G service to its customers as soon as possible with the help of its best technology, Just waiting for the government's approval.



Unified Payments Interface (UPI)

National Payments Corporation of India (NPCI) after successfully launching the IMPS online payments system, has taken a step further in turning the Indian Economy into a “less-cash” and more “digital society”. The launch of a Unified Payments Interface (UPI) adds a feather to its cap. UPI is set to completely revolutionize the financial sector for good.

What is Unified Payments Interface (UPI)?

- The Unified Payments Interface is a system for instant, electronic payments through your smart phone.
- It authenticates the identity of the user like a debit card does using the phone as a tool instead of a separate card.
- It is an advanced version of Immediate Payment Service (IMPS) which was used to transfer money between bank accounts.
- Like IMPS, UPI will facilitate round-the-clock funds transfer service.
- It works 24x7, 365 days, unlike RTGS or NEFT services which have specific working hours.

How does it work?

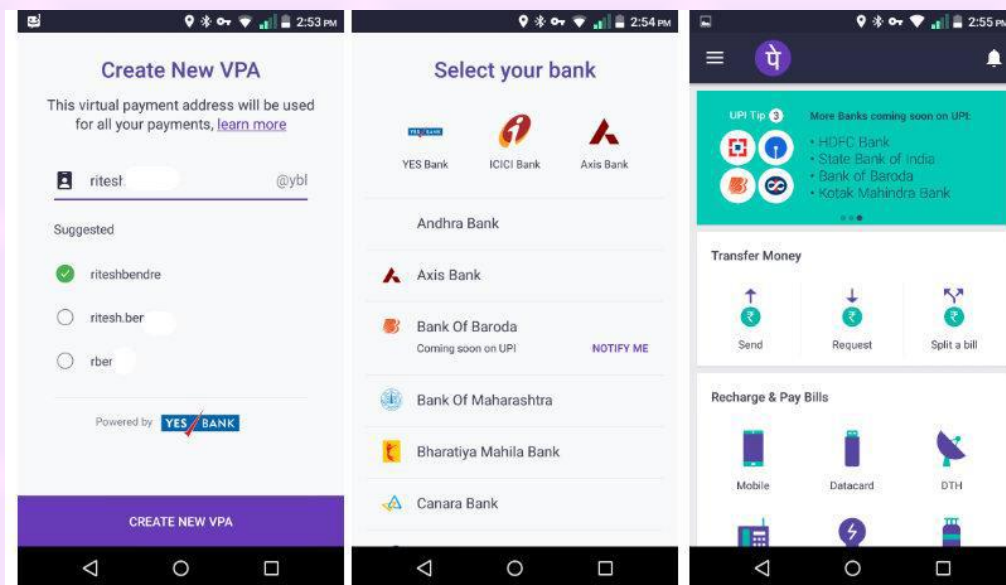
To make UPI money transfer, One needs 2 basic things:

- ✓ A smartphone with UPI application (app).
- ✓ A bank account.
- One has to download the UPI app and get a UPI ID by registering on the app with his bank details.
- UPI ID is a virtual identity (a payment identifier) like an email address.
- It can be a name or a mobile number along with the name of your bank. For example- Name@sbi or vivek@icici
- The payment is verified instantly through the smart phone, without needing to rely on debit card payment or net banking.
- One has to buy a book online. He can initiate the e-commerce purchase by selecting UPI as the payment mode and providing his UPI ID vivek@sbi.
- He then receives a pop-up notification on his smartphone through the ‘UPI App’ requesting confirmation of the payment.
- He has to enter his secure pin on the app to authenticate the purchase transaction.
- He will then receive a confirmation of a successful online purchase from the merchant within seconds.

UPI Registration Process

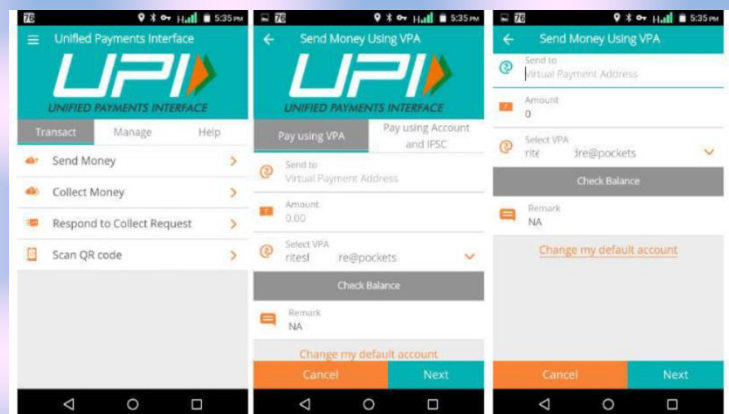
- ✓ Download any Bank app's.
- ✓ Choose your unique Id (Aadhar no, Mobile no).
- ✓ Select your bank.
- ✓ Give account details for the first time.
- ✓ Set M-Pin for transaction.
- ✓ Registration completed.

