FOURTH EDITION

Teaching
Guide

RIGHT BYTE 1
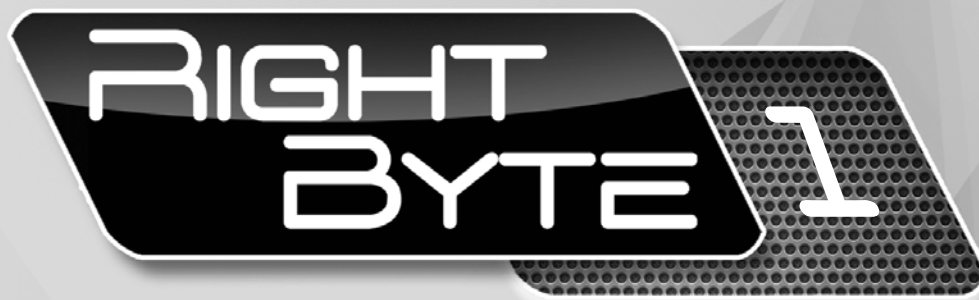
For Secondary Classes

Farah Naz

OXFORD
UNIVERSITY PRESS

Contents

Introduction to the series

Right Byte (Fourth Edition) is a three-book series aimed at introducing secondary level students to the logic behind computer operations. Students are now putting more effort into things that interest them and things they are convinced are relevant to them. Hence, the purpose of this book is to help students become competent in computer skills by explaining their practicality and usefulness. The new edition has been updated with respect to software and technology.

Education systems are based on examinations, and examination boards develop subject curricula accordingly. However, the foundation for all subjects is constructed well in advance. Computer studies is no different.

Written by experienced teachers, *Right Byte (Fourth Edition)* has been devised keeping in view the fact that the course should be a worthwhile experience in itself. The authors have sought to present the subject in a way which is accessible to all students. The series uses a simple and easy-to-learn approach throughout. Special attention has been paid to making the material comprehensive, interesting, concise, and practical.

Each chapter is self-contained and can be read independently. This provides the flexibility of studying chapters selectively. The chapters address a class-wise content and assessment methodology so that teachers can implement the curriculum effectively. The questions at the end of each chapter follow a logical progression in the amount of analysis and logical thinking required.

The authors sincerely hope that *Right Byte (Fourth Edition)* will shape the future of computer education at the secondary level.

For the instructor

In today's teaching environment, we understand that offering a textbook alone is not sufficient to meet the needs of the many different teachers who will be using it. To teach effectively, teachers must have a complete array of supplementary resources to assist them at every stage of teaching, from lesson planning to assessment.

Throughout the three Students' Books, important terms have been presented in bold and defined within the text. Summaries appear at the end of each chapter. The objective of these summaries is to provide a recapitulation of key concepts and terms in an engaging and meaningful way.

The approach of this fourth edition is to present information in clear and carefully-controlled steps. Engaging questions and tasks have been designed to test students' skills and explore the information presented. In addition, each chapter contains a number of objective questions to test students' recall of information. There is a list of key terms in the glossary at the end of each Student's Book.

All the concepts presented in the Students' Books are illustrated with suitable examples as and when required. This will enable the students to use the books most effectively.

Introduction to the Teaching Guides

Each Student's Book is accompanied by a Teaching Guide to help teachers use the textbook effectively. Our intention has been to produce a series that covers different aspects of IT. Every effort has been made to make it readable and accessible to those using this series. Simple and plain English has been used throughout.

The Teaching Guides have been developed keeping in mind that some teachers have had little or no prior experience of teaching computer studies. Efforts have been made to make sure that those teachers who have some experience of technology will benefit from the teaching ideas. The approach is practical and applied as well as theoretical. We believe that people learn by doing. A hands-on approach has been used to introduce each type of application. Sample lesson plans have been provided for each chapter that teachers can use to prepare their own lesson plans and activities appropriate for their class.

Features of the Teaching Guides

- Teaching objectives and learning outcomes
- Background information on important topics to guide the teacher during lesson planning
- Sample lesson plans
- Sample answers to questions given in the Students' Books
- Additional information that the teacher can incorporate in class discussions
- Activity sheets and test sheets for reinforcement and assessment
- Answers to activity sheets and test sheets

Note that students' answers to analytical questions might differ from the answers given in the guides. The answers given in the guides are only suggestions.

A practical approach

In order to function as an effective tool, the computer needs useful software that will make a student's work easier. We believe that the best way to learn is by doing. We encourage teachers to use the computer as a personal tool first and then to think about how to use it in the classroom. A tool is a means to an end, so it makes sense that the computer as a tool should be integrated throughout the school's curriculum. It is essential that the students get as much practical experience of using computers as they can because real understanding of computers can only come by using them as often as possible.

Issues involved in using computers

1 **Location of the computers in the computer lab**

One advantage of a computer lab is that it can accommodate the whole class at one time. An ideal lab should have enough computers so that there is one computer per child. But if that is not possible, then two students per computer is also a workable arrangement. Tables should also be provided in the computer lab so that students who are involved in off-computer activities have a place to work.

2 **Keyboarding**

It is important for students to learn the appropriate techniques for using a keyboard to enter data. Make sure that students do not develop bad keyboard habits. Schools should start formal keyboard instruction during the initial classes. The overall goal is for students to be able to type as fast as they can write. Emphasis should be placed on the correct technique as well as on accuracy.

Ideas on class management

- It is important to teach students some basic tasks such as how to insert a CD or a USB and how to protect them, how to plug in and unplug cables, how to navigate around a hard disk, how to use the printer properly, and so on.
- It is important to encourage students to make back-up copies of their important files.
- Pairing students at the computer is always very helpful. One student can enter information while the other can proofread what appears on the screen. Always remind them to change roles halfway through the task.

- When students work in pairs, make sure that each student does his or her own keyboarding. Sometimes the pair decides to let the faster typist do all the keyboarding and the other one does not get a chance to improve his or her keyboard skills. Please remember that one always learns to use software through hands-on experience, not by watching someone else.

- Always remind students to save their work periodically to minimize data loss caused by power failure. You could post a sign near the computer area saying, "Have you saved your work lately?"

- Students' keyboarding skills vary. Do not expect every student to need the same amount of time to complete a particular task. Help those who are slower.

- You can allow individual students to become class experts on particular software or on particular skills. These students can then help other students who need help, while you are busy with other students or tasks.

- When students ask for your help, never put your hands on their keyboard or mouse. Instead, tell them which key to press or what to do with the keyboard or mouse. Students should always do the task themselves in order to learn.

- Prepare a reference sheet for each software or software skill you introduce to students. Then, whenever they come for their practical class, they can bring their reference sheets to the computer lab to remind them of the most commonly-used procedures. This will save class time as students will have their own sheets and will refrain from asking questions again and again. You can also store students' reference sheets in a folder in the computer lab. Store the folders in alphabetical order on a shelf in the lab so that students can easily locate them whenever they need them.

- Another way to encourage students is to send letters to parents once in a term along with printouts of their practical work. Parents are always interested in knowing how their children are doing in class.

Some ideas for practical application

Your goal should be to stimulate students to think of new ways to integrate current lessons with computer activities.

Encourage students to interview their parents, grandparents, relatives, friends, or even their teachers to gather information about a given topic such as global warming. They can then enter the information on a Word document.

Students can prepare a newsletter of the events that have taken place at school over a period of three months or more, or about some other important event taking place in the country.

Encourage students to communicate and exchange ideas with other students in class via email.

Students can prepare a class database of all the students in their class along with their addresses and telephone numbers. They can also maintain a database of the weather for a month or two, or keep a database of all their school field trips and the places they have visited.

Always remember that if computer-related activities are designed to support the regular curriculum, they will not distract from learning, they will enhance it.

THE EVOLUTION OF COMPUTERS

1

Teaching objectives

The objectives of this chapter are to:

- introduce students to computers
- explain the developments that have taken place in computing devices
- explain how electronic computers have evolved
- classify computers according to size and type of data processed.

Learning outcomes

After completing this chapter, students should be able to:

- define a computer and explain its functions
- compare electronic computers with their predecessors
- describe the five generations of computers
- differentiate computers according to size, speed, and functionality.

Introduction for the teacher

The purpose of this chapter is to introduce students to the computer as a device that people use to help them make decisions, just as calculators are used for solving numerical problems. This chapter discusses, in chronological order, the development of computers. Help the students appreciate how people have improved the processing speed and the variety of tasks performed by computers.

Next, discuss the generations of computers with an emphasis on the developments that have taken place in processing speed and user-friendliness. Similarly, describe the different types of computers with reference to size and type of data processed. At each stage, ensure that students are able to identify the improvement of each subsequent machine over the previous one.

Conclude with a discussion on computers as they are used around us today. The students should be encouraged to project ways in which computers might evolve in the future.

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

What do we do when we need to do simple calculations?

How do we do more difficult calculations?

How do calculators help us? Is there only one kind of calculator?

Are there similar machines to help us with different tasks?

Reading and explanation (30 minutes)

Discuss section 1.1 on pages 3 to 5 of the textbook.

Explain data-processing by describing a common daily activity like cooking or painting. Next, extend this to more complicated problems like calculating the salaries of several employees in a company or maintaining the attendance records of all the students in a school.

After students have understood what a computer is and how it processes data, explain that like every other thing around them, computers also change over time. Support this by having students look at the different computing devices described on pages 4 and 5 of the textbook.

Conclude the discussion with computers as they exist today. Towards the end of the period students should be left with the understanding that if they think the journey has ended here they are in for a surprise because even electronic computers are continuing to evolve. This will prepare them for the discussion of the generations of computers in the next session.

You could bring in photographs or models of the various machines to demonstrate to the students. An abacus, a punched card, and a calculator are easily available. For other machines like Babbage's engine or Hollerith's tabulating machine, you could paste photographs on chart paper and show these to the students.

Homework assignment (5 minutes)

Assign question 1 from section D (page 12) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (30 minutes)

Discuss section 1.2 on pages 5 to 7 of the textbook.

Homework assignment (5 minutes)

Assign question 2 from section D (page 12) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 3

Starter activity (5 minutes)

Reading and explanation (20 minutes)

Discuss sections 1.3 and 1.4 on pages 7 to 10 of the textbook.

Classroom activity (10 minutes)

Assign sections A, B, and C on pages 11 and 12 to be completed in the classroom.

Homework assignment (5 minutes)

Assign questions 3 to 5 from section D (page 12) and section E (page 13) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 11 to 13

A. **Fill in the blanks.**

   1. vacuum tubes   2. circuits   3. instructions   4. Supercomputers

   5. Charles Babbage

B. **State whether the following statements are true or false. Rewrite the false statements to make them true.**

   1. True.

   2. False. Mainframes are faster than minicomputers.

   3. True.

   4. True.

   5. False. Transistors were more efficient than vacuum tubes.

C. **Select the correct option for each question.**

   1. c   2. d   3. b   4. c   5. a

D. **Answer the following questions.**

   1. **What is a computer? What is the difference between data and information?**

      A computer is an electronic machine that processes data and converts it into information.

      Data consists of raw facts and figures whereas information contains meaning. Data on its own has no meaning. Data only becomes information after being processed and taking on some meaning. A series of numbers like 4, 11, 18, and 25 is data. It becomes information when we know that they are the dates on which Sunday falls in a particular month.

