

COMPUTER SCIENCE FUNDAMENTALS

STUDENT WORKBOOK

DEofch Academy

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Chapter 1: Fundamentals of Computer

Welcome to this Lesson!

In this chapter, we explore the core concepts of Fundamentals of Computer. Pay close attention as we dive into the details.

1. Introduction

A computer is an important machine used in our daily life. It helps us to do many tasks easily and quickly. Computers are used at home, schools, offices, banks, hospitals, and many other places.

2. What Is a Computer?

A computer is an electronic device that accepts data, processes it, and gives output. In simple words, a computer is a machine that works according to the instructions given by the user.

3. Uses of a Computer

Computers are used for many purposes, such as:

- Writing and typing work
- Drawing and painting pictures
- Playing games
- Watching videos and listening to music
- Storing information
- Learning and doing homework

4. Main Parts of a Computer

The main parts of a computer are:

- Monitor “ displays information on the screen
- CPU (Central Processing Unit) “ processes data and controls all activities
- Keyboard “ used to type letters and numbers
- Mouse “ used to point, click, and select items

5. Types of Computers

- Desktop computer
- Laptop
- Tablet
- Smartphone

6. Characteristics of a Computer

A computer: Works very fast, is very accurate, can store a large amount of data, and does not get tired.

7. Limitations of a Computer

A computer cannot think or make decisions on its own. It works only when instructions are given by a user.

8. Summary

A computer is an electronic device. It helps us perform tasks easily. It has different parts and types. It works according to instructions.

9. Exercise

A. Answer the following questions:

1. What is a computer?
2. Name any two uses of a computer.
3. Name the main parts of a computer.

B. Fill in the blanks:

1. A computer is an _____ device.
2. The brain of the computer is the _____.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Chapter 1: Fundamentals of Computer. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
- ☐ I can identify the parts discussed.
- ☐ I have completed the exercise questions.

My Learning Notes:

Chapter 2: Computer Case

Welcome to this Lesson!

In this chapter, we explore the core concepts of Computer Case. Pay close attention as we dive into the details.

1. Introduction

A computer is made up of many parts. Some parts are outside the computer and some are inside it. The computer case is one of the most important parts because it holds and protects all the internal parts of a computer.

2. What Is a Computer Case?

A computer case is a strong box that contains the main working parts of a computer. It is usually made of metal or hard plastic.

3. Where Is the Computer Case Located?

- In a desktop computer, the computer case is placed on or under the desk.
- In a tower computer, the case stands upright.
- In a laptop, all parts are inside one body.

4. Parts Inside the Computer Case

- CPU (Central Processing Unit): The brain.
- Motherboard: The main circuit board.
- Hard Disk / SSD: Stores data permanently.
- RAM: Temporary fast storage.
- Power Supply Unit (PSU): Supplies electricity.

5. Front and Back of the Computer Case

Front Side: Power button, USB ports, Headphone ports.

Back Side: Monitor port, Keyboard/Mouse ports, Network port, Power socket.

6. Types of Computer Cases

- Desktop Case (Flat)
- Tower Case (Upright)
- Mini Case (Small)

7. Importance of the Computer Case

Protects internal parts from dust, keeps parts cool, holds parts in position, makes the computer safe.

8. Care of a Computer Case

Keep it clean, do not open without permission, no liquids nearby, keep it cool.

9. Summary

The case is the body. It holds the CPU, RAM, and disk. Proper care is essential.

10. Exercise

A. Questions: What is a case? Name 3 parts inside. Why is it important?

B. Blanks: CPU is the __. PSU supplies __. Motherboard connects __.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Chapter 2: Computer Case. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
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- ☐ I have completed the exercise questions.

My Learning Notes:

Chapter 3: Input Devices

Welcome to this Lesson!

In this chapter, we explore the core concepts of Input Devices. Pay close attention as we dive into the details.

Input devices allow users to enter data. They bridge the user and the computer. Manual entry (Keyboard/Mouse) vs Direct entry (Scanner/Barcode).

Types of Input Devices

Basic: Keyboard, Mouse, Microphone.

Special: Scanner, Digital Camera, Touch Screen, OMR, OCR, Barcode Reader, Light Pen, Trackball, Joystick, Digitizer, MICR.

The Keyboard

The most common input device. QWERTY layout. Over 100 keys including Numeric, Alphabetic, Mathematical, Function (F1–F12), and Special keys (Enter, Shift, Esc).

The Mouse

Developed in 1965 by Douglas Engelbart. Parts: Left button, Right button, Scroll wheel. Types: Mechanical, Opto-Mechanical, Optical.

Other Devices

- Joystick: Vertical stick for games/simulators.
- Trackball: Stationary base with a ball.
- Touch Screen: Tap with finger or stylus.
- Light Pen: Drawing pen for graphics.
- Digital Camera: Captures digital images.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Chapter 3: Input Devices. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
- ☐ I can identify the parts discussed.
- ☐ I have completed the exercise questions.

My Learning Notes:

Chapter 4: Output Devices

Welcome to this Lesson!

