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Individual assessment

Q1. Definition of ICT**: Information and communication Technology (ICT**) refers to the integration of technologies that manage information and facilitate communication. It encompasses all digital to all system and services that allow for the storage, retrieval, processing, transmission, and reception of data and information. ICT is a broad umbrella term that include both **information technology (IT)** and **communication technology (CT**)

Difference between IT and CT:

|  |  |  |
| --- | --- | --- |
| **Aspect** | **Information technology (IT)** | **Communication technology ( CT)** |
| **Definition** | The use of computer, software and network to manage and process data. | Technologies and systems that facilitate communication over distance. |
| **focus** | Data storage, processing and management | Transmission and exchange for information between people or devices. |
| **Key components** | Hard ware (eg: servers, computers), software ( e.g. :data bases),networking. | Telecommunication system (eg: phones, satellites, internet protocols). |
| **Examples** | Database management, cloud computing, cyber security, data analytics. | Mobile networks, email services and social media platforms. |
| **Overlap with ICT** | IT form the back bone of ICT infrastructure. | CT enables communication in ICT system |

**Example of IT:**

1. **Data processing systems**: banks using data base to manage customer transaction.

2. **Enterprise software**: Microsoft office, SAP and oracle for office productivity and resource planning.

**3. Cloud storage**: google drive, drop box for storing and accessing files online.

**Example of CT:**

**1. Telecommunication networks**: mobile carriers like vision or Vodafone

**2. Messaging plat forms:** WhatsApp, telegram or slack for instant communication.

**3. Video conferencing**: zoom or Microsoft teams for real-time visual audio.

**Q2. Components of computer systems**

A computer system consist of hardware software and various types of memories, all working together to perform computing tasks.

**1. Hardware**: Refers to the physical components of a computer system that are tangible.it include:

a**. Input devices**: device used to input data and instruction into the computer.

**Examples**: keyboard, mouse, scanner.

**Function**: allow the users to interact with the computer by providing raw data for processing.

**B. output devices**: devices that display or output processed information.

**Examples:** monitor, printer, speaker.

**Function**: present the results of the computer’s operations in a human-readable form.

**C. central processing unit (CPU**):often called “brain” of the computer.

**Function**: executes instruction and processes data.

. **Arithmetic logic unit (ALU):** handles arithmetic and logic operation.

**. Control units (CU):** direct the follow of data instruction.

. **Registers:** temporary storage for immediate processing.

**D. storage devices**: used for saving data and program.

**. Primary memory (RAM and ROM)** : temporary or permanent storage for fast access.

**. Secondary storage**: long term storage.

**Example**: hard drives, SSDs, USB driver.

**2. Software**: refers the set of instruction or program that tell the hardware how to perform tasks. It includes:

**A. system software**: manage hardware and provide an environment for application software.

E**xamples**; operating system (windows, Macos, linux).

**Function**: facilitate basic operations like file management and resource allocation.

**B. application software**: designed to perform specific task for user.

**Function:** help users complete task such as writing document or browsing the web.

**C. utility software**

Provide additional functionalities to enhance system operation.

**Example**: antivirus software, backup tools.

**Function**: ensure system security and maintenance.

**3. Types of memory**

a. Random access memory (RAM)

**Function**: -temporary store data and instruction that the CPU needs while a program is running.

**Significance**:-enable fast data retrieval and processing. Volatile memory (data is lost when the system is turn off.

b. Read only memory (ROM)

Function: - permanently store essential instruction for booting up the computer.

Significance:-non-volatile memory (data persistent even when the system is torn off).

c. Secondary storage

Function: - store data and program for long time use.

Significance: -provide high capacity, persistent storage for files, applications and operating system.

Example: hard drive (HDDS), solid state drives (SSDs), optical discs (CDs/DVDs).

Importance of these component

. Hardware and software: works together to perform operations, with hardware executing the software instructions.

Memory is a critical for both temporary and permanent storage ensuring that data is ready avaliable

For processing and saved for analysis.

Those component collectively enable a computer system to perform a wide range of function , from simple calculation to complex data analysis.

Q3. Primary unity of computer system

A computer system operates by organizing its tasks into distict units. These units work together to process data and deliver a results efficiently.