   2. **Write a brief note on the different generations of computers.**

      First-generation computers (1942-1955) used vacuum tubes to process data. Some computers of this generation were ENIAC, EDVAC, and EDSAC. These computers were very bulky and unreliable.

      Second-generation computers (1956-1964) used transistors. Transistors were smaller and more reliable than vacuum tubes. These computers were smaller, faster, cheaper, and more reliable than first-generation computers.

      Third-generation computers (1965-1975) used integrated circuits. Computers became smaller, portable, faster, and cheaper. They also needed less power than earlier computers.

OXFORD
UNIVERSITY PRESS

Fourth-generation computers use microprocessors. A microprocessor or microchip is a tiny, thin wafer of silicon. Several electric circuits can be printed onto a microchip. Microchips are widely used in video games, pocket calculators, cash registers, washing machines, and other devices.

Fifth-generation computers are based on artificial intelligence. They can make decisions on their own and understand things in the same way as human beings.

3. **List three advantages of using computers for weather forecasting instead of the manual system.**

Three advantages of using computers for weather forecasting instead of the manual system are given below:

1. Computers can process weather data for a greater number of years than the manual system.

2. Computers can give more precise results than the manual system.

3. Computers can process weather data faster than the manual system.

4. **List five different places where computers are extensively used.**

Computers are extensively used in the following places:

1. Offices   2. Factories   3. Airports   4. Banks   5. Hospitals

5. **Beside each of the following, write the data that is being measured or counted. State whether the device is analog or digital.**

Device	Data	Type of device
a weather vane	wind direction	analog
a mercury thermometer	temperature	analog
a calculator	mathematical operations	digital

E. **Write paragraphs to answer the following questions.**

1. **Explain the major developments in data processing from the first generation to the fifth generation.**

From the first generation to the fifth generation, data processing has become more efficient and convenient. The processing capacity of computers has increased from the first generation onwards. The vacuum tubes had limited processing capacity but they were replaced by transistors, ICs, and microprocessors. The storage capacity has also increased over the generations.

2. **Explain how technology could change the following in the coming decade: education, shopping.**

In the coming decade, technology could change education through mobile devices. Students will be able to listen to lectures and complete assignments on mobile computers such as laptops and smartphones. They will not have to be present in the classroom at all times. This will help to spread education in rural areas. Technology will make shopping more convenient because people will make online purchases.

3. **What is the significance of Charles Babbage's contribution to the development of computer technology?**

Charles Babbage's contribution is a landmark in computer technology because he provided the blueprint for future developments in the field. His work on the analytical and difference engines helped the electronic computer to take shape. These machines showed how calculations and data processing could be carried out through programming an electronic machine.

F. **Lab exercise**

For the teacher: Ask the students to form an orderly queue and take them on a tour of the lab. Caution them to maintain silence in the lab. Show them the various computers. The following computers are present in a

typical computer lab: desktop computers, laptops, and smartphones. Ask students to name them. You could remove the casing of a system unit and show the location of the microprocessor.

G. **Project**

For the teacher: As students may not have seen some of the computers in real-life, you may need to bring in some pictures and explain how students can initiate their own research for this project. Encourage students to write brief descriptions for each picture on the chart and to make them attractive. Organize a chart exhibition after the students have completed their work.

Additional information for the teacher

- The original aim of inventing the computer was to create a fast, calculating machine. However, a lot of work done by a computer these days is of a non-mathematical or non-numerical nature. So a computer may be defined as a device that operates on data. Data comes in various forms depending upon the type of computer application.

- If you give incorrect data to a computer, it will produce incorrect results. Many problems that arise with computers are not caused by the computer but by the data that is used. People blame computers for mistakes but it is usually the fault of the person who collected or entered the data.

- The abacus is also known as the soroban and is still used in the Far East.

- A computer is many things to many people depending on what it is being used for. A computer can be a machine that tabulates a student's grades. It can also be a machine that processes a payroll, or be used to play chess. It is important to note that all the above tasks and many more are performed by the same computer; hence the term general-purpose computer. All you need to do is to give a computer an appropriate set of instructions and it will perform each particular task. In other words, we can say that a general-purpose computer can perform a variety of business, leisure, or scientific tasks.

- A special-purpose computer is one that is built to handle a specific task. It can perform only that task and no other. This means that the set of instructions which drives the machine is fixed (hard-wired) at the time it is built. Because a special-purpose computer is dedicated to a single task, it can perform this task efficiently and quickly.

- General-purpose analog computers were first built in the 1930s. Early special-purpose analog computers were the plain meter, the slide rule, and the harmonic analyser. In World War II, analog computers were of great importance for controlling gunfire on warships.

- In the early 1940s, Aiken built the first general-purpose digital computer called MARK I. Today digital computers are widely used in educational institutes, hospitals, offices, etc.

- Hybrid computers are a combination of analog and digital computers. These computers can produce precise and accurate results. Hybrid computers use analog-to-digital conversion and digital-to-analog conversion. These types of computers are used in medical labs and in robotics.

- Microchips are used in many home appliances and in office equipment. Cameras, telephones, fax machines, and televisions use microchips. Microchips enable us to make machines that are cheaper, smaller, automatic, and programmable.

- Appliances made with microchips are programmable. Programmable devices can be programmed to do specific jobs. A washing machine can be programmed to wash and dry clothes. A video recorder can be programmed to change TV channels and to start and stop recording at specific times.

OXFORD
UNIVERSITY PRESS

Activity Sheet

I. What is…?

1. What is a computer?

    _____

    _____

2. What is information?

    _____

    _____

3. What is a punched card?

    _____

    _____

4. What is an embedded computer?

    _____

    _____

5. What is a dedicated computer?

    _____

    _____

6. What is a supercomputer?

    _____

    _____

II. Arrange the given computers in order of size, from the largest to the smallest.

laptop   –   minicomputer   –   desktop computer   –   tablet

_____

_____

Test Sheet

I. **Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.** **(5 marks)**

Charles Babbage   Microchips   Digital   personal   notebook

1. _____ can be used in video games, toys, and washing machines.

2. _____ devices are used to count things.

3. Desktop computers are also called _____ computers.

4. Laptop computers are also called _____ computers.

5. _____ _____ is considered to be the father of modern digital computers.

II. **Complete each sentence by circling the correct words in the brackets.**   **(5 marks)**

1. In 1890, Herman Hollerith suggested using (vacuum tubes/punched cards) to enter data.

2. First-generation computers used (vacuum tubes/integrated circuits) to perform calculations.

3. A single IC chip contains thousands of (materials/circuits).

4. Digital devices deal with (discrete/continuous) data.

5. A (laptop computer/supercomputer) is a microcomputer.

III. **Identify one advantage of using a laptop over a PC. Can you think of one problem that might arise while using a laptop?** **(1 mark)**

_____

_____

IV. **What do you understand by the term artificial intelligence?** **(2 marks)**

_____

_____

V. **Microchips are used in many household appliances. Name some appliances that might contain microchips.** **(2 marks)**

_____

_____

Answers to activity sheet

I. What is...?

1. A computer is an electronic machine that can process data and convert it into information.

2. Processed data is called information.

3. A punched card is a strip of card with holes punched in it. It is used to give instructions to a computer.

4. An embedded computer is a microprocessor that is installed within a device to control how it works.

5. A dedicated computer is a computer that can perform only one type of task.

6. A supercomputer is the largest, fastest, and most complex type of computer.

II. Arrange the given computers in order of size, from the largest to the smallest.

minicomputer   –   desktop computer   –   laptop   –   tablet

Answers to test sheet

I. Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

Charles Babbage   Microchips   Digital   personal   notebook

1. Microchips   2. Digital   3. personal   4. notebook

5. Charles Babbage

II. Complete each sentence by circling the correct words in the brackets.

1. In 1890, Herman Hollerith suggested using (vacuum tubes/(punched cards)) to enter data.

2. First-generation computers used ((vacuum tubes)/integrated circuits) to perform calculations.

3. A single IC chip contains thousands of (materials/(circuits)).

4. Digital devices deal with ((discrete)/continuous) data.

5. A ((laptop computer)/supercomputer) is a microcomputer.

III. Identify one advantage of using a laptop over a PC. Can you think of one problem that might arise while using a laptop?

A laptop is small, light, and easy to carry around.

It may be difficult to read from the screen of a laptop.

IV. What do you understand by the term artificial intelligence?

Artificial intelligence is the field of computer science that tries to make computers think like human beings. AI computers will be able to make decisions on their own by making sensible guesses and forecasts.

V. Microchips are used in many household appliances. Name some appliances that might contain microchips.

1. microwave oven   2. washing machine   3. digital camera   4. television

5. air conditioner

INPUT DEVICES

Teaching objectives

The objectives of this chapter are to:

- explain the importance of the input function
- describe the role of input devices
- explain pointing devices, digitizing devices, scanning devices, image-capturing devices, audio-based devices, and sensors.

Learning outcomes

After completing this chapter, students should be able to:

- explain the input function
- identify various input devices
- select appropriate input devices for different types of data.

Introduction for the teacher

The purpose of this chapter is to create among students an appreciation of the diverse ways in which data can be fed into a computer. The tools used for this purpose are called input devices. You should highlight the fact that the choice of input device depends on the type of data that needs to be input. For example, text data can be input by a keyboard and visual data can be input by a webcam or a digital camera.

A point that you need to keep in mind when teaching this chapter is that students should understand that input devices vary not only in the type of data that can be input, but also in the way in which the data is input. For example, pointing devices use a precise location to input data while scanners input data in the form of images.

The chapter should end with a discussion on the different input devices that are found around us. Students should be encouraged to think about different types of data and the devices that can be developed to input such data.

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

In what form is information given in your book?

How does the traffic light tell us to stop our car?

How do we know when a thief has broken into the house?

Reading and explanation (30 minutes)

Discuss sections 2.1, 2.2, and 2.3 on pages 15 to 18 of the textbook.

Most of the devices covered in these sections are those that students are already familiar with. You can go over them quickly. At the same time, the focus should remain on the types of data that are input using keyboards, pointing devices, and digitizing devices, along with the ways in which they can be used to input data.

Describe the features of each device, but a lot of elaboration is not required. Students should be able to identify keys, mouse buttons, scroll wheels, joysticks, styluses, and pucks. Additionally, ask them about any problems that one might face when using these devices. You should then introduce Braille keyboards, cordless mice, and the like.

Lead the class discussion to students' understanding of the function of an input device in a data-processing system. They should be able to explain that the better the quality of the input device, the better the result of the processing will be. They will then be prepared for a subsequent discussion of devices that provide higher-quality input to the system.

To guide discussion and create interest among the students, you might bring in an actual keyboard, mouse, joystick, and light pen to the classroom. The students may be asked if they recognize these devices. These devices can be referred to when describing them from the text.

Homework assignment (5 minutes)

Assign questions 1 to 3 from section D (page 22) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (30 minutes)

Discuss sections 2.4 and 2.5 on pages 18 to 19 of the textbook.

Homework assignment (5 minutes)

Assign reading of the topics covered in the classroom.

Period 3

Starter activity (5 minutes)

Reading and explanation (20 minutes)

Discuss sections 2.6, 2.7, and 2.8 on pages 19 and 20 of the textbook.