In this chapter, we explore the core concepts of Output Devices. Pay close attention as we dive into the details.

1. Introduction to Output Devices

Receives processed data and presents it to the user. Converts binary into text, images, or sound.

2. Monitor (Visual Display Unit)

Shows text, graphics, and animations. Types: CRT (bulky), LCD (slim), LED (bright), OLED (excellent contrast), Touchscreen.

3. Printer (Hard Copies)

Produces digital data on paper. Types: Impact (Dot Matrix, Line) and Non-Impact (Inkjet, Laser, Thermal, 3D).

4. Speaker (Audio)

Converts digital signals into sound. For music, alerts, and communication.

5. Screen Image Projector

Projects content onto large screens. Used for presentations and classrooms.

6. Summary

Monitor is visual. Printer is hard copy. Speaker is audio. Projector is large display.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Chapter 4: Output Devices. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
- ☐ I can identify the parts discussed.
- ☐ I have completed the exercise questions.

My Learning Notes:

Unit 5: Storage Devices

Welcome to this Lesson!

In this chapter, we explore the core concepts of Storage Devices. Pay close attention as we dive into the details.

Primary Storage (Main Memory)

Directly accessed by the CPU. RAM (Volatile, fast) and ROM (Non-volatile, startup instructions).

Secondary Storage (Permanent)

- Hard Disk (HDD): Large capacity, magnetic.
- Solid State Drive (SSD): Faster, flash memory.
- Flash Drive: Portable USB.
- Memory Card: Used in mobile devices.
- External Hard Drive: Portable backup.

Importance of Storage

Essential for saving files, running programs, and keeping backups.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Unit 5: Storage Devices. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
- ☐ I can identify the parts discussed.
- ☐ I have completed the exercise questions.

My Learning Notes:

Unit 6: CPU and Processing

Welcome to this Lesson!

In this chapter, we explore the core concepts of CPU and Processing. Pay close attention as we dive into the details.

The CPU is the Brain. It fetches, decodes, and executes instructions.

Parts of the CPU

Control Unit (CU): The manager. Controls data flow.

Arithmetic Logic Unit (ALU): The calculator. Performs math and logic.

CPU Speed

Measured in Gigahertz (GHz). Higher GHz means faster processing. Essential for running heavy software and games.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Unit 6: CPU and Processing. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
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My Learning Notes:

Unit 7: Motherboard and Ports

Welcome to this Lesson!

In this chapter, we explore the core concepts of Motherboard and Ports. Pay close attention as we dive into the details.

Motherboard: The Backbone. Connects CPU, RAM, and Storage.

Components

CPU Socket, RAM Slots, Chipset, BIOS Chip, Power Connectors, Expansion slots (PCIe).

Ports and Connections

- USB: Universal connection for peripherals.
- HDMI/VGA: Connects to monitors.
- Audio: For speakers/mics.
- Ethernet: For wired internet.

Importance: Integration, Communication, and Upgradability.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Unit 7: Motherboard and Ports. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
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My Learning Notes:

Unit 8: Software and Operating Systems

Welcome to this Lesson!

In this chapter, we explore the core concepts of Software and Operating Systems. Pay close attention as we dive into the details.

Software are instructions. System Software (Windows/macOS) vs Application Software (Word/Games).

Operating Systems (OS)

Manages hardware and resources. Provides User Interface (UI).
Popular: Windows, macOS, Android.

Windows Basics

Desktop (Workspace), Taskbar (Bottom bar), Start Menu (Access hub).

Chapter Review & Practical Activity

Use this space to summarize the most important points from Unit 8: Software and Operating Systems. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
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My Learning Notes:

Chapter 9: Files, Folders and Skills

Welcome to this Lesson!

In this chapter, we explore the core concepts of Files, Folders and Skills. Pay close attention as we dive into the details.

File: Collection of data with an extension (.docx, .pdf, .jpg).

Folder: A container used to organize files. Helps in structuring data.

Keyboard Skills

Touch typing on Home Row (ASDF / JKL;). Shortcuts like Ctrl+C, Ctrl+V, Ctrl+S.

Mouse Skills

Pointing, Clicking, Double-clicking, Right-clicking, Drag and Drop.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Chapter 9: Files, Folders and Skills. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
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My Learning Notes:

Chapter 10: Internet and Safety

Welcome to this Lesson!

In this chapter, we explore the core concepts of Internet and Safety. Pay close attention as we dive into the details.

Web Browsers (Chrome, browsers Edge) and Email (Electronic Mail).

Online Safety

Strong passwords, avoid sharing personal data, recognizing scams.

Computer Care

Keep it clean, no food/drinks, update software, use Antivirus.

Troubleshooting

Restarting, checking cables, scanning for viruses.

Chapter Review & Practical Activity

Use this space to summarize the most important points from Chapter 10: Internet and Safety. Remember: Practice makes perfect!

Checklist for Learning:

- ☐ I understand the vocabulary.
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My Learning Notes:

Final Reflection Page

Congratulations on reaching this far! In this section, write a letter to your future self about what you want to do with computers.

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