1. Input : the input unit is responsible for receving data and instruction from the user and converting them into format that the computer can process.

Function : . accepts input from the device such as a keyboard, mouse, scanner or microphone.

. converts human – readable data into machine readable binary form.

. sends the processed input data to the CPU for further operations.

Examples: . keyboard: input text and comands.

. mouse: provides point and click input.

. microphone: captures audio signals.

1. Central processing unit (CPU)

The CPU is the “brain” of the computer, responsible for interprenting and executing instructions.

It consists of three sub-units:

1. Control units(CU)

. Role: direct the operation of the computer by managing the follow of data between computer.

. function: fetches instruction from memory ,decode them and cordinate their execution.

1. Arithemetic logic units(ALU)

.Role :performs arithmetic (addition, subtraction) and logical operation (comparisons)

. function: executes calculations and make logical decision required by programs.

1. Register

Role:- temporarity store small amaunt of data for immediate processing.

* Enable faster acess to data than main memory.

1. Memory unity : the memory unity store data and instruction temporarily or permanently. It provide quik access to information required by CPU.

Component

.Primary memory ( RAM and ROM):faster ,volatile or non-volatile storage for immediate CPU use.

. secondary memory: long-term storage for file and applications.

Fuction: ensure data is accessible for processing and retrieval when needed.

1. Output unit: the output unit take the processed data from the CPU and convert it into humany readable form.

Function:. Receives result s from the CPU in binary format.

.converts data into visual, audio or printed format for users.

. displays information through output devices.

Examples; .monitor :display visual output(text,graphics)

.printer: produces hard copies of documents.

.speaker:output audio signals.

Workflow among units

1. Input unit :collects data and sends it to the CPU.
2. CPU:Process the data,performs calculations,and generate result.
3. Memory units: store data temporarily for processing or permanently for later use.
4. Output unit : converts processed data into an understandable format for use.

This modular aproach ensures efficient data flow and functionality across the computer system.

Q4. a. the internet and intranet

Purpose of internet: the internet is a global network of interconnected computers that allows users to access and share information, communicate and interact via websites, emails,social media and more . it connect millions of private, public,academic and government networks world wide.

Difference between internet and intranet:

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| Aspect | internet | intranet |
| definition | A global network accessible to any one with an internet connection | A private net work restricted to specific users with in an organization |
| acess | Open to the public | Limited to authorized personnel only |
| purpose | Enables global communication and information sharing | Facilitates internal communication and resources sharing with in an organization |
| Example use | Browsing websites ,emailing ,using social media | Sharing comfidential report, internal emails |

b. step to create an emails account in gmail

1. go to the gmail website:open your web browser and go to ww.gmail.com.

2. click”create account” :select “greate account” ,then choose if the account is for personal or

Business use.

3. fill in your personal details: provide your first name , last name and prefferred email address

(Username).

4.Set a password: create a strong password and comferm it.

5.- Provide additional information:add aphone number optinal but recommended for recovery

- Enter a back up email address.

-provide your date of birth and gender.

6. verify your account : google may sent a verification code to your phone or backup email.

enter The code to confirm your identity.

7. accept term and conditions:review and agree to google’s term and privacy policy.

8.complete the setup:customize your gmails setting (ex: themes,signatures) as needed.

Three practical use of Email in academic or professional settings.

1. Communication:

. academic: students can communicate with professors for clarifications,submit assignment or coordinate group project.

.professionals: employees use email to coordinate tasks share up date,and interact with colleagues. .

1. Document sharing: emails allow easy attachment of document ,presentation ,and spreadsheets,making it essential for collabrative works.
2. Scheduling and notication:

.academic: student receive notification about exam shhedules,course updates and deadlines.

. professionals; emaile are used to schedule meeting ,set reminder and comfirm appointments.

Email is a vital tool for efficient communication and resouces management in both academic and professional environiments.

Q5. a. computer virus and how it spreads

Definition:

A computer virus is a types of milicious software program designed to infect a comper ,replicate it self and spread to another system. It often disrups normal operations corrups files or steal data.

How it spread:

1. Email attachments: viruses can be embedded in malicious attachment or link in emails.
2. Infected downloads: downloading infected soft ware ,gameor media files from untrusted sources.
3. Removable media: USB drives or external hard devices carrying viruses.
4. Nertwork sharing: spread thought file over network
5. Exploiting vulnerabilities:through upatched software or weak secuurrrity configurations.

b. three types of malicious software.

