Information and Communication Technologies (ICT)

CODE BAT 05104

INTRODUCTION

- **Information and Communication Technologies** (ICTs) is a broader term for Information Technologies (IT), which refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, video-conferencing, social network, and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form.
- **Dfn:** Information and Communication Technology (ICT) refers to the use of digital technologies to process, store, and exchange information. It includes tools and applications such as computers, smartphones, internet, social media, email, and software.

INTRODUCTION

- Some examples of ICTs are intranet, extranet, website, mobile apps, e-commerce websites, software robots, servers, cloud technologies, digital communication apps, and technology to facilitate work from home. Let's introduce them one by one.

Types of ICT used in business

- Intranet: A network used by employees of a business to communicate privately is called an intranet. Intranet is used to share ‘inside’ information on the company that the company does not want to go public. This may include training videos, employee information, or plans of the company.
- Extranet: Also a private network. Along with employees, other stakeholders like suppliers and wholesalers can also access the extranet of the company. Using the extranet, suppliers can communicate with employees about stocks or dealers can order the required quantity of goods.

Types of ICT used in business

- **Website**: Websites are now the ‘storefronts’ of a business. A commonly repeated factoid is that there are as many websites as the number of people in the world. The website lets the business talk to its customers directly and receive feedback.
- **E-commerce website**: Along with using a website for communication, businesses use their websites to sell their products. The buying or selling of goods using the internet is called e-commerce.

Types of ICT used in business

- **Software robots**: Chatbots are the most widely used software robots. Do you remember surfing on a random website when a pop-up comes up asking you if you need any help finding particular information? If you go ahead and reply, you communicate with a 'software robot' that helps you navigate better. Software robots are special software created to work as a virtual workforce.
- **Servers**: Servers are computers or programs that help client computers with the required information. Servers usually are ultrafast processing computers with a large storage capacity.
- **Cloud technologies**: Cloud servers let businesses store their data on the server of another company. If a company is using cloud service, then they don't have to invest a huge amount of money in setting up their server.

Types of ICT used in business

- **Digital communication apps**: Many businesses use mobile applications to communicate internally. There are some apps like Slack or Google Workspace that help communication while working remotely feasible.
- **Technologies to facilitate home working**: Nowadays many businesses have adopted a work-from-home policy. There are technologies such as the Microsoft Office suite where people can work simultaneously on a single project. Zoom calls have also smoothened communication for larger groups of employees.

DATA AND INFORMATION

- Data are raw facts, events, numbers and transactions, which have been collected, recorded, stored but are not yet processed. Data consist of numbers and characters (i.e. alphabets and special symbols) which are used to record facts and events about activities occurring in an environment.

DATA AND INFORMATION

- **Information** is processed data. It is obtained after subjecting data to a series of processing operations which convert related groups of data (raw facts) into a meaningful and coherent form. Processing could be in the form of addition, subtracting, comparison, sorting, rearrangement etc. This makes information useful and meaningful. In other words, information could be defined as the desired form to which data is finally transformed after undergoing a series of processing.

DATA AND INFORMATION

- Let us consider an example which distinguishes data from information. The costs of five different items are data while the total cost or average cost which is obtained from the different costs is information. **Information must be communicated and received by a manager who uses it for decision making**. On most occasions, what is information to one manager might be data needing further processing to another manager.

The Table below shows example of data being used as information and vice versa.

S/N	Operation	Data	Information
1	Typing of students name, Matriculation number and scores in computer science	Characters like alphabets (A-Z, a-z), digits (0-9), or special characters (+,-,*,/)	Set of characters (words) like Ade, 70, Sola etc.
2	Computation of a class average science in computer science	Each student's test score in computer science	The class average score in Computer science
3	Computation of a school average score in Computer science	Each class' average score in Computer science	The school's average score in Computer science

The table below gives some distinctions between data and information

S/N	DATA	INFORMATION
1	Data is raw, an unchanged fact	Information is an organized and sorted fact
2	It serves as input into the computer system	It serves as an output from the computer system
3	Observation and recording are done to produce data	Analysis of data are done to obtain information
4	Data is the lowest level of knowledge	Information is the second level of knowledge
5	Data by itself is not significant	Information is significant

Use of information and communication technology in business

- Now that we are aware of some of the ICT technologies, let us see how it has impacted businesses in recent times. The use of ICT in business is to provide tools and systems that enable efficient communication, data management, analysis, and decision-making processes, as well as to enhance productivity, customer engagement, and competitive advantage.
- ICT can support various aspects of businesses like the **location of employees, collecting, storing, and analyzing information, e-commerce, and digital communication**.

Computer security

Computer security, also called cybersecurity, is the protection of computer systems and information from harm, theft, and unauthorized use.

Computer hardware is typically protected by the same means used to protect other valuable or sensitive equipment—namely, serial numbers, doors and locks, and alarms

The main objectives and characteristic of the computer security

The goal of cyber security is to ensure secure storage, control access, and prevent unauthorized processing, transfer, or deletion of data. It safeguards the **confidentiality**, **integrity**, and **availability** of information.

What are the Three Pillars of the CIA Triad

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- **Confidentiality:**

Collecting, storing, and sharing data in the digital space have made us prone to cyber attacks. Confidentiality states that only authorized people should be able to access sensitive information.