Classroom activity (10 minutes)

Assign sections A, B, and C on pages 21 and 22 to be completed in the classroom.

Homework assignment (5 minutes)

Assign questions 4 and 5 from section D (page 22) and section E as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 21 to 23

A. **Fill in the blanks.**

   1. 104   2. OMR   3. barcode   4. touch pad   5. cordless

B. **State whether the following statements are true or false. Rewrite the false statements to make them true.**

   1. False. A touch screen is used as an input device and an output device.

   2. True

   3. True

   4. False. MIDI instruments can be connected to a computer

   5. True.

C. **Select the correct option for each question.**

   1. a   2. d   3. c   4. b   5. d

D. **Answer the following questions.**

   1. **Describe the different types of keys on a keyboard.**

      The keyboard has alphabetic keys to enter text. It has numeric keys to enter numbers. Special keys help us perform special tasks like moving to a new line or adding spaces. Function keys are used to perform different functions.

   2. **Name a place where the following input devices might be used:**

      a. **Touch screen**

         A bank

      b. **Barcode reader**

         A department store

      c. **Card reader**

         An electronics store

      d. **Joystick**

         A gaming zone

      e. **RFID reader**

         A warehouse

      f. **Fingerprint reader**

         An office

   3. **Which of these is a pointing device?**

      a. **Light pen**

      b. **Card reader**

      c. **Sensor**

         a. Light pen

OXFORD
UNIVERSITY PRESS

4. **Some students are physically challenged or have learning disabilities. Can you name two input devices that might help these students provide information to a computer?**

Braille keyboards and voice recognition systems can help students who are physically challenged to provide information to a computer.

5. **Which method of input (OMR, OCR, MICR, barcodes) is most likely to be used for each of the following? Why?**

a. **Reading data from a lottery ticket**

OMR. Data is read in the form of dots or marks.

b. **Scanning a typed document into a word processor**

OCR. An entire document is saved as an image.

c. **Reading data from bank cheques**

MICR. Data printed in special ink is read using MICR.

E. **Write paragraphs to answer the following questions.**

1. **Name four input devices that could be used to control security in a bank. Explain the reasons for your choice.**

The following devices could be used to control security at a bank: sensors, fingerprint readers, digital cameras, and MICR reader. Sensors can be used to detect unauthorized entry after banking hours. Fingerprint readers can be used to restrict access into sensitive areas. Digital cameras can be used to monitor activity inside the bank. MICR readers can be used to process cheques and identify fraudulent ones.

2. **Discuss 2-3 examples where audio-based input systems could be helpful to people with disabilities.**

Audio-based input systems can be installed in electronic wheelchairs so that the user can give voice commands to control its movement. Audio-based systems installed in a computer can type text spoken by users who cannot type with their hands. Audio-based systems can be installed around the house to control home appliances.

3. **Find out online about the new types of keyboards. How are they being made more useful and easier to use?**

Braille keyboards have raised dots that help visually-impaired people to type. Keyboards are now being designed in ways that reduce the stress on finger and wrist muscles. Foldable keyboards are being made that can be stored away when not in use.

F. **Lab exercise**

For the teacher: As in the activity for the previous chapter, you need to conduct an orderly tour of the lab and show the students the input devices installed on the computers. Explain how each device is used to enter data in different ways. Invite questions from students and allow them to practise using the devices. Make sure that each student gets adequate time for practice.

G. **Project**

For the teacher: You may need to suggest some science-fiction films if students are not familiar with this genre. Circulate a list where students write the names of the films they want to watch. You should make sure that these films are age-appropriate before approving their choices.

Additional information for the teacher

- Students are familiar with the QWERTY keyboard. In this chapter, the Braille keyboard has been introduced. Some keyboards are designed ergonomically to cause less strain for people who spend a lot of time typing. These are called concept keyboards. These keyboards have overlays that are placed on them before data is entered. You can see such keyboards on tills in shops or restaurants. Restaurants that sell fast food have tills with special keyboards. Each key on the till represents one food item. When the key is pressed to order the item, it inputs the name and price of the item. These are then printed on the customer's receipt. Concept keyboards are also used to help teach young children who may find large keyboards difficult to use.

- Touch screens are special monitors covered with a plastic layer that allow users to select items by touching points on the screen. Behind this plastic layer are invisible criss-crossed beams of infrared light. This arrangement allows users to select actions or commands by touching the screen with a finger. They are useful in multiple-choice input and menus.

- **Interactive whiteboards (IWBs) are used in classrooms. A special stylus is used to touch the screen.**

- Voice recognition systems use a microphone, a sound card, and special software. These systems allow computer users to operate computers and to create documents using voice commands. The computer then responds to this data by carrying out instructions like printing a document or recording dictation.

  Sound is an analog signal. The process of converting an analog signal into digital data is called sampling. The more frequently sampling is done, the better the sound quality. Microphones can be useful in offices for dictation. For this reason we also call them **voice-activated input systems**.

  Portable voice recognition systems are used by lawyers, doctors, and other professionals to record dictation. These devices are able to record for hours. They can later be connected to a computer to edit, store, and print the information. Some systems can also translate dictation from one language to another.

  There are two types of voice recognition systems. **Discrete-speech recognition systems** can recognize individual words based on their sounds. This system cannot distinguish between words that sound the same, such as THEIR and THERE, so the users have to review and correct captured dictation.

  Continuous-speech recognition systems can distinguish between words that sound the same. This is considered to be one of the key technologies for the twenty-first century.

OXFORD
UNIVERSITY PRESS

Activity Sheet

I.   What is…?

1.   What is a barcode?

2.   What is the benefit of an optical mouse?

3.   What is a puck?

4.   What is a magnetic stripe?

5.   What is mark sensing?

6.   What is a sensor?

II.   Complete each sentence by circling the correct words in the brackets.

1.   A mouse is a (moving/pointing) device.

2.   Using a digital camera you can take pictures and view them (later/immediately).

3.   A platform scanner or hand-held pen, also called a wand, is used to read (barcodes/phone cards).

4.   A card reader is a device that is used to read data on a (cinema ticket/magnetic stripe).

5.   Touch screens work best for (multiple-choice input/keyboard input).

Test Sheet

I. **Tick five boxes to show which five of these statements are most likely to be true.**

(5 marks)

1. Output devices are hardware devices used to provide input to the computer. ☐

2. A joystick can be used for simulation programs. ☐

3. A wireless mouse makes it easier to have a clutter-free desk. ☐

4. A light pen requires special hand/eye coordination skills. ☐

5. An optical mouse needs a pad and a lot of space. ☐

6. A touch pad is a small, rectangular surface usually placed below the keyboard. ☐

7. Smartphones can be used to schedule meetings. ☐

8. A puck is a mouse-like input device used with a graphics tablet. ☐

9. A POS terminal is a cardboard ticket that records details of sales for computer processing. ☐

10. Barcodes are multi-coloured lines of varying thickness that represent different letters. ☐

II. **Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.** **(4 marks)**

| touch pad | light pen | scanning | POS terminal |
| graphics tablet | keyboard | mark sensing | point of sale |

1. The most common input device is the _____.

2. A _____ _____ is a common input device on a laptop computer.

3. The _____ _____ is used directly on the monitor screen and does not require any special hand/eye coordination skills.

4. These days many graphic artists prefer to draw with the help of a _____ _____ and a computer.

5. A card reader is a _____ device that is used to read data on a magnetic stripe.

6. OMR is also called _____ _____.

7. A _____ _____ is a device at a point of sale, which records details of sales for computer processing.

8. A _____ _____ _____ is a place, usually in a shop, where a customer pays for goods.

Test Sheet

III. A keyboard is used to enter text into the computer. Give two disadvantages of using a keyboard. **(2 marks)**

_____

_____

IV. The image below shows coded data that could be input into a computer.

ISBN 978-0-19-547182-3

9 780195 471823

   a. What is the name given to this type of input? **(1 mark)**

   _____

   b. Name two places where this method of data input would be used. **(2 marks)**

   _____

   c. State what hardware is needed to enter the coded data into a computer. **(1 mark)**

   _____

Answers to activity sheet

I. What is...?

1. A barcode is a series of black and white lines of varying thickness that enables a computer to identify an item.

2. An optical mouse is easy to use because it does not have a rotating ball. It can be moved smoothly over any flat surface.

3. A puck is a device like a mouse that helps us to draw accurately on a graphics tablet.

4. A magnetic stripe is a strip of magnetic material that can hold large quantities of data.

5. Mark sensing is a method of data entry in which a reader senses the absence or presence of a mark.

6. A sensor is an input device that measures changes in temperature, pressure, and light and sends them to a computer for analysis.

II. Complete each sentence by circling the correct words in the brackets.

1. A mouse is a (moving/(pointing)) device.

2. Using a digital camera you can take pictures and view them (later/(immediately)).

3. A platform scanner or hand-held pen, also called a wand, is used to read ((barcodes)/phone cards).

4. A card reader is a device that is used to read data on a (cinema ticket/(magnetic stripe)).

5. Touch screens work best for ((multiple-choice input)/keyboard input).

Answers to test sheet

I. Tick five boxes to show which five of these statements are most likely to be true.

2. A joystick can be used for simulation programs.

3. A wireless mouse makes it easier to have a clutter-free desk.

6. A touch pad is a small, rectangular surface usually placed below the keyboard.

7. Smartphones can be used to schedule meetings.

8. A puck is a mouse-like input device used with a graphics tablet.

II. Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

touch pad	light pen	scanning	POS terminal
graphics tablet	keyboard	mark sensing	point of sale
1. keyboard	2. touch pad	3. light pen	4. graphics tablet
5. scanning	6. mark sensing	7. POS terminal	8. point of sale

III. A keyboard is used to enter text into the computer. Give two disadvantages of using a keyboard.

We cannot use a keyboard to input pictures.

We have to retype data that has already been printed on paper.

IV. **The image below shows coded data that could be input into a computer.**

ISBN 978-0-19-547182-3

9 780195 471823

a. **What is the name given to this type of input?**

Barcode reading

b. **Name two places where this method of data input would be used.**

Libraries, supermarkets, etc.

c. **State what hardware is needed to enter the coded data into a computer.**

A barcode reader

OUTPUT DEVICES

Teaching objectives

The objectives of this chapter are to:

- explain the importance of the output function
- describe the role of output devices
- explain different types of monitors and printers
- introduce speakers, combination devices, and multifunctional devices.

Learning outcomes

After completing this chapter, students should be able to:

- explain the output function
- identify various output devices
- select appropriate output devices for different types of output.

Introduction for the teacher

The purpose of this chapter is to create among students and appreciation of the diverse ways in which processed information is presented by a computer to users. The tools used for this purpose are called output devices. Highlight the fact that the choice of output devices depends on the type of information that needs to be displayed. For example, text data can be viewed by a monitor. A hard copy can be obtained by a printer. A plotter can be used for larger printouts like maps and architectural drawings. Likewise, a speaker can be used for audio data.

During the discussion of this chapter, identify that certain types of printers are not used nowadays. Relate this aspect to the evolution discussed in Chapter 1 by saying that as times change, existing technologies become obsolete and new ones take their place.

It is also important to bring to the students' notice that various output devices can be combined in order to create multifunctional devices to save time and space.