1. worms:

. Description: self-replicating programs that spread across networks without needing to attach to a host

File.

Effect :consumes bandwidth,slow system,and can deliver payloads like ransomware.

2.Trojan horses:

. Description :malicious programs disguised as legitimate software.

-effect: grants un autholised acess to attackers,allowing the to steal data or control the system.

3.Ransomware

.Description :encry auser’s data demands payment(ransom) for decrypion.

.effect :causes data loss and financial harm if backups are unavailable

c.Three best practices for preventing viruses and maintaining computer security.

1.install and update antivirus software;

.Use reputable antivirus software:

.use reputable antivirus software to detect and remove malware.

.regulate up date the software to protect against new threats

2.Be cautious with dowloads and emails;

.only download file from trusted websites.

.avoid opening email attachments or links from unknown senders.

3. Regularly update software and operating system.

. Apply security patches and update to fix vulnerabilities.

. Use automatic update whenever possible to stay protected against exploits.

By following these best practices users can minimize the risk of infection and maintain the security of their systems data.

Q6. Difference between data, information, and knowledge.

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| --- | --- | --- | --- |
| Aspect | data | information | knowledge |
| definition | Raw, unprocessed facts and figures without context | Processed data that is meaning full and use full | Insights or understanding gained from information |
| nature | Unorganized and raw | Organized and structured | Contextual ,applied and actionable |
| dependent | Does not depend on information or knowledge | Depend on data to drive meaning | Depend on information to form insights |
| use | Serves as in put for processing | Help in decision making or analysis | Guides action and strategies |

Examples: 1. Data:

. Raw figures like “120, 85, 75” or “2023-11-19”. Ex: scores from a test 85, 90, 78.

2. Information:

.contextualized data that answer a specific question.

.example: “the average test score for the class is 84”

3. Knowledge:

.interpretation of information to derive insight or conclusion.

.example: “student who studied for more than 2 hours a day scored above the class

Average”.

Explanation 1. Data serves the raw materials that is processed to create information.

2. Information adds context and relevance, making the data useful for under

Standing or decision.

3. Knowledge build on information by applying understanding, experience,

Reasoning, enabling informed decision and strategies.

This progression from data to knowledge demonstrate how unstructured facts evolve in to action able insights.

Q7.The role of ICT in modern education career development

In today’s digital era information and communication technology(ICT) has become a comer stone of modern education and career development .ICT transform a traditional learning and working methods ,equipping individual with skills that are indispensable for success in academic and professional environment.

In education, ICT fosters an engaging and interactive learning experiences. Digital tool such as virtual classroom, education app, and on line resources break the barrier of time and space, enabling learner to access knowledge anytime and anywhere. For instance, platform like google class and zoom ensure seamless communication between student and educators, especially during remote learning .furthermore ICT empowers learner with tool like simulation software, enabling them to grasp complex concepts in subjects such as science and engineering effectively. From personal experience using online tutorials and eBook significantly enriched my understanding of challenging topics and allowed me to learn at my own pace.

ICT also play a pivotal role in enhancing career readiness. In the professional word, digital literacy is no longer optional; it is a fundamental skills. Proficiency in tool like Microsoft office, programming languages and data analysis software is often a prerequisite for employment. Additionally ICT facilitate collaboration through platform such as slack and Microsoft team can communicate and share resources efficiently. For example : I use cloud-based tools like google drive during group projects, which allowed my team to collaborate on presentation and document in real time ,mirroring work place dynamics.

Moreover ICT nurture critical thinking and problem solving skills by exposing individual to diverse technology challenges. Learning to navigate and adapt to evolving technologies prepare student to address real-world issues innovatively. For instance, participating in a coding workshop not only improved but also enhanced my logical reasoning and team work abilities.

In conclusion ICT has revolutionized education and career development, bridging the gap between knowledge acquisition and practical application. By integrating ICT into learning and work, individual can achieve academic excellent and remain competitive in an increasingly digital workplace. As technology continues to advance, mastering ICT will remain essential for lifelong learning and professional growth.

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