Registering on UPI



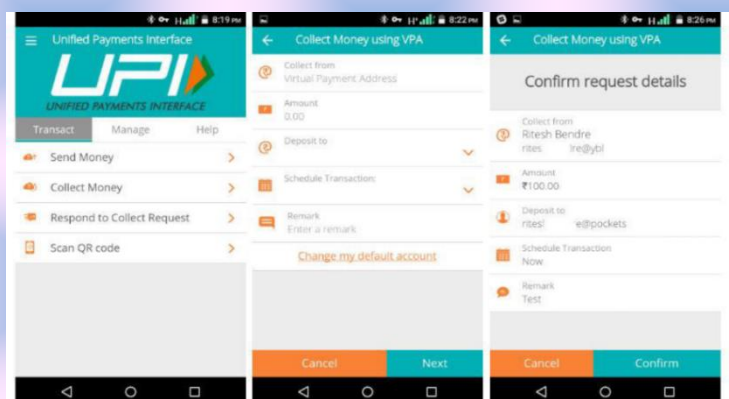
Sending Money On UPI

- ✓ Choose 'SEND MONEY'.
- ✓ Enter Virtual Payee Address.
- ✓ Enter Amount.
- ✓ Write Remarks for the transaction.
- ✓ Confirm the details.
- ✓ Hit "SEND".



Collecting Money on UPI

- ✓ Choose "COLLECT MONEY".
- ✓ Enter payer's virtual address.
- ✓ Enter Amount.
- ✓ Enter when do you want to collect.
- ✓ Write Remarks.
- ✓ Hit "CONFIRM".



BIOLOGICAL-WEAPONS

Introduction:-

The Stockholm International Peace Research Institute (SIPRI) has suggested that advancements in emerging technologies, such as artificial intelligence, additive manufacturing (3D printing), and robotics, may lead to increased proliferation of biological weapons.



History of biological weapon :-

Despite patchy intelligence, France started its own biological weapons programme in the early 1920s. It was headed by Auguste Trillat, an inventive German-educated chemist who envisioned and tested the sustained virulence of airborne pathogens.



What is a biological weapon?

Biological weapon, also called germ weapon, any of a number of disease-producing agents—such as bacteria, viruses, rickettsia, fungi, toxins, or other biological agents—that may be utilized as weapons against humans, animals, or plants.

Types of biological weapons

The following is the example of biological weapons:-

- Plague.
- Smallpox.
- Anthrax.
- Ricin.
- Q fever.
- Weapon of mass destruction.
- Tularemia.
- Glanders

Effect of Biological weapon



Sometimes known as “germ warfare,” biological weapons involve the use of toxins or infectious agents that are biological in origin. These agents are used to incapacitate or kill humans, animals, or plants as part of a war effort. In effect, biological warfare is using non-human life to disrupt or end human life to death.

How can I prevent this effect:-

Available protective equipment include respiratory protective devices, full face protective masks and surgical masks for respiratory protection, battle dress overgarments, protective gloves and over boots for skin protection. Full protection is needed when the agent has not been identified.



Hacking

Definition

Hacking is an attempt to exploit a computer system or a private network inside a computer. Simply put, it is the unauthorized access to or control over computer network security systems for some illicit purpose.



HACKERS: - The term “hacker” is popularly associated with cybercriminals harbouring malicious intentions, when in reality, it’s a lot more. A hacker can be anyone who utilizes their computer software and hardware knowledge to break down and bypass a computer, device, or network’s security measures.

Types of hacking: - There are two main factors that determine what type of hacker an individual is: their motives and legality of their actions. Hackers are divided into three types.

1. Black Hat Hackers.
2. White Hat Hackers and
3. Grey Hat Hackers

1. **Black Hat Hackers :-**

Black hat hackers can be anyone from amateurs to highly experienced and knowledgeable individuals looking to spread malware, steal private data, like login credentials, along with financial and personal information.