Conclude with a discussion of the different output devices that are found around us. Encourage students to think about different types of information and the devices that can be developed to view such information.

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

What is a monitor?

What is a printer?

What is the difference between information displayed by a monitor and a printer?

Reading and explanation (30 minutes)

Discuss section 3.1 on pages 25 and 26 of the textbook.

This section covers different types of monitors. Since students are already familiar with monitors, there is no need to go into an in-depth description of monitors. If needed, preliminary information can be provided.

After clarifying the purpose of a monitor, steer discussion towards the different types of monitors, such as CRT monitors, LCD monitors, plasma screens, data projectors, and HDTV. Encourage students to identify the different ways in which data is presented through these different devices.

After a discussion of the hardware, direct class discussion towards the nature of the information presented by each. Ask students whether they can hold the output of a monitor in their hands. Introduce the concept of soft copy and describe its characteristics. This will prepare the ground for subsequent discussion of hard copy.

To guide discussion and create interest among the students, you might bring in an actual monitor to the classroom or take students into the computer lab, if time and resources permit. The students may be asked if they recognize CRT and LCD monitors.

Homework assignment (5 minutes)

Assign questions 2 and 3 from section D (page 31) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (30 minutes)

Discuss section 3.2 on pages 26 and 27 of the textbook.

Homework assignment (5 minutes)

Assign questions 1 and 5 from section D (page 31) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 3

Starter activity (5 minutes)

Reading and explanation (20 minutes)

Discuss sections 3.3 to 3.7 on page 28 of the textbook.

Classroom activity (10 minutes)

Assign sections A, B, and C on pages 30–31 to be completed in the classroom.

Homework assignment (5 minutes)

Assign question 4 from section D (page 31) and section E as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 30 and 31

A. Fill in the blanks.

1. character   2. telephone   3. plotter   4. monitor   5. pixels

B. State whether the following statements are true or false. Rewrite the false statements to make them true.

1. True.

2. True.

3. False. Laser printers are also called page printers.

4. False. Dot-matrix printers produce output by using a printhead carrying a series of pins.

5. True.

C. Select the correct option for each question.

1. a   2. b   3. c   4. d   5. b

D. Answer the following questions.

1. **A microcomputer is advertised as having the following:**

   • **32 GHz processor**

   • **512 RAM**

   • **80 Gb hard drive**

   • **12-inch monitor**

   • **Ink-jet printer**

   What output devices are mentioned in the advertisement?

   A monitor and a printer are mentioned in this advertisement.

2. **Explain the advantages of LCD monitors over CRT monitors.**

   LCD monitors are flat while CRT monitors are curved. The flat surface of LCD monitors makes it easy to view output. LCD monitors are lighter than CRT monitors. They do not flicker, which reduces the strain on the user's eyes.

3. **What are pixels? Explain screen resolution.**

   Pixels are picture elements. A computer screen can be divided into numerous small dots called pixels. These pixels make up an image on the screen. Screen resolution measures the amount of detail in which an image appears on the screen. A screen that has a greater number of pixels can display an image in greater detail.

4. **What is a fax machine? How does it work?**

   A fax machine is a device that combines input and output devices. We can use it to send and receive messages over telephone lines. A fax/modem board connects the computer with telephone lines. The user inserts a document into the fax machine and dials the number of the recipient. The fax machine scans the

document and sends a copy of it over telephone lines to another fax machine at the receiving end. The receiving fax machine prints the copy or displays it on a monitor.

5. Why are dot-matrix printers not used nowadays?

Dot-matrix printers are not used nowadays because they are slow, noisy, and produce low-quality output.

E. Write paragraphs to answer the following questions.

1. Explain the ways in which display screens found in smartphones are different from CRT monitors.

Display screens found in smartphones are usually made of plastic or glass while CRT display screens are made of glass. The smartphone screens are LCD screens and have a flat surface whereas CRT screens have a curved surface. Smartphone screens do not produce glare and give a better view than CRT screens.

2. State two advantages of Internet telephony. Explain how it helps to improve communication between people.

Internet telephony has two main advantages: it reduces the cost of communication, and it allows people to see each other. It improves communication because people can get in touch directly without going through the telephone company. People can communicate more often because it costs very little. People can see one another and use expressions and gestures to communicate.

F. Lab exercise

For the teacher: Demonstrate the different types of printers available in the lab. Show how the printer is connected to the system. You may need to type some text on the computer. A better idea may be to ask students to type one line each on the computer. When this is done, show how the Print command is accessed from Microsoft Word and give the Print command. Explain how paper is inserted into the printer and observe as the printout emerges from the printer. Show that output produced by the printer is exactly the same as output on the monitor.

G. Project

For the teacher: Advise students to visit a computer shop in their area for this activity. Advise them to be accompanied by a parent or trusted adult instead of venturing out on their own. Help them prepare a list of questions to ask the shopkeeper so that they are well-prepared. Explain to students that they need to be polite and may need to visit other shops if the people at some shops are not forthcoming with their responses.

Additional information for the teacher

- A monitor screen contains a matrix of luminescent red, green, and blue dots **(RGB)**. These are blended to display different colours.

  Mapping the location and colour information of each bit of data creates a computer image. This is known as a bitmap. The bitmapped image seen on a monitor is made up of thousands of pixels.

- Portable monitors are known as **liquid crystal display** or **flat panel** monitors. Notebooks use either a liquid crystal display or a plasma display, in which neon gas is used. Just like an LCD screen, a plasma screen is only a few centimetres thick and can be mounted on a wall. It is also much brighter and visible from a wide angle.

- The **size** of a monitor is measured diagonally from corner to corner. Clarity is indicated by its **resolution** measured in pixels.

- The visual output from a computer can be projected onto a screen using a video projector.

- There are many different types of printers, distinguished by the technology they use.

- A **dot-matrix** printer uses inked ribbons that are hammered onto the paper by a printhead consisting of a number of pins. An advantage of a dot-matrix printer is that multi-part stationery can be used, where the output is printed on several pages at once.

- **Laser printers** use a process similar to a photocopying machine where the toner, a very fine powder, is transferred to the paper and fused onto it using heat and pressure. Some laser printers are monochrome and use a single cartridge of black toner while others print in colour and may use a number of cartridges of toner of different colours.

- **Ink-jet printers** form text and images by spraying dots of coloured ink from nozzles on a printhead that moves repeatedly across the paper. When each pass is completed, a little more paper is fed through, ready for the next pass. Most ink-jet printers use four colours—cyan, yellow, magenta, and black. This system is known as **CYMK**, with K standing for black. In the ink-jet printer, all four colours are printed at the same time, unlike the laser and thermal printers.

  Special glossy paper can be used in ink-jet printers to produce high-quality printouts of photographs.

  One problem with these printers is that their ink-filled printheads have to be cleaned and their cartridges need to be replaced more frequently than the toner cartridges of laser printers.

- **Thermal printers** use the four-colour process, which is the most-widely used method in colour printing (CYMK). In both the colour laser printer and the colour thermal printer, each of the four colours is printed separately, one on top of another.

- In situations where high-quality printouts are required, an image setter is used, in magazines, for example. An image setter transfers text and artwork from computer files directly onto paper or film. Image setters print at a very high resolution of over 1000 dpi (dots per square inch).

- Some applications, such as **CAD** (computer-aided design) use a plotter rather than a printer to produce a finished design. Although plotters are slow, they can print accurate charts, diagrams, and drawings. They can draw continuous curves precisely and in a variety of colours. CAD software utilizes computers to assist designers to create graphic designs. CAD packages use **vector graphics** to create designs. CAD can be used to design kitchen layouts, aircraft, bridges, cars, houses, circuit boards, etc. Large blueprints can be drawn on very large sheets of paper. Their size is measured in **metres** rather than centimetres. Large designs include a lot of detail which would be difficult to see if the printout was too small.

- A sound card can be installed in a microcomputer to obtain high-quality sound for music, software, and games. Sound and music are outputted using speakers.

  Earlier attempts at speech synthesis produced voices that sounded like those coming from robots. Recently, they have become more natural and pleasant to listen to.

  Text-to-speech systems convert a spoken version of text into a document. This is especially helpful for people with visual handicaps. You can also send personal messages across the Internet. The recipient plays the message in a similar way to receiving an email message.

Activity Sheet

I.   What is...?

1.   What is speech synthesis?

   _____

   _____

2.   What is a multifunctional device?

   _____

   _____

3.   What is HDTV?

   _____

   _____

4.   What is a data projector?

   _____

   _____

5.   What is a line printer?

   _____

   _____

6.   What is Internet telephony?

   _____

   _____

II.   Complete each sentence by circling the correct words in the brackets.

1.   The most common output device is the (visual display unit/printer).

2.   Older types of monitors use (LCD/CRT) technology.

3.   (Shared laser printers/Personal laser printers) are more expensive and can print over 30 pages a minute.

4.   Pixels are (picture elements/picture lines) that form images on a monitor.

5.   The speed of the ink-jet printer is measured in (pages per minute/lines per minute).

Test Sheet

I.   Tick five boxes to show which five of these statements are most likely to be true. (5 marks)

1.   To send a fax message, the document is inserted into a printer. ☐

2.   Internet telephony uses the Internet to connect two or more people via telephone ☐ lines.

3.   LCD monitors take up a lot of space. ☐

4.   E-books are also known as electronic books. ☐

5.   Laser printers are expensive but give good-quality output. ☐

6.   HDTV is also called PC/TV. ☐

7.   Computer output printed on paper is called hard copy. ☐

8.   A chain printer is faster and more expensive than a laser printer. ☐

II. Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.   (8 marks)

speech synthesizer	bulky	Character	page
data projectors	pens	Monochrome	Output devices

1.   _____ _____ present the information processed by the computer in a form that humans can understand.

2.   CRT monitors are _____ and take up a lot of space.

3.   _____ printers print one letter or number at a time.

4.   Marketing people and students use _____ _____ for presentations.

5.   Plotters are special printers that produce high-quality output using _____.

6.   A _____ _____ can help a child learn to spell.

7.   _____ printers can produce output in one colour.

8.   A laser printer is a _____ printer.

III. Imagine that you are an architect. What output device would you use to produce your drawings? Give reasons for your answer.   (2 marks)

_____

OXFORD
UNIVERSITY PRESS

Answers to activity sheet

I.   What is…?

1.   Speech synthesis is a technology that enables a computer to produce an artificial human voice.

2.   A multifunctional device is a device that combines the capabilities of a scanner, printer, fax machine, and photocopier.

3.   HDTV stands for high-definition television. It uses computer technology to produce very clear and detailed images on a television screen.

4.   A data projector is an output device that displays output on a large screen or wall.

5.   A line printer is a printer that can print one complete line at a time.

6.   Internet telephony is a technology that allows people to have telephone conversations over the Internet.

II.   Complete each sentence by circling the correct words in the brackets.

1.   The most common output device is the (visual display unit/printer).

2.   Older types of monitors use (LCD/CRT) technology.

3.   (Shared laser printers/Personal laser printers) are more expensive and can print over 30 pages a minute.

