

Comprehensive Notes On

Unit 3: Information and Communication Technology Skills

Class X - Employability Skills

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1 Session 1: Basic Computer Operations

1.1 What is ICT?

What-Why-How: Information and Communication Technology (ICT)

What It Is: ICT refers to methods, tools, and concepts related to storing, recording, and sending digital information.

Why It Matters: ICT skills help us communicate, run businesses, and stay connected with family and friends.

How It Works: When information is stored on electronic devices like tablets, smartphones, and laptops, it takes on a 'digital' form.

1.2 Computer Hardware and Software

What-Why-How: Hardware and Software

What It Is: A computer system consists of two main parts. Hardware is the physical machinery we can see and touch (e.g., keyboard, monitor, CPU). Software is the unseen programs that make hardware work.

Why It Matters: Without software, the hardware is useless. Software allows you to play games, watch videos, or type text.

How It Works: When you open a game (software), it runs on the CPU and displays images on the monitor (hardware).

1.3 Operating System (OS)

The most important software in any computer is the **Operating System (OS)**.

- **Desktop OS:** Ubuntu, Microsoft Windows, Mac OS.
- **Mobile OS:** Apple iOS, Google Android.

1.4 Starting a Computer

Steps to Start a Computer

1. Press the Power button on the CPU or device.
2. The computer runs a basic program called BIOS (Basic Input/Output System).
3. BIOS does a self-test.
4. If fine, BIOS loads the Operating System (e.g., Ubuntu).
5. The OS displays the desktop/welcome screen and is ready for inputs.

1.5 Login and Logout

- **Login:** Keeping a computer locked ensures no unauthorised person can see or change information. We use a **login-ID** and **password**. A password is like a key to a lock.
- **Logout:** Once finished, you must log out or sign out to keep your work secure.

1.6 Using the Keyboard

Key Type	Function / Description
Function Keys	Labeled F1 to F12. Specific functions vary by program.
Control Keys	CTRL, SHIFT, SPACEBAR, ALT, CAPS LOCK, TAB.
Enter Key	ENTER or RETURN. Moves cursor to a new line or confirms a task.
Punctuation Keys	Colon (:), semicolon (;), question mark (?), quotes (' ', " ").
Navigation Keys	Arrow keys, HOME, END, PAGE UP, PAGE DOWN. Moves cursor up, down, left, right, to start/end of line, or up/down a page.
Command Keys	INSERT (INS), DELETE (DEL), BACKSPACE. Used to overwrite or remove text/characters.
Windows Key	Pressing this key opens the Start menu.

1.7 Using a Mouse

- **Roll Over or Hover:** Bringing the mouse over a file without clicking to see details.
- **Point and Click:** Moving the pointer and pressing the left mouse button to select an item.
- **Drag and Drop:** Clicking an item, holding the mouse button, moving it to a new location, and releasing.
- **Double-click:** Quickly clicking the left mouse button twice to open a file or program.

2 Session 2: Performing Basic File Operations

2.1 Files and Folders

What-Why-How: Files and Folders

What It Is: Information on a computer is stored in files. Files are grouped and kept inside folders.

Why It Matters: It keeps information organized, making it easier to manage, copy, move, rename, or delete.

How It Works: Every file has a **file name** and a **file name extension** separated by a 'dot'. Example: Neha.txt, image.jpg, song.mp3.

2.2 Creating Files and Folders

- **Creating a File:** Open a text editor (like 'editor' in Ubuntu or Notepad in Windows), type text, click **Save**, select a location (like Desktop), give it a name, and click Save.
- **Creating a Folder:** Open file explorer, choose a location (like Desktop), right-click and choose **New Folder**, then type a name for the folder.

2.3 Keyboard Shortcuts

Shortcut	Action
CTRL+Z	Undo
CTRL+Y	Redo
CTRL+A	Select All
CTRL+X	Cut
CTRL+C	Copy
CTRL+V	Paste
CTRL+P	Print
CTRL+S	Save

3 Session 3: Computer Care and Maintenance

3.1 Importance of Care

What-Why-How: Computer Maintenance

What It Is: Taking care of electronic devices, protecting them from dust, damage, and overheating.

Why It Matters: Computers and mobiles are expensive. Proper care helps them work efficiently, last longer, and saves money.

How It Works: Regular cleaning, proper handling, and running maintenance software.