2. **White Hat Hackers:-**

Also known as “ethical hackers,” they’re often employed or contracted by companies and governmental entities, working as security specialists looking for vulnerabilities. While they employ the same methods as black hat hackers, they always have permission from the system’s owner, making their actions completely legal. White hat hackers implement strategies like penetration tests, monitor in-place security systems, along with vulnerability assessments. Ethical hacking, the term used to describe the nature of a white hat hackers’ actions, can even be learned through independent sources, training, conferences, and certifications.

3. **Grey Hat Hackers :-**

As the name suggests, these individuals utilize aspects from black and white hat hackers, but will usually seek out vulnerabilities in a system without an owner’s permission or knowledge. While they’ll report any issues they encounter to the owner, they’ll also request some sort of compensation or incentive. Should the owner not respond or reject their proposition, a grey hat hacker might exploit the newfound flaws. Grey hat hackers aren’t malicious by nature, but do seek to have their efforts rewarded. Since grey hat hackers don’t have permission to access the system by its owner, their actions are ultimately considered illegal, despite any alarming findings they might reveal.

How to Prevent

1. Don't access personal or financial data with public Wi-Fi.

This may seem like a no-brainer, but you'd be surprised how many people check their bank accounts or make purchases with a credit card while using public Wi-Fi. It's best to do those things on a secure connection.

2. Turn off anything you don't need.

Hackers can use certain features on your phone to get at your information, location or connection. So, instead of keeping your GPS, wireless connection and geo-tracking on all the time, just turn them on when you need them.

3. Choose your apps wisely.

Only download apps from trustworthy sources that have established a good reputation. Make sure you update your software and apps regularly and get rid of old apps you don't use.

4. Use a password, lock code or encryption.

Make sure your passwords are at least eight characters long, with a mix of upper and lower case, and include numbers or other characters, and never use the auto-complete feature for passwords. You can use the storage encryption feature on your phone to protect your private data, and set your screen to timeout after five minutes or less.

5. Be sceptical about links and attachments.

If you're not sure about the source, don't use the link or open the attachment.

6. Trace or erase.

Make sure your data is secure if your mobile device is stolen or lost. You can set up your device to lock itself after a pre-set number of failed log-in attempts.



Big Data

Introduction

Big Data is something so huge and complex that it is impossible for traditional system and traditional data warehousing tools to process and work on them.

Big data is generated by machines, generated by humans. With the growth of technologies and services, this large data is produced that can be structured, semi structured and unstructured from the different sources. Big data can neither be worked upon by using traditional SQL line queries nor can the relational database management system (RDBMS) be used for storage. So that a wide variety of scalable database tools and techniques have evolved.

Hadoop, an open source distributed data processing system in one of the prominent and well known solutions.

The need of big data comes from the big companies like Google and Facebook. For the purpose of analysis of big amount of data which is unstructured form. Such type of data is very difficult to process that contains the billions records of millions people that includes the web social media, images, audio and so on.

Characteristics

Big Data can be described by the following characteristics



- **Value**

Value is the most important aspect in the big data. Though, the potential value of big data is huge. It is all well and good having access to big data but unless we can turn it into value it is become useless. It becomes very costly to implement IT infrastructure systems to store big data, and businesses are going to require a return on investment.

- **Velocity**

Velocity refers to the increasing speed at which this data is created, so the increasing speed, at which the data can be processed, stored and analyzed by relational database. Velocity refers to the speed at which new data is generated and the speed at which data moves around.

- **Variety**

The next aspect of Big data is its variety. Big data is not always structured data and it is not always easy to put big data into a relational database. This means that the category to which Big Data belongs to is also a very essential fact that needs to be known by the data analysts. Dealing with a variety of Structured and unstructured data greatly increases the complexity of both storing and analyzing Big Data. 90 % of data generated is data is in unstructured form.

- **Variability**

Variability refers to data whose meaning is constantly changing. This is particularly the case when gathering data relies on language processing.

- **Visualization**

Once it's been processed, you need a way of presenting the data in a manner that's readable and accessible- this is where visualization comes in. Visualizations can contain dozens of variables and parameters- a far cry from the x and y variables of your standard bar chart- and finding a way to present this information that makes the findings clear is one of the challenges of Big Data.

- **Volume**

This volume presents the most immediate challenge to conventional IT Structures. This is the aspect that comes to most people's minds when they think of Big Data. Many companies already have large amounts of archived data in the form of logs, but do not have the capacity to process that data. The benefit gained from the ability to process large amounts of information is the main attraction of big data analytics.

- **Veracity**

When we are dealing with a high volume, Velocity and variety of data, it is not possible that all of the data is going to be 100% correct there will be dirty data. The quality of data being captured can vary greatly. The data accuracy of analysis depends on the veracity of the source data.