4.   Pixels are (picture elements/picture lines) that form images on a monitor.

5.   The speed of the ink-jet printer is measured in (pages per minute/lines per minute).

Answers to test sheet

I.   Tick five boxes to show which five of these statements are most likely to be true.

2.   Internet telephony uses the Internet to connect two or more people via telephone lines.

4.   E-books are also known as electronic books.

5.   Laser printers are expensive but give good-quality output.

6.   HDTV is also called PC/TV.

7.   Computer output printed on paper is called hard copy.

II.   Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

speech synthesizer	bulky	Character	page
data projectors	pens	Monochrome	Output devices

1. Output devices   2. bulky   3. Character   4. data projectors

5. pens   6. speech synthesizer 7. Monochrome   8. page

III.   Imagine that you are an architect. What output device would you use to produce your drawings? Give reasons for your answer.

I would use a plotter to produce my drawings. Plotters can produce very large drawings, use coloured pens and toners to draw images on paper, and print accurate diagrams.

PROCESSING AND STORAGE

4

Teaching objectives

The objectives of this chapter are to:

- introduce the components of the system unit
- explain the processing function
- explain the importance of memory
- explain different types of memory and storage devices.

Learning outcomes

After completing this chapter, students should be able to:

- identify ports, circuits, expansion cards, expansion slots, the motherboard, and the microprocessor in a system unit
- differentiate between RAM and ROM
- differentiate between primary and secondary storage
- compare the features of various storage devices.

Introduction for the teacher

The purpose of this chapter is to highlight the most important aspect of a computer—its processing function. The term has already been introduced in Chapter 1. In this chapter, the importance of the processing function should be described. The students should learn how a computer processes data. Along with processing, the importance of the storage function should also be elaborated. Students should be able to explain that all processed information needs to be stored for future reference and convenience. In this respect, the terms CPU and microprocessor should be introduced.

The processing function should be explained by a description of the ALU, MU, and CU. A discussion of buses should explain how data is passed between these components. Once students are familiar with the processing function, discussion should move on towards the storage function.

The concepts of RAM and ROM should be introduced. Similarly, primary storage and secondary storage should be introduced. The difference between the two should be explained. Different storage devices should be described with reference to their storage capacity, security, and ease of handling. Similarly, the difference between magnetic and optical storage devices should be elaborated and students should be able to describe the advantages of laser devices over magnetic storage devices.

Students should be able to identify and prescribe different storage devices for different situations according to volume of data, degree of security needed, and cost.

OXFORD
UNIVERSITY PRESS

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

How do we perform calculations?

What else do we use our brain for?

How does a computer process information?

How is input transformed into output?

Reading and explanation (30 minutes)

Discuss sections 4.1 to 4.4 on pages 33 to 35 of the textbook.

These sections cover the processing function and memory to some extent. In the first instance, it is important that students learn to distinguish between the system unit and the CPU. You could bring a system unit to the classroom and help students to identify it. Explain that the CPU is located on a small microchip that is housed within the system unit. You can also point to the ports and explain that these connect the peripheral devices to the microprocessor.

After identifying the microprocessor, describe its components. Explain that the ALU performs calculations, the MU stores information, and the CU controls the other devices. You may ask students to relate problems from real life and ask them to identify which part of the CPU they might be processed in.

Once students are clear about processing, introduce the concept of storage. Describe the term memory and its benefits. Describe primary memory as existing within the CPU. Next, describe RAM as volatile memory.

Ensure that students are clear about the differences between the system unit and CPU. They should be clear about the different components of the CPU and the different types of memory.

Homework assignment (5 minutes)

Assign questions 1 and 2 from section D (page 40) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (30 minutes)

Discuss sections 4.5 to 4.6.1 on pages 36 and 37 of the textbook.

Homework assignment (5 minutes)

Assign questions 4 and 5 from section D (page 40) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 3

Starter activity (5 minutes)

Reading and explanation (20 minutes)

Discuss sections 4.6.2 to 4.6.6 on pages 37 and 38 of the textbook.

Classroom activity (10 minutes)

Assign sections A, B, and C on pages 39 and 40 to be completed in the classroom.

Homework assignment (5 minutes)

Assign question 3 from section D (page 40) and section E (page 41) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 39 to 41

A. **Fill in the blanks.**

1. random-access memory
2. processing
3. calculations
4. storing
5. permanently

B. **State whether the following statements are true or false. Rewrite the false statements to make them true.**

1. True.
2. True.
3. True.
4. False. Signals from peripheral devices are carried along the address bus.
5. False. A smart card stores more data than a CD.

C. **Select the correct option for each question.**

1. a   2. d   3. c   4. b   5. c

D. **Answer the following questions.**

1. **Define processing. What is the function of the central processing unit?**

   Processing is an activity performed by the computer by which data is transformed into information. The central processing unit processes data, stores it, and controls the operations of the other parts of the computer.

2. **Name and briefly describe the components of the CPU.**

   The arithmetic logic unit (ALU) does all the arithmetic and logical operations needed to solve a particular problem. The control unit (CU) executes or carries out all the instructions which have been stored in the memory. The memory unit (MU) stores data and instructions.

3. **What is an SD memory card? Why is it called a solid-state storage device?**

   An SD memory card is an optical secondary storage device that stores data in gigabytes. It is smaller, lighter, and easier to carry around than other storage devices. An SD memory card is called a solid-state storage device because it does not have any moving parts.

4. **What is the difference between primary and secondary storage?**

   Primary storage is located within the system unit while secondary storage is located outside the system unit. Secondary storage is removable storage. It can be removed from one system unit and attached to another. Primary storage has less capacity than secondary storage. Secondary storage stores data permanently.

5. **Draw a table and differentiate between RAM and ROM.**

OXFORD
UNIVERSITY PRESS

RAM	ROM
1. RAM stands for random-access memory.	1. ROM stands for read-only memory.
2. RAM is temporary memory.	2. ROM is permanent memory.
3. Data stored on RAM can be changed. It is also called volatile memory.	3. Data stored on ROM can be read but cannot be changed. It is also called non-volatile memory.

E.   Write paragraphs to answer the following questions.

1.   Why is there a need for two different types of memory?

Two different types of memory help the computer to organize the most important instructions separately. The most-frequently used instructions are stored in ROM and cannot be changed by the user. In this way, the computer is protected from damage. RAM memory allows data to be added, changed, and deleted by the users according to their needs.

2.   Why is back-up storage necessary?

Back-up storage is necessary because data stored on the computer can become damaged or lost at any time. When data is stored on back-up in the form of a CD or flash drive, it becomes easier to retrieve the lost data. If back-up is not made, then data lost from the computer becomes lost forever.

3.   What are some of the advantages of cloud storage?

Cloud storage allows users to store complete applications on server space. They do not have to carry around their own computer everywhere because the data from the cloud can be accessed from any other computer. Cloud storage is more secure because criminals cannot extract any data from it without the password.

F.   Lab exercise

For the teacher: Take students to the lab and remove the casing of the system unit before them. Point to where the hard disk is located and remove it carefully from the computer. You may need the services of the lab manager for this activity. Ask students to recall the parts of the hard drive and write them on the board. Now open up the hard disk and ask students to identify the parts they have learnt about.

G.   Project

For the teacher: You can bring in pictures of similar projects collected from the Web. Students may not have carried out such a project before and may need some stimulation. Remind students to represent all three components of the CPU in their model.

Additional information for the teacher

- The **system clock** is located on a small chip that produces precisely-timed electrical beats or pulses. The microprocessor uses these beats as a timing mechanism to coordinate all computer operations. The faster the speed of the clock, the faster the computer can process information.

- We can also refer to RAM as read/write memory. **Read** refers to the retrieval of information from memory and write refers to the storage of information in memory. Thus RAM enables a programmer to store and retrieve programs and data. The programmer has the most control in deciding what is stored in RAM.

- The contents of the ROM are fixed at the time of manufacture. We can say that the contents are hard-wired. Information can be retrieved from it but cannot be changed.

- The most common uses of ROM are to provide:

    - special functions or facilities peculiar to a given machine

    - translation programs for converting a user's program into machine language

    - application programs such as spreadsheet software or word processors

    - control programs for the operation of the computer and peripheral devices.

- As discussed earlier, the contents of ROM are fixed at the time of manufacture. A PROM **(Programmable Read-Only Memory)** is more flexible, as it can be customized to suit a particular user's needs. **Customizing** is the process by which a standard product is adapted for use in a particular situation. In the beginning, all PROMs are the same. Once the customizing process is complete, a PROM functions just as an ordinary ROM.

- **EPROM (Erasable Programmable ROM)** can be reused even after the customizing process mentioned above has been completed. If we need to change the contents of an EPROM, another hardware process resets the EPROM to its original state. The EPROM can then be programmed to perform the new desired function.

- **Disk caching** increases the performance of a hard disk by anticipating data needs. Sometimes a program is frequently required to read large volumes of data from a disk. This can slow down a program, so to speed up processing, a part of memory is set aside to be used as a disk cache, and any data recently read from the disk is stored in it. When the central processor needs an item of data, it first checks the disk cache to see if it is there, and only accesses the disk if it is not. For this reason the transfer rate from main memory is much faster than from the hard disk.

- **File compression** increases storage capacity by reducing the amount of space required to store data and programs. File compression helps to speed up transmission of files from one computer system to another. Sending and receiving compressed files across the Internet is a very common activity. File compression programs typically can shrink files to a quarter of their original size.

- **Redundant arrays of inexpensive disks (RAIDs)** improve performance by expanding external storage. Here, groups of inexpensive hard disk drives are connected together using networks and special software. These grouped disks are treated as a single, large-capacity hard disk. In case of hardware failure, data can be recovered from RAIDs.

Activity Sheet

I.   What is…?

1.   What is the difference between loading data and saving data?

_____

_____

2.   What is an internal hard disk?

_____

_____

3.   What is the advantage of using a CD to store data?

_____

_____

4.   What is the memory unit?

_____

_____

5.   What is non-volatile memory?

_____

_____

6.   What is serial access?

_____

_____

II.   Complete each sentence by circling the correct words in the brackets.

1.   A (USB/USB flash) is a back-up storage medium.

2.   Saving data means transferring data from (memory to back-up store/back-up store to memory).

3.   Secondary storage is also known as (temporary/permanent) storage.

4.   (DVD drive/Data play) is gaining popularity because users are able to record data such as music files, to play pre-recorded music, and store digital photographs.

5.   Special storage sites on the (computer/Web) provide users free or low-cost storage space.

Test Sheet

I.   Tick four boxes to show which four of these statements are most likely to be true.
                                                                                (4 marks)

1.   The speed with which a CPU processes data and instructions is measured in seconds. ☐

2.   The control unit is the part of the CPU that regulates the step-by-step operation of ☐
     all the other parts of the computer.

3.   Computer memory can be classified into two types: main memory and permanent ☐
     storage.

4.   RAM is also called non-volatile memory. ☐

5.   Memory is also referred to as the workspace of the computer. ☐

6.   USB memory sticks are small and can be inserted into the USB port of any computer. ☐

7.   Magnetic tapes and CDs are examples of removable media. ☐

8.   You cannot save data and programs on removable CDs. ☐

**II. Complete the following statements by filling in the blanks with the correct terms. Each
      word or phrase can be used only once.**   **(4 marks)**

DVDs	solid-state	address	spindle
laser	cloud storage	magnetic	microprocessor

1.   The biggest advantage of _____ over other forms of secondary storage is that you
     can access any information from any location using any computer that is connected to
     the Internet.