Any Personal Identifiable Information (PII) that can help recognize a person, any financial information such as transaction details made on e-commerce sites is supposed to be kept confidential.

What are the Three Pillars of the CIA Triad

- **Integrity:**

Ever remember clicking on a checkbox that says ‘I declare that the information provided is correct and accurate to my knowledge? This is essentially a declaration of integrity.

Integrity maintains the dependability of information and ensures that it has been in its original form throughout and is exact.

What are the Three Pillars of the CIA Triad

- **Availability:**

Availability ensures the accessibility of information to authorized personnel at the right time. They should be able to process data whenever the need arises.

Apply computer security techniques in handling business organization information

- Data has become one of the most valuable assets for companies of all sizes. With the increasing use of technology in business operations, securing sensitive data has become a top priority. Cyber attacks and data breaches are on the rise, and businesses must take proactive steps to protect themselves from potential threats.

Apply computer security techniques in handling business organization information

Conduct a Security Audit

- The first step in securing your data is to conduct a comprehensive security audit of your company's systems and processes. This will help identify any vulnerabilities or areas that need improvement. An external security audit by a professional service provider is recommended, as it provides an unbiased perspective and can highlight areas that might have been overlooked.

Implement Access Controls

- Implementing access controls is one of the most effective ways to secure your data. This means restricting access to sensitive information to only those needing it to perform their duties. This can be accomplished through password-protected user accounts, multi-factor authentication, and role-based access controls.

Apply computer security techniques in handling business organization information

Use Encryption

- Encryption is a powerful tool for securing data and should be used whenever possible. Encryption ensures that even if a hacker gains access to your data, they will be unable to read or use it without the encryption key. This is especially important for sensitive data such as credit card numbers, social security numbers, and medical records.

Keep Software Up-to-Date

- Software updates often include important security patches, so it is essential to keep your software up-to-date. This applies not only to your operating system but also to all third-party software and applications.

Apply computer security techniques in handling business organization information

Train Employees on Security Best Practices

- Employees are often the weakest link in data security, so training them on security best practices is crucial. This includes teaching them how to create strong passwords, identifying phishing scams, and reporting suspicious activity. Regular training sessions and reminders can help reinforce these practices.

Use Antivirus and Antimalware Software

- Antivirus and antimalware software can help protect your company's systems from malware and other malicious software. Regular scans and updates should be performed to ensure that the software is up-to-date and effective.

Apply computer security techniques in handling business organization information

Implement a Data Backup and Recovery Plan

- Data backups are essential in case of a data breach or system failure. A comprehensive data backup and recovery plan should be implemented, including regular backups and backup and recovery process testing.

Monitor Network Activity

- Regular monitoring of network activity can help identify potential security threats before they become a problem. This includes monitoring for unusual network traffic, unauthorized access attempts, and suspicious user activity.

Apply computer security techniques in handling business organization information

Use Secure Cloud Storage

- Cloud storage can be a secure and convenient way to store data, but choosing a reputable provider is essential, ensuring proper security measures are in place. This includes using Encryption, two-factor authentication, and regularly reviewing access controls.

Have an Incident Response Plan

- Finally, every company should have an incident response plan in place. This plan should outline the steps to take in case of a security breach or data loss, including notifying appropriate parties, containing the breach, and implementing remediation measures.

Type of computer security

❖Network Security

protects your network and data from breaches, intrusions and other threats. This is a vast and overarching term that describes hardware and software solutions as well as processes or rules and configurations relating to network use, accessibility, and overall threat protection.

Type of computer security

❖Software security

is the concept of implementing mechanisms in the construction of security to help it remain functional (or resistant) to attacks. This means that a piece of software undergoes software security testing before going to market to check its ability to withstand malicious attacks.

Type of computer security

❖Physical security:

This type of security is focused on preventing physical access to computers, servers, and other electronic devices. Examples include security cameras, locked doors, and biometric scanners.

Types of computer attack

A cyberattack is any intentional effort to steal, expose, alter, disable, or destroy data, applications, or other assets through unauthorized access to a network, computer system or digital device. Threat actors start cyberattacks for all sorts of reasons, from petty theft to acts of war,

There types of computer attack such as **Network attack, web and software attacks:**

Types of computer attack

❖Network attacks

Are unauthorized actions on the digital assets within an organizational network. Malicious parties usually execute network attacks to alter, destroy, or steal private data. Perpetrators in network attacks tend to target network perimeters to gain access to internal systems.

Types of computer attack

❖A web attack

Targets vulnerabilities in websites to gain unauthorized access, obtain confidential information, introduce malicious content, or alter the website's content

Types of computer attack

❖**Software Attacks**

Software threats are malicious pieces of computer code and applications that can damage your computer, as well as steal your personal or financial information. For this reason, these dangerous programs are often called malware (short for “malicious software”)

GROUP ASSIGNMENT

Group One:

Explain the five antivirus that you know at surrounding area and choose at least one of them, describe the procedure how to install into a desktop computer: Note include drawing or picture

Group Two

Explain how to secure Business data by using various computer security method.

Submission date: **3/05/2024** at **10:00 am** Avoid to use Chat GPT

END

Quiz