Techniques and Technology

Since big data is not only large, but also varied and fast-growing many technologies and analytical techniques are needed in order to attempt extracting relevant information. For processing the large amount of data, the big data requires exceptional technologies. This technique and technologies have been introduced for manipulating visualizing and analyzing of big data.

So, to handle big data many solutions are available, but the Hadoop technology is one of the most widely used technologies.

Big Data components on Hadoop Framework

Apache Hadoop is an open-source framework that deals with distributed computing of large datasets across clusters of computers using simple programming models. The Apache Hadoop software library is a framework that allows for the distributed processing of large data sets across clusters of computers using simple programming models.

The Apache Hadoop software library is a framework that allows for the distributed processing of large data sets across clusters of computers using simple programming. It is named after a toy elephant scaling up from single servers to thousands of machines with local storage and computation as the advantages that Hadoop offers. This is one of the major advantages that Hadoop offers as we can use inexpensive hardware.

Hadoop includes these modules

- **Hadoop Distributed File system (HDFS)**

A distributed file system that provides high-throughput access to application data. It is a distributed file system that helps to store large amount of data in a reliable manner providing fault tolerant file system. The master node is called name node and manages the cluster metadata. It follows a Master/ Slave structure, in which we have a one or more devices called as slave devices are controlled by one device known as master device. Slave node is called data node and stores data. It is a java based file system.

- **Hadoop YARN / Map Reduce**

A framework for job scheduling and cluster resource management. It is cluster resource management and has been built as a programming model in the Hadoop framework to process large amount of data in a distributed & parallel environment on a cluster.

- **HBase**

It is scalable and distributed database that supports structured data storage for large tables. It also provides for transactional kind of capabilities by allowing updates, inserts, delete etc. HBase is a Hadoop database which is non-relational (NoSQL) database that runs on top of HDFS. HBASE allows for random, real time read/write access for the big data. Is columnar, and provides fault tolerant storage and fast access.

- **Pig**

A high-level data flow language and execution framework for parallel computation. Apache PIG is a scripting language enabling users to write complex Map Reduce transformation including summarizing/ aggregation, joining, sorting etc. One of the main features of PIG is parallel processing enabling it to handle very large datasets.

- **Hive**

A data warehouse infrastructure that provides data summarization and ad hoc querying. HiveQL is a SQL like language used for querying petabytes of data in Hive. It is used to analyze data in HDFS and provides full support for Map Reduce. The advantage that Hive offers is that it is very similar to the traditional SQL language, fast over big datasets. It is scalable, extensible and provides for various reporting.

- **Sqoop**

Sqoop is a software tool designed to transfer bulk data between Hadoop and relational database. Sqoop is used to im-port data from external databases into HDFS or HBASE or HIVE. It allows for data imports form and data exports to external relational database and parallel data transferring. It uses simple SQL query as well as saved jobs that can run number of time for importing the updates regarding the data between Hadoop and relational database.

- **ZooKeeper**

A high –performance coordination service for distributed applications Zookeeper offers operations services in the Hadoop framework. It is a centralized service used for maintaining configuration information, named registry, provides data synchronization and group services that are used by distributed application. Zookeeper’s architecture support high availability though redundant services. It allows for the various distributing processes to coordinate between themselves through a shared hierarchical name space or registers called znodes.

- **Avro**

Avro is a data serialization system, which serializes data in a compact binary data format and provides for rich data structures and a container file for storing persistent data. It relies on schemas to read and write data. It uses JSON (Java script open notation) for defining data types & protocols. It makes use of wire format for communicating between Hadoop nodes, and between client program & services.

- **Cassandra**

A scalable multimaster database with no single points of failure. Apache Cassandra is a high availability, highly scalable and high performance open source distributed database management system having capability of handling huge amount of data across multiple servers. It provides for fault tolerance and is decentralized.

- **Mahout**

Apache Mahout is a project of the apache software foundation to produce free implementation of distributed or otherwise scalable machine learning algorithms focused primarily in the areas of collaborative filter, cluster and classification.

- **Tez**

A generalized data –flow programming framework, which provides a powerful and flexible engine to execute an arbitrary DAG of tasks to process data for both and interactive use-cases. Tez is being adopted by Hive, Pig and other frameworks in the Hadoop ecosystem, and also by other commercial software to replace Hadoop MapReduce as the underlying execution engine.