2.   Flash memory cards are _____ storage devices.

3.   _____ allow you to skip to a position in the middle of a film.

4.   Optical discs use _____ technology.

5.   A hard disk is a _____ storage medium.

6.   A smart card carries a _____.

7.   The hard disk rotates around a _____.

8.   The _____ bus carries signals between peripheral devices and the processor.

Test Sheet

III. **Place tick marks in the cells below to show which of the following are used as permanent storage and removable media.**   **(2 marks)**

Name	Permanent storage	Removable media
1. USB drive		
2. RAM		
3. Magnetic tapes		
4. Hard disks		

Answers to activity sheet

I.   **What is...?**

1. Loading data means transferring data from back-up store to the main memory. Saving data means transferring data from the main memory to back-up store.

2. An internal hard disk is a secondary storage medium that is located inside the system unit. It is sealed to protect it from dust.

3. CDs are portable, cheaper to produce, and have large storage capacities.

4. The memory unit is a part of the CPU where data and instructions are stored.

5. Non-volatile memory is a type of computer memory from where data is not lost if power to the system is lost.

6. Serial access is a method of reading data stored in the memory. Data is read in a sequence from start to finish.

II. **Complete each sentence by circling the correct words in the brackets.**

1. A ((USB)/USB flash drove) is a back-up storage medium.

2. Saving data means transferring data from ((memory to back-up store)/back-up store to memory).

3. Secondary storage is also known as (temporary/(permanent)) storage.

4. (DVD drive/(Data play)) is gaining popularity because users are able to record data such as music files, to play pre-recorded music, and store digital photographs.

5. Special storage sites on the (computer/(Web)) provide users free or low-cost storage space.

Answers to test sheet

I.   **Tick four boxes to show which four of these statements are most likely to be true.**

2. The control unit is the part of the CPU that regulates the step-by-step operation of all the other parts of the computer.

3. Computer memory can be classified into two types: main memory and permanent storage.

6. USB memory sticks are small and can be inserted into the USB port of any computer.

7. Magnetic tapes and CDs are examples of removable media.

II. **Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.**

DVDs	solid-state	address	spindle
laser	cloud storage	magnetic	microprocessor

1. cloud storage	2. solid-state	3. DVDs	4. laser
5. magnetic	6. microprocessor	7. spindle	8. address

III. Place tick marks in the cells below to show which of the following are used as permanent storage and removable media.

Name	Permanent storage	Removable media
1. USB drive	✓	✓
2. RAM		
3. Magnetic tapes	✓	✓
4. Hard disks	✓	

OPERATING SYSTEMS AND USER INTERFACE

5

Teaching objectives

The objectives of this chapter are to:

- introduce the terms program, software, file, folder, and directory
- explain the importance and functions of an operating system
- explain user-computer interface and its types
- introduce DOS as an operating system.

Learning outcomes

After completing this chapter, students should be able to:

- define an operating system and explain its functions
- explain the importance of a user-computer interface.

Introduction for the teacher

In the previous chapters, students have learnt about the hardware of computer systems. The purpose of this chapter is to introduce students to the software aspect. In this chapter, the term software is introduced and discussed at length.

Students should remember the processing devices from earlier chapters. They should now be curious to learn how these devices work to process data. How does the computer know what to do with the data it receives as input? Where do these instructions come from? The answer is software.

Students will learn about the characteristics of software: that it is a set of instructions for the computer. Students will also learn about a very special type of software that falls into the category of system software. This system software is known as the operating system. The functions of an operating system should be clear to students at this stage.

Next, students should be interested in learning how users give instructions to a computer. The concept of interface should be explained along with its two types. DOS should be introduced as one type of operating system based on command line interface.

Finally, students should learn about some commands of DOS. The importance of syntax should be stressed and students should be aware of the functions of the commands that they are using.

OXFORD
UNIVERSITY PRESS

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

What is the function of a computer?

How does a computer process data?

How does a computer know what to do with the data?

Reading and explanation (30 minutes)

Discuss sections 5.1 to 5.5 on pages 43 to 45 of the textbook.

These sections introduce and explain several important terms that create the foundation for subsequent chapters. You should define and discuss the following terms in class: program, software, system software, operating system, BIOS, application software, content-free application, integrated software, and interface. A program should be described as a set of instructions, while software may be described as a set of programs for performing related activities.

Next, you could ask students whether there can be different types of software. Introduce the terms **system software** and **application software**. Along with system software, describe the operating system as one important type of software along with the functions that it performs. Next, describe application software and differentiate it from system software. Mention some examples of application software. Describe the installation of software and the term integrated software.

Introduce the term **interface**. Explain that an interface is the way in which users communicate with computers. The type of interface affects the ease with which information can be exchanged between user and computer. Introduce the two types of interface: command line interface and graphical user interface.

Homework assignment (5 minutes)

Assign questions 1 to 4 from section D (page 49) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (30 minutes)

Discuss section 5.5.1 on page 46 of the textbook.

Homework assignment (5 minutes)

Assign sections A, B, and C on pages 48 and 49 as homework.

Period 3

Starter activity (5 minutes)

Reading and explanation (lab session) (25 minutes)

Discuss section 5.5.2 on page 47 of the textbook.

Lab activity (5 minutes)

Assign section F on page 49 to be completed in the computer lab.

Homework assignment (5 minutes)

Assign questions 5 and 6 from section D and section E (page 49) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 48 and 49

A. Fill in the blanks.

   1. multitasking   2. files   3. Windows   4. System software   5. application

B. State whether the following statements are true or false. Rewrite the false statements to make them true.

   1.   True.

   2.   True.

   3.   False. DOS stands for Disk Operating System.

   4.   True.

   5.   True.

C. Select the correct option for each question.

   1. d   2. a   3. c   4. b   5. d

D. Answer the following questions.

   1.   What is software? What are the two main types of software?

   Software is a set of programs that guides a computer in performing related tasks. The two main types of software are system software and application software.

   2.   What is the purpose of an operating system?

   The purpose of an operating system is to make sure that the computer is running properly and performing routine tasks.

   3.   What is the difference between integrated software and application software?

   Application software is software designed to do a specific job. Integrated software combines all the major types of application software and brings them together in one application.

   4.   What is a user interface? Write a brief note on the two commonly-used interfaces.

   A user interface is the way in which a user gives commands or instructions to the computer and the way in which the computer displays information back to the user.

   There are two commonly-used interfaces:

   A.   Command Line Interface (CLI)

      A command line interface allows a user to give data and instructions to a computer by typing them on a keyboard. DOS is an example of an operating system that is based on command line interface.

   B.   Graphical User Interface (GUI)

      A graphical user interface provides a way for the user to communicate with the computer through visual images.

OXFORD
UNIVERSITY PRESS

5. **Explain two problems with using a command line interface.**

There can be some problems with using a command line interface. Users have to learn the syntax for each instruction. Also, a command line interface is not very attractive or interesting to use.

E. **Write paragraphs to answer the following questions.**

1. **Describe how GUI is more user-friendly than CLI.**

GUI is more user-friendly than CLI because it uses an interactive interface. In GUI, the user can use the mouse to control the pointer and to select objects. The user can also use the keyboard to type commands. However, in a CLI, the user can only use the keyboard. In a GUI, the user can view applications and data in windows, which is not possible in a CLI.

2. **Think about the functions of an operating system. Why is it stored on the hard disk?**

The operating system performs the most essential functions of the computer. These instructions are required whenever the computer performs some work. The operating system is stored on the hard disk so that the instructions can be accessed whenever they are needed. The hard disk is also well-protected which prevents the data stored on it from getting damaged.

3. **Draw the directory tree for five files stored on your computer.**

For the teacher: Students will perform this activity in different ways according to the data stored on their computer. However, the directory tree should be drawn in the form of a hierarchy which shows the main folder at the top. Sub-folders and individual files should be represented as branches of the hierarchy.

F. **Lab exercise**

For the teacher: Students may carry out this exercise independently. They should prepare the folder on the windows desktop. If a different operating system such as Google Chrome or Mac is installed on a device, you could demonstrate the operation on that system too. Ask students to compare and evaluate the different systems.

G. **Project**

For the teacher: You could guide students by describing the features of Windows and listing them on the board. Ask students to use this structure when they start out on their project. However, as they progress, students will use their own strategies to complete their projects. Discuss the tables they have created in the classroom.

Additional information for the teacher

- It is believed that one of the first operating systems was developed in the early 1950s. This operating system was quite elementary in nature and was not as powerful as the operating systems of today. Job-to-job transition was not automatic. For each and every job to be executed, the operator had to clear the main memory to remove any data remaining from the previous job, load the program and data of the current job from the input devices, and finally run the job to obtain the results from the output devices.

- Operating systems go by many names depending on the manufacturer of the computer. Some terms used to describe operating systems are **master control programs, supervisors**, and **controllers**.

- On some computers, the operating system will only work on one program at a time. When the first program has completed its processing, then the next program is loaded up and run.

- In a **batch-processing system**, jobs that are waiting to be run are collected and stored in a job queue. They are then all processed together, for example, a monthly payroll system.

- In multi-programming, the computer holds more than one program in its memory and gives each one a small amount of processing time in turn. Multi-programming is also called **multitasking**.

- In a **multi-access system**, many users can work on the same computer at the same time. A mainframe computer can have a number of workstations connected to it. Each user works interactively, even though the computer they are using may not be nearby.

- In an **interactive system**, a user inputs a command to the computer, which may then respond with a request for further input of data. This is called interactive computing. A good example is an ATM.

OXFORD
UNIVERSITY PRESS

Activity Sheet

I. What is…?

1. What is software?

   _____

   _____

2. What is system software?

   _____

   _____

3. What is an operating system?

   _____

   _____

4. What is a user interface?

   _____

   _____

5. What is a directory?

   _____

   _____

II. Complete each sentence by circling the correct words in the brackets.

1. A computer follows instructions contained in a (program/channel).
2. Application software consists of programs for performing (routine/specific) tasks.
3. The most important (system/application) software run on any computer is the operating system.
4. Command line interface allows users to (write/type) data and instructions.
5. If you have DOS installed as the main operating system, then the (DOS file/DOS prompt) is automatically shown when you switch on your computer.

Test Sheet

I. **Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.** **(4 marks)**

| user interface | integrated software | content-free applications | MD |
| subdirectory | prompt | peripheral | booting up |

1. Many computers are sold with _____ _____ already installed.

2. Application programs are also known as _____ _____ because the user decides what to use the software for.

3. The _____ _____ is the way a user interacts with the computer.

4. The operating system controls _____ devices.

5. A directory within another directory is called a _____.

6. The _____ command enables us to create a new directory.

7. The DOS interface consists of a _____ against a plain background.

8. The process of starting up a computer is called _____ _____.

II. **Circle the correct answer.** **(4 marks)**

1. Every computer has an operating system, from the smallest palmtop to the largest mainframe. — True/False

2. The process of starting up a computer is known as BIOS. — True/False

3. The operating system consists of programs stored partially on the hard disk and partially on a ROM chip. — True/False

4. The operating system controls and coordinates all communication between the various parts of the computer. — True/False

5. An operating system is also known as a ROM system. — True/False

6. Application software performs general tasks. — True/False

7. You work with MS-DOS by typing commands. — True/False

8. We can set a new date in MS-DOS. — True/False

III. **Write down the four elements of a GUI.** **(2 marks)**

_____

_____

_____

_____

OXFORD
UNIVERSITY PRESS

Answers to activity sheet

I.   What is...?

1.   Software is a collection of all the programs that run on a computer.

2.   System software consists of programs that help a computer to perform routine tasks like starting up, saving data, and shutting down.

3.   An operating system is the most important system software that controls routine tasks performed by the computer.

4.   A user interface is a means by which users and computers interact and share information.

5.   A directory is a group of related files and folders.

II.   Complete each sentence by circling the correct words in the brackets.

1.   A computer follows instructions contained in a (program/channel).

2.   Application software consists of programs for performing (routine/specific) tasks.

3.   The most important (system/application) software run on any computer is the operating system.

4.   Command line interface allows users to (write/type) data and instructions.

5.   If you have DOS installed as the main operating system, then the (DOS file/DOS prompt) is shown automatically when you switch on your computer.

Answers to test sheet

I.   Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

user interface	integrated software	content-free applications	MD
subdirectory	prompt	peripheral	booting up

1.   integrated software   5.   subdirectory

2.   content-free applications   6.   MD

3.   user interface   7.   prompt

4.   peripheral   8.   booting up

II.   Circle the correct answer.

1.   True/False   5.   True/False

2.   True/False   6.   True/False

3.   True/False   7.   True/False

4.   True/False   8.   True/False

III. Write down the four elemtns of GUI.

1.   Window

2.   Icon

3.   Menu

4.   Pointer

AN INTRODUCTION TO WINDOWS

6

Teaching objectives

The objectives of this chapter are to:

- introduce Windows as a GUI-based operating system
- describe the features of the desktop and a window
- explain how files and folders are created, copied, and moved across locations.

Learning outcomes

After completing this chapter, students should be able to:

- compare system software and application software
- navigate the Windows environment and explain its different features
- create and copy files and move them across different locations.

Introduction for the teacher

By now, students should be familiar with the functions of an operating system. They should also be aware of the qualities of a good operating system. They should interact fluently with a command line interface such as DOS. The purpose of this chapter is to introduce students to an operating system based on a graphical user interface such as Windows.

This chapter should build on the lessons of the previous chapter by discussing at length the functions of an operating system. After this, graphical user interface should be discussed and compared with a command line interface. Once this has been done, Windows should be introduced as a GUI-based operating system.

The discussion should then focus on the elements of a Windows desktop such as the taskbar, the start menu, icons, and the desktop. Similarly, the various elements of a window should also be described, such as the Title Bar, the Menu Bar, scroll bars, rulers, etc. Students should be able to identify the different elements and describe their functions.

The terms file, folder, directory, and subdirectory should be explained in relation to storing and organizing data on the computer. Common functions like creating, copying, saving, moving, and deleting files and folders should be explained.

You should ensure that students not only become adept at performing these functions, but they should also develop the capacity to compare these functions to the ways in which they have been performing them in a DOS environment. The user-friendliness of windows should become clear to students as a result of their practice with Microsoft Windows.

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

What does the DOS interface look like?

Is it easy to learn the syntax of all the commands?

How could the DOS interface be made easier?

Reading and explanation (lab session) (30 minutes)

Discuss sections 6.1 to 6.2.1 on pages 51 to 54 of the textbook.

Ask students to recall the functions of an operating system from the previous chapter. Elaborate on these functions and ask the students to read them out from the textbook. Once this has been done, ask students to recall the characteristics of a GUI. When students have answered correctly, ask whether it would be easier to enter commands in a GUI-based operating system. Microsoft Windows should be introduced as a GUI-based operating system.

In the lab, students should be taught that Microsoft Windows uploads automatically when the system is switched on. Next, point out the desktop and explain it. Describe the various elements, such as the taskbar, the Start menu, and the icons. Familiarize students with the important icons on the desktop. A lot of detail is not needed. Examples of application software might be given. Installation of software should be explained and the term integrated software should be described.

Open a window at random and describe the various elements of a window. Students should become familiar with the Title Bar, the Ribbon, scroll bars, and the Status Bar on the window. Students should also know that opening several windows makes it easy to do several things at the same time on a computer.

Homework assignment (5 minutes)

Assign questions 1 and 2 from section D (page 60) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss sections 6.2.2 to 6.2.5 on pages 54 to 56 of the textbook.

Homework assignment (5 minutes)

Assign questions 3 and 4 from section D (page 60) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 3

Starter activity (5 minutes)

Reading and explanation (lab session) (20 minutes)

Discuss sections 6.2.6 to 6.2.9 on pages 56 to 58 of the textbook.

Classroom activity (10 minutes)

Assign sections A, B, and C on pages 59 and 60 to be completed in the classroom.

Homework assignment (10 minutes)

Assign questions 5 to 7 from section D and section E (page 60) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 59–61

A. **Fill in the blanks.**

   1. desktop   2. icon   3. Computer   4. Title   5. double-click

B. **State whether the following statements are true or false. Rewrite the false statements to make them true.**

   1. True.

   2. False. Copying a file retains the file in its original location.

   3. True.

   4. True.

   5. True.

C. **Select the correct option for each question.**

   1. b   2. a   3. d   4. d   5. c

D. **Answer the following questions.**

   1. **What are the three ways of opening a window?**

      There are three ways of opening a window:

- by double-clicking on the icon if it is present on the desktop
- by selecting the file or program from the Start Menu
- by typing the name of the file or program by using the Run feature.

   2. **What is the difference between an active window and an inactive window?**

      The window that appears on top of other open windows is called the active window. Other windows beneath the active window are called inactive windows. Clicking anywhere on an inactive window makes it the active window. The Title Bar of an active window is coloured, while the inactive windows have a grey Title Bar.

   3. **What are scroll bars?**

      Scroll bars are horizontal and vertical bars on a window. They allow us to move up, down, right, or left on a document to view it completely.

   4. **Is moving a file the same thing as copying a file?**

      Moving a file is different from copying a file. When we move a file, we remove it from one location and place it in another. When we copy a file, the file remains in its original location, but a copy of it is placed in a different location.

OXFORD
UNIVERSITY PRESS

5. **What are shortcuts? How are they created?**

Shortcuts are placed on the desktop so that applications, files, or folders stored in other locations can be accessed from the desktop. They are created by right-clicking on the file after selecting it in the original location. Then we click on Create shortcut in the menu. This creates the shortcut on the desktop.

E. **Write paragraphs to answer the following questions.**

1. **Explain how you would open a file not present on the desktop.**

A file not present on the desktop can be accessed from its folder in Computer or Documents. If the location of the file is not known it can be accessed by typing part of its name in the Search feature of the Start Menu. The file can also be accessed through a shortcut if one has been created on the desktop.

2. **Explain how the Windows interface makes multitasking easier.**

Windows makes multitasking easier because each application, folder, and file opens in a separate window. In this way, the user can open different files in separate windows and work on them at the same time. For instance, if the user is downloading something from the Internet, he can work on a Word document while the downloading takes place.

F. **Lab exercise**

For the teacher: The instructions for this exercise are self-explanatory and the students should be able to follow them without any intervention by the teacher. You may need to walk around to identify any students who may be struggling with the exercise. Encourage them to overcome their difficulties on their own before offering the solution.

G. **Project**

For the teacher: Ask students to create a basic structure or outline of the essay before writing the first draft. Ask students if they have revised their first draft before submission. Encourage students to develop a habit of planning and revising their work before submitting it for evaluation.

Additional information for the teacher

- It is important for systems to change when people's needs change; otherwise people will stop using the system. Windows is a system that helps the computer to create and organize data in the form of files, folders, and programs. It has improved in many ways over the years. Because of this, it is still very popular.

- Whenever a system changes, people have to learn how to use the new version. Changing a system is of no use if people find it difficult to learn. A system that is easy to learn and use is called a user-friendly system. Windows is also popular because it is user-friendly.

- Many improved versions of Windows have been produced.

- **Windows 1.0** was the first Windows operating system. It was created in 1985. It was better than DOS because it was based on a graphical user interface, but it did not allow windows to overlap. This made it difficult for users to open many windows at the same time.

- **Windows 2.0** was launched in 1988. It allowed windows to overlap but it could not work with modern microprocessors of the time.

- **Windows 3.0** was launched in 1990. It could work well with modern microprocessors. It also used more icons and games. It also ran Paint and word processing programs. But some programs could not be run on this interface. They had to be run on DOS.

- **Windows 95** was launched in 1995. It was better than earlier versions because it combined the Windows and DOS environments. It allowed users to create long file names. It could also work more smoothly with hardware devices.

- **Windows 98** was launched in 1998. It was better than Windows 95 because it had a better way of protecting files and programs from becoming damaged. It also had a better DVD-ROM drive and allowed several users to share an Internet connection.

- **Windows Me** was launched in 2000. It was faster than Windows 98 because it did not require booting up in DOS mode. It also allowed users to create video-based data in the form of films. It had a better DVD-ROM drive and games than Windows 98.

- **Windows XP** was launched in 2001. It could boot up faster than Windows Me and had a more attractive interface. It could create video-based and audio-based data of a better quality.

- **Windows Vista** was launched in 2007. It provided better security of the system and allowed users to share files more easily.

- **Windows 7** was launched in 2009. It has the ability to recognize touch and handwriting. It has a calculator that can perform more complex calculations. It also has a feature that minimizes all open windows at the same time. This saves users from having to minimize each window separately.

- **Windows 8** is the latest version of Microsoft Windows. It has a very unique interface which is well-suited for use on smartphones. Instead of a Start Menu, it has the **Smart Screen** with all major applications displayed as clickable tiles on the tablet or smartphone screen. Windows 8 also has the capability to accept input via touch screen. It also has near field connectivity through which it automatically connects to devices in its environment.

Activity Sheet

I.   What is...?

1.   What is GUI?

_____

_____

2.   What is an icon?

_____

_____

3.   What is a window?

_____

_____

4.   What is a desktop?

_____

_____

5.   What is a toolbar?

_____

_____

6.   What is a menu?

_____

_____

II.   Complete each sentence by circling the correct words in the brackets.

1.   Graphical user interface uses (typed commands/menus and icons).

2.   The pointer is controlled by the (keyboard/mouse).

3.   An active window lies (on top of/under) the inactive windows.

4.   Each window has (two/four) scroll bars.

5.   A toolbar displays (menus/icons).

Test Sheet

I.   Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.   (4 marks)

icon	pointer	resized	Title Bar
operating system	GUI	Windows	menu

1.   The _____ _____ is the most important program run on the computer.

2.   _____ makes it easy and interesting to communicate with a computer.

3.   The most popular GUI-based operating system is _____.

4.   We can find a list of related commands in a _____.

5.   An _____ is a small picture that represent a program or a file.

6.   A _____ is controlled by a mouse.

7.   Windows can generally be _____, moved, and closed.

8.   The _____ _____ displays the name of the document or program.

II.   Circle the correct answer.   (6 marks)

1.   A computer will not work without an operating system.   True/False

2.   Clicking on the Computer icon on the desktop enables us to print our work.   True/False

3.   Clicking on the Documents icon enables us to view our files and folders.   True/False

4.   Windows is the most popular operating system.   True/False

5.   A computer cannot work without a desktop.   True/False

6.   Windows cannot be resized, moved, or closed.   True/False

Test Sheet

III. Tick five boxes to show which five of these statements are most likely to be true.

(5 marks)

1. Almost all software packages use menus to present commands. ☐

2. Icons are small boxes within which an application is run. ☐

3. A pointer can also be called a cursor. ☐

4. A GUI is a difficult-to-use interface. ☐

5. Many operating systems and application programs use windows to display information. ☐

6. When you click anywhere on an inactive window, it becomes the active window. ☐

7. The most commonly-used operating system is DOS. ☐

8. Microsoft Windows is the only GUI-based operating system available. ☐

9. An image or an item that appears on the desktop is called an object. ☐

10. When Windows has completely loaded, you will see a screen called the desktop. ☐

Answers to activity sheet

I. What is...?

1. GUI stands for graphical user interface. It is a means of interacting with the computer through icons and menus.

2. An icon is a picture that represents an object.

3. A window is a rectangular box that displays the contents of a file or program.

4. A desktop is the working area of the Windows operating system. It displays some of the programs, files, and folders of the computer.

5. A toolbar is a horizontal strip that displays important tools used by the program.

6. A menu is a list of related commands and features.

II. Complete each sentence by circling the correct words in the brackets.

1. Graphical user interface uses (typed commands/(menus and icons)).

2. The pointer is controlled by the (keyboard/(mouse)).

3. An active window lies ((on top of)/under) the inactive windows.

4. Each window has ((two)/four) scroll bars.

5. A toolbar displays (menus/(icons)).

Answers to test sheet

I. Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

icon	pointer	resized	Title Bar
operating system	GUI	Windows	menu

1. operating system	2. GUI	3. Windows	4. menu
5. icon	6. pointer	7. resized	8. Title Bar

II. Circle the correct answer.

1. (True)/False	2.	True/(False)	3.	(True)/False	
4. (True)/False	5.	True/(False)	6.	True/(False)	

III. Tick five boxes to show which five of these statements are most likely to be true.

1. Almost all software packages use menus to present commands.

5. Many operating systems and application programs use windows to display information.

6. When you click anywhere on an inactive window, it becomes the active window.

9. An image or an item that appears on the desktop is called an object.

10. When Windows has completely loaded, you will see a screen called the desktop.

WORD PROCESSING

Teaching objectives

The objectives of this chapter are to:

- introduce Microsoft Word as an application software
- identify the documents that can be prepared using Microsoft Word
- explain how text can be selected, edited, and formatted in a Microsoft Word document.

Learning outcomes

After completing this chapter, students should be able to:

- explain the advantages of a word processor
- identify the features of word-processing software
- create, select, edit, and format text in a Microsoft Word document using menus and toolbars.

Introduction for the teacher

Students are now familiar with application software and its uses. The purpose of this chapter is to introduce students to word-processing software by using Microsoft Word as an example. It is important that students know that Microsoft Word is just one word-processing software of several. It is more popular than other software because of its user-friendliness and compatibility with different types of hardware.

This chapter is theoretical as well as practical. It is of no use to equip students with practical knowledge unless they are capable of understanding its theoretical background. Such theoretical knowledge helps to clarify concepts in order to enable students to solve many practical problems on their own. In this chapter, students should first be introduced to word processing. It is a range of activities used to produce text-based documents such as letters, reports, brochures, pamphlets, and so on. Students should identify how they perform such activities manually. It should then be explained that these activities can also be performed on a computer by using application software.

Once students have become aware of word processing, they should learn about the different elements of word-processing software. They should learn how to draft a document. Next, you should differentiate between the editing and formatting stages of a document and enable students to distinguish between the two. The activities related to editing (selecting, cutting, copying, pasting, and deleting of text) should be practised. Similarly, formatting commands such as bold, italics, underlining, change case, and inserting headers and footers should also be taught.

At the end of this chapter, students should be able to prepare complete documents using word-processing software.

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

How do you write a letter?

How do you correct a mistake in your writing?

How can you write letters in less time?

Reading and explanation (lab session) (30 minutes)

Discuss sections 7.1 to 7.4 on pages 63 to 65 of the textbook.

You should discuss with students the different functions of a word processor. Encourage students to come up with several types of documents that need to be produced: letters, report cards, notes, notices, circulars, magazines, books, etc. In the lab, teach students how to open the Microsoft Word program. They should be able to do this on their own as they have learnt it in the previous chapter. However, you may need to refresh their memories. Once the Microsoft Word window is open, ask students to recall the different elements of the Word window.

The students should be able to identify the Title Bar and the Ribbon. You should then introduce the tabs. Identify the buttons of a few commonly-used functions such as New, Open, Save, and Font size. Once students have a blank document open on their screens, introduce them to page layout. Explain Portrait and Landscape orientation. Demonstrate how the orientation can be changed.

Next, ask students to type in text of their choice. It may be a letter or material from a textbook. Ask students what they would like to do with the text they have entered. In other words, ask how they would like to change its appearance. Once students have given their suggestions, explain that in order to make these changes, the text should first be selected. Otherwise the changes will not be made. Describe the two methods of selecting text.

The session should end with students being curious about how to change the text after it has been selected.

Homework assignment (5 minutes)

Assign question 1 from section D (page 73) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss sections 7.5 to 7.6.5 on pages 65 to 67 of the textbook.

Homework assignment (5 minutes)

Assign questions 2 and 3 from section D (page 73) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

<u>Period 3</u>

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss sections 7.6.6 to 7.6.10 on pages 69 to 70 of the textbook.

Assign question 5 from section D (page 73) and section F (page 73) as lab work.

Homework assignment (5 minutes)

Assign sections A, B, and C, question 4 from section B, and section E (page 67) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 72 and 73

A. Fill in the blanks.

1. tools, editing   2. Title Bar   3. cursor   4. Bullets, numbers   5. Copy

B. State whether the following statements are true or false. Rewrite the false statements to make them true.

1. False. Editing refers to making changes to the text in a document.

2. False. Word processors have features that are used to detect and correct spelling errors.

3. True.

4. True.

5. False. Text typed in lowercase appears in small letters throughout.

C. Select the correct option for each question.

1. b   2. a   3. c   4. d   5. a

D. Answer the following questions.

1. What is a word processor?

A word processor is an application software that allows us to produce documents like letters, reports, and pamphlets with the help of a computer.

2. What is the difference between editing and formatting?

Editing refers to the process of making changes to the content of a document. Formatting refers to the process of making changes to the appearance of a document.

3. How can a Word document be edited? How can it be formatted?

A Word document can be edited by cutting or copying text from one part of the document and pasting it in another part of the document. It can also be edited by correcting spelling and punctuation errors.

A Word document can be formatted by changing the alignment, colour, or bordering of the text. Text can be made bold, italicized, or underlined. Bullets and numbering may be used in lists. Indentation, line spacing, and case might be changed. Headers and footers may also be added.

4. Explain one disadvantage of using a spell checker.

A spell checker can only identify words that have been spelt incorrectly. It may not detect a word that has been spelt correctly but does not fit the context.

5. **Next to each of the following shortcuts, write the name of the appropriate command.**

Shortcut	Command	Shortcut	Command
Ctrl+A	Select All	Alt+F4	Close
Ctrl+D	Font	Ctrl+B	Bold
Ctrl+N	New	Ctrl+I	Italicize
Ctrl+U	Underline	Ctrl+X	Cut
Ctrl+C	Copy	F7	Spelling and Grammar

E. **Write paragraphs to answer the following questions.**

1. **'Using more formatting options improves a document.' Do you agree with this statement? Why or why not?**

   I do not agree with this statement. The main purpose of a document should be to present information in an easy-to-read way. Using many formatting options distracts the reader and he cannot concentrate on the information in the document. Using many font styles and colours also makes the document difficult to read and interpret.

2. **Describe the page layout you would select to produce each of the following documents: a newsletter for your school, a leaflet advertising a garage sale, and a brochure to describe the facilities offered by your school.**

   I would select the Portrait orientation and larger paper size to produce a newsletter because text and pictures will be placed on it. I would use Portrait orientation and A4 paper size for the leaflet because it would contain minimum details announcing the garage sale. I would use Landscape orientation and A4 paper size for the brochure because this would make the brochure easy to fold. I would use columns to arrange text on the brochure.

F. **Lab exercise**

   For the teacher: Students should be able to produce the content for both exercises. However, you may provide samples or templates as well as formatting instructions. Students may have learnt the structure of an essay and an application in their English class. Encourage them to apply those principles to this exercise.

G. **Project**

   For the teacher: This project may be best performed as a group activity as it would give students the opportunity to brainstorm creative ideas with friends. You may even announce a competition and a prize for the best poster to encourage students to produce exceptional work.

Additional information for the teacher

- Sometimes a business will want to send a standard letter to a lot of people but each letter has to be slightly different. For example, if a DVD shop were sending out reminders for unpaid bills then the letters would be identical except for the customers' names and addresses and the amounts owed. This can be done using **Mail Merge**.

  We also receive a lot of junk mail more or less everyday. Much of this mail is personalized with our name, address, or town. Many other people have received the same letter, but with different details. This is also done by using Mail Merge.

  There are three stages to this process:

  1. The first stage is where a form letter is created which contains the main text of the letter as well as place markers to show where the data fields such as name and address are to be inserted.

  2. Then a database of the data that is to be used in the letters is created.

  3. Then the data from the database is placed into each individual letter.

- **A table** is used where lists of data are to be displayed in a grid. The number of rows and columns can be set, and you can change the width of the columns by dragging the vertical lines on the table.

- **A macro** is a sequence of instructions that can be recorded, stored, and labelled with a name. The macro can be run at any time and the instructions will be executed in the given order. This saves a lot of time. Macros are usually recorded for sequence of tasks that are frequently repeated.

- For frequently-used documents, setting up a **template** can save a lot of time. Styles and layouts can be preset on the template and used each time a new document is created.

  Nearly every company uses letterheads printed at the top of all their stationery, showing details of the business such as the company's name, telephone numbers, email address, and a logo. These can all be placed in position on a template. This means that all this information does not have to be typed every time a letter is written. To give letters a more professional look, the same font and text size can be used for every letter that is written, and these can be defined in the template.

Activity Sheet

I.   What is...?

1.   What is a spell checker?

_____

_____

2.   What is a thesaurus?

_____

_____

3.   What is formatting?

_____

_____

4.   What is a border?

_____

_____

5.   What is deleting?

_____

_____

6.   What is the difference between a header and a footer?

_____

_____

II.   Complete each sentence by circling the correct words in the brackets.

1.   A (grammar checker/footer) identifies problems with the way sentences are structured.

2.   If you type an incorrect character, pressing the (Tab/Backspace) key will delete it.

3.   The (Shift/Delete) key removes the character to the right of the cursor.

4.   To reproduce a section of text at another place in the document, we use the (Copy and Paste/Cut and Copy) commands.

5.   You can set the page size and orientation from the (Home/Page Layout) tab.

OXFORD
UNIVERSITY PRESS

Test Sheet

I. Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.   (4 marks)

indent	justified	thesaurus	lists
orientation	move	