3.2 Basic Tips for Taking Care of Devices

- **Keyboard & Screen:** Keep clean. Use a soft brush for the keyboard and a soft cloth for the screen. Don't eat over it.
- **Food and Drinks:** Keep liquids away to prevent permanent damage from spills.
- **Handle Carefully:** Avoid dropping or banging. Use a padded case.
- **Keep it Cool:** Avoid overheating. Ensure CPU fan functions. Do not block vents (e.g., using a laptop on a bed).
- **Do Not Overcharge:** Unplug once charged 100% to maintain battery life.
- **Plug in Carefully:** Insert USB drives and headphones gently.
- **Don't Run Too Many Programs:** Too many programs make the computer slow and crash. Close unused apps.

3.3 Maintenance Schedule

Frequency	Tasks
Daily	Clean up e-mail inbox. Download and save attachments properly.
Weekly	Clean keyboard and monitor. Dust CPU/printer. Backup data.
Monthly	Transfer photos to drive, organize into folders. Clean 'Download' folder. Uninstall unused programs. Run disk-cleaner and virus scan.
Yearly	Clean social media contacts. Clean e-mail contact list. Update OS. Renew anti-virus.

3.4 Data Backup and Virus Cleaning

- **Backup:** Saving information to a CD/DVD or hard disk. Helps recover data if the computer crashes.
- **Anti-virus:** Software that scans for and cleans viruses before they destroy data.
- **Increasing Performance:** Remove extra/temporary files using disk cleaner software.
- **SPAM:** Unwanted promotional e-mails. Never respond to SPAM; delete it or use SPAM filters.

4 Session 4: Computer Security and Privacy

4.1 What is Computer Security?

What-Why-How: Security and Privacy

What It Is: Measures taken to prevent the loss or leakage of data (security break).

Why It Matters: Sensitive data (photos, banking details, patient records) must be protected from falling into the wrong hands.

How It Works: Using passwords, anti-virus, and encryption to restrict unauthorized access.

4.2 Threats to Computer

Types of Threats

1. **Theft:** Stealing information or hardware.
 - *Physical Theft:* Stealing the actual device.
 - *Identity Theft:* Hacker steals personal information to assume your identity.
 - *Software Piracy:* Using or distributing unlicensed software.
2. **Virus:** Malicious software that damages data.
 - *Worms:* Replicate themselves and spread to all files.
 - *Trojan Horse:* Disguises itself as a useful program, but behaves like a virus.
3. **Online Predators:** People who trap others into inappropriate relationships.
4. **Internet Scams:** Attractive fake offers designed to steal money or bank details.

4.3 Protecting your Data

- **Use strong passwords:** A mix of small and capital letters, numbers, and special characters.
- **Install Anti-virus and Firewall:** Monitors incoming/outgoing data and detects/cleans viruses.
- **Encrypt Data:** Scrambles data so a password is required to decrypt it.
- **Secure sites:** Only give credit card details on sites starting with `https://` and a lock symbol.

5 Comprehensive Question Bank

5.1 Multiple Choice Questions (MCQs)

1. Which of the following functions is not performed using a mouse?

- | | |
|-------------|-------------------|
| (a) Turn on | (c) Right click |
| (b) Hover | (d) Drag and Drop |

Answer: (a)

2. What is the term used when you press and hold the left mouse key and move the mouse around?

- | | |
|------------------|---------------|
| (a) Highlighting | (c) Selecting |
| (b) Dragging | (d) Moving |

Answer: (b)

3. Here are the steps that take place when starting a computer. Rearrange the steps in the correct order:

- (i) Desktop appears after login
- (ii) Login screen appears
- (iii) Power on Self-Test (POST) starts
- (iv) Operating system starts
- (v) Welcome screen appears

- | | |
|---------------------------------|---------------------------------|
| (a) (iii), (iv), (v), (ii), (i) | (c) (iii), (iv), (ii), (v), (i) |
| (b) (iv), (iii), (v), (ii), (i) | (d) (v), (iv), (iii), (ii), (i) |

Answer: (a)

4. Which one of the following shortcut keys is used to paste a file?

- | | |
|--------------|--------------|
| (a) Ctrl + c | (c) Ctrl + v |
| (b) Ctrl + p | (d) Ctrl + x |

Answer: (c)

5. Which of the following is a valid file extension for Notepad file?

- | | |
|----------|-----------|
| (a) .jpg | (c) .text |
| (b) .doc | (d) .txt |

Answer: (d)

6. What keys do you use to copy something?

- | | |
|------------|------------|
| (a) Ctrl+x | (c) Ctrl+z |
| (b) Ctrl+c | (d) Ctrl+y |

Answer: (b)

7. What happens if you leave a device plugged in even after it is charged 100%?

- (a) It can break.
- (b) It can stop functioning.
- (c) It can over-heat.
- (d) Data can get corrupt.

Answer: (c)

8. How can an anti-virus protect your device?

- (a) It can protect it from over-heating.
- (b) It can increase its performance.
- (c) It can prevent data from getting corrupt.
- (d) It can backup data.

Answer: (c)

9. Which option is not required to keep a device cool?

- (a) Keep the device unplugged when in use.
- (b) Do not cover a laptop with a blanket.
- (c) Make sure computer's CPU fan is working.
- (d) Avoid leaving the device in the sun.

Answer: (a)

10. Which of the following is essential for maintaining keyboard?

- (a) Turn the keyboard upside down and shake it.
- (b) Blow dust and other particles with help of a blower.
- (c) Use soap and water with a non-abrasive cloth.
- (d) All of the above.

Answer: (d)

11. What should you do to ensure secure online transactions?

- (a) Lock your computer
- (b) Give credit card details only on safe websites
- (c) Use anti-virus
- (d) Do not use pirated software

Answer: (b)

12. Which of the following trap small children into inappropriate relations?

- (a) Online predators
- (b) Worms
- (c) Trojan Horse
- (d) Anti-Virus

Answer: (a)

13. What should a strong password consist of?

- (a) Only letters
- (b) Numbers and special characters
- (c) Name of a person
- (d) Letters, numbers and special characters

Answer: (d)

14. What does BIOS stand for?

- (a) Basic Internal Output System
- (b) Basic Input/Output System

- (c) Better Input Output System
- (d) Basic Internet Output System

Answer: (b)

15. Which of the following is an Operating System?

- (a) MS Word
- (b) Ubuntu

- (c) Keyboard
- (d) Monitor

Answer: (b)

5.2 Assertion-Reasoning Questions

Options for each question:

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

1. **Assertion (A):** Hardware cannot function without software.

Reason (R): Software provides the instructions that make the physical parts of the computer work.

Answer: (a)

2. **Assertion (A):** You should keep your computer plugged in at all times to ensure maximum battery life.

Reason (R): Overcharging a battery can cause it to overheat and reduce its lifespan.

Answer: (d)

3. **Assertion (A):** Anti-virus software prevents viruses from entering the computer system.

Reason (R): A firewall monitors data coming in and out of the computer.

Answer: (b)

4. **Assertion (A):** Entering credit card details on a website starting with 'http://' is safe.

Reason (R): Secure sites always start with 'https://' and have a lock symbol.

Answer: (d)

5. **Assertion (A):** SPAM e-mails should be deleted regularly.

Reason (R): SPAM e-mails are often unwanted advertisements or scams.

Answer: (a)

5.3 One-Word / Brief Answer

1. What is the program called that starts as soon as a computer is switched on?

Answer: BIOS

2. What key helps you overwrite characters to the right of the cursor?

Answer: INSERT (INS)

3. What is the term for stealing or distributing unlicensed software?

Answer: Software Piracy

4. Which virus type disguises itself as a useful software program?
Answer: Trojan Horse
5. Which feature scrambles data on an entire hard disk?
Answer: Encryption
6. What do you call a location where a group of files can be stored?
Answer: Folder
7. Which shortcut is used to 'Select All'?
Answer: CTRL+A
8. Name the malware that replicates itself and spreads to all files.
Answer: Worm
9. What indicates a secure website in the address bar?
Answer: https:// and a lock symbol
10. Which physical device displays text, images, and videos generated by software?
Answer: Monitor

5.4 Differentiate Between

Hardware	Software
Physical parts of a computer. Can be seen and touched (e.g., Keyboard).	Programs that instruct hardware. Cannot be physically touched (e.g., Ubuntu).
CTRL+C	CTRL+X
Copies the selected text/file. Original remains in place.	Cuts the selected text/file (removes it). Used to move the item to a new location.
Worm	Trojan Horse
Replicates itself across files. Spreads rapidly once inside.	Disguises itself as a useful program. Requires user to execute the disguised file.
File	Folder
Stores information (e.g., text, image). Has an extension (e.g., .txt).	Stores groups of files. Has no extension.
Backspace	Delete (DEL)
Removes character to the left of cursor.	Removes character to the right of cursor.

5.5 Short Answer Questions

1. **What is the function of the ENTER key?**

Answer: The ENTER key is used to move the cursor to the beginning of a new line in a document or to confirm a command.

2. **How will you prevent others from using your computer?**

Answer: By keeping the computer locked with a strong login-ID and password, and by logging out or shutting down.

3. **How is a computer file system similar to a physical file system?**

Answer: Just as physical papers are placed in files, and files are grouped inside folders in a cabinet, a computer stores data in digital files, which are kept organized within digital folders.

4. **Explain how to clean a computer on a daily basis.**

Answer: On a daily basis, one should clean up their e-mail inbox by deleting SPAM and downloading important attachments into proper folders.

5. **How can you increase the performance of a computer?**

Answer: By removing unnecessary files using disk cleaner software, and avoiding running too many programs at once.

6. **What is a strong password?**

Answer: A strong password must be a mix of capital letters, small letters, numbers, and special characters.

7. **Why should we avoid eating over a keyboard?**

Answer: Food crumbs can fall into the keyboard, damaging its internal parts.

8. **What is the role of an Operating System?**

Answer: The OS starts when the computer is switched on, displays the desktop, and makes the hardware and software work together to take instructions.

9. **What are online predators?**

Answer: People who trap others into inappropriate relationships or illegal activities online.

10. **What does encrypting data mean?**

Answer: Scrambling the information on a hard disk so that it requires a decryption password or key to be read.

5.6 Long Answer Questions

1. **Explain how a Trojan Horse virus works.**

Answer: A Trojan Horse is a type of malicious software that disguises itself. It appears to be a useful program, such as a game. The user is tricked into downloading and opening it. Once it is executed on the computer, it begins behaving like a virus, destroying data and stealing information.

2. **List the various ways you can use to protect your data.**

Answer: 1. **Use Strong Passwords:** Create passwords combining letters, numbers, and symbols. 2. **Install Anti-virus & Firewall:** Use them to detect, monitor, and remove viruses. 3. **Data Encryption:** Scramble data on the hard disk. 4. **Secure Transactions:** Share sensitive data only on sites starting with `https://`. 5. **Regular Backups:** Keep copies of important data on external drives.

3. **Describe the boot process (starting a computer) in detail.**

Answer: When the power button is pressed, the computer runs a basic program called BIOS (Basic Input/Output System). The BIOS performs a self-test to check if the hardware components are functioning properly. If the self-test passes, the BIOS loads the Operating System. The OS then displays the desktop, indicating the computer is ready.

4. **What is a computer maintenance schedule? Outline a proper schedule.**

Answer: A maintenance schedule is a planned routine to keep the computer running in perfect condition. It includes: **Daily:** Cleaning up the e-mail inbox. **Weekly:** Cleaning the keyboard and monitor, and backing up data. **Monthly:** Uninstalling unused apps, running disk cleaner, and running a full virus scan. **Yearly:** Updating the OS and renewing anti-virus software.

5. **Explain the different types of keys found on a keyboard and their functions.**

Answer: **Function Keys:** Perform specific actions depending on the active program. **Control Keys:** Perform special functions in combination with other keys. **Navigation Keys:** Move the cursor through a document. **Command Keys:** Used to edit or remove typed text. **Punctuation Keys:** Keys for typing marks like colon, semicolon. **Enter Key:** Used to confirm an action or move to a new line.

5.7 Case-Study / Competency-Based Questions

1. **Case Study 1:** Rahul's computer has been running very slowly for the past few weeks. He has many files in his 'Downloads' folder, and he often forgets to shut down his computer, leaving it plugged in all night. He recently downloaded a free game from an unknown website.

- (i) What is the most likely reason for the computer running slowly related to file storage, and how can he fix it?
- (ii) By leaving the laptop plugged in overnight, what hardware risk is Rahul taking?
- (iii) The free game he downloaded might actually be a threat. What type of threat could it be?
- (iv) What software should Rahul use immediately to check his system for the threat mentioned in (iii)?

Answers:

- (i) He has too many extra files taking up space. He should use disk-cleaner software and empty 'Downloads'.
- (ii) He is overcharging the battery, which can overheat the device and reduce battery life.
- (iii) It could be a Trojan Horse virus disguised as a game.
- (iv) He should run a full scan using an updated Anti-virus software.

2. **Case Study 2:** Priya receives an e-mail stating she has won a lottery of \$10,000. The e-mail asks her to click a link and provide her bank account details. The website link provided starts with <http://www.free-money-prize.com>.

- (i) What kind of cyber threat is Priya facing?
- (ii) Should Priya enter her bank details on the provided link? Give one technical reason based on the URL.
- (iii) What should Priya do with this e-mail?
- (iv) What type of folder does Priya's e-mail client use to automatically filter such emails?

Answers:

- (i) She is facing an Internet Scam.
- (ii) No, she should not. The URL starts with `http://` instead of `https://`, meaning it is not secure.
- (iii) She should never respond to it and delete it immediately.
- (iv) The SPAM folder.