- **Spark**

It provides a simple and expressive programming model that supports a wide range of applications, machine learning, stream process, and huge graph computation. Apache spark is a fast data analytics and machine learning algorithmic engine used for processing data at large scale. Spark is integrated with Hadoop and has an advance analytical engine which makes it 100 times faster than Hadoop map reduce by utilizing in memory processing.

- **Flume**

Flume is a reliable distributed service for efficiently collecting aggregation and moving large amount of LOG Data. It helps the users make most use of valuable log data. It allows for streaming data from multiple sources, collecting high volume real time web logs.

Conclusion

Big data provides an opportunity for “big analysis” leading to “big opportunities” to advance the quality of life, or to solve the mysteries of the world. We are in the development are of big data. In this paper details about big data have been discussed taking the Hadoop Framework as a base. We have characteristics of big data and provided deep information on the various components of big data from a Hadoop perspective. There are various challenges and issues of big data. There must support and encourage fundamental research towards these technical issues if we want to achieve the benefits of big data.



Tech –Terms

Broadband

Broadband is a type of communications technology whereby a single wire can carry more than one type of signal at once; for example, audio and video. Cable TV is one technology that uses broadband data transmission.

Content

Content refers to a website's text and information, as opposed to its design and structure.

Cookie

A piece of code or data created by a web server and stored on a user's computer. It is used to keep track of the user's usage patterns and preferences.

Encryption

Encryption is the process of converting electronic data to an unrecognisable or encrypted form, one that cannot be easily understood by unauthorised parties.

Gateway

A point within a network that interconnects with other networks.

Malware

“Malware” is short for malicious software. It refers to a software program that has been developed to do harm to other computers. Types of malware include viruses, worms and spyware.

Phishing

Phishing is a type of email fraud in which the perpetrator sends out emails that appear to come from a legitimate service or reputable company, such as a bank or an email service provider. These emails aim to lure recipients to reveal confidential information that the perpetrator can use for their financial advantage - for example, online banking log-in details and passwords.

Plug-in

A software plug-in is a component that adds to a software program's functionality.

Resolution

Resolution refers to the number of distinct pixels that make up the display on a computer monitor. It is denoted in DPI (dots per inch). The higher the resolution, the finer and smoother the images appear when displayed at a given size.

SEO

SEO, or search engine optimisation, is the practice of making adjustments to certain aspects of a website in an effort to improve its ranking on search engines.

Zip

To zip files is to archive and compress them into one file of smaller size using a program such as WinZip. It's a handy way to make files smaller before sending them via email.

Quiz

1. **'.MOV' extension refers usually to what kind of file?**
 - A. Image file
 - B. Animation/movie file
 - C. Audio file
 - D. MS Office document

2. **The purpose of choke in tube light is?**
 - A. To decrease the current
 - B. To increase the current
 - C. To decrease the voltage momentarily
 - D. To increase the voltage momentarily

3. **Who developed Yahoo?**
 - A. Dennis Ritchie & Ken Thompson
 - B. David Filo & Jerry Yang
 - C. Vint Cerf & Robert Kahn
 - D. Steve Case & Jeff Bezos

4. **Who created Pretty Good Privacy (PGP)?**
 - A. Phil Zimmermann
 - B. Tim Berners-Lee
 - C. Marc Andreessen
 - D. Ken Thompson

5. **In what year was the "@" chosen for its use in e-mail addresses?**
 - A. 1976
 - B. 1972
 - C. 1980
 - D. 1984

6. **Where is the headquarters of Intel located?**
 - A. Redmond, Washington
 - B. Tucson, Arizona
 - C. Santa Clara, California
 - D. Richmond, Virginia

7. **What is a GPU?**
 - A. Grouped Processing Unit
 - B. Graphics Processing Unit
 - C. Graphical Performance Utility
 - D. Graphical Portable Unit

8. What is NAT?

- A. Network Address Translation
- B. Network Administration Tool
- C. Novell Address Transfer
- D. Newly Added Technology

9. What is TTL?

- A. Technical Talk Language
- B. Transparent Transfer Layer
- C. Time To Live
- D. True Technology Lives

10. First smartphone is_____.

- A. IBM Simon
- B. Nokia 1110
- C. Samsung Galaxy S
- D. None of these



Acknowledgement

We are highly thankful for reading out this compilation and hope it will be useful for you in our day to day professional and personal life. We would like to hear your interest areas, suggestions from you to make this newsletter more informative and interesting. Your views will definitely help us to create this newsletter as an effective medium to reach you with latest development in the fields of communication and technology.



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Answers to the Quiz

1	2	3	4	5	6	7	8	9	10
B	D	B	A	B	C	B	A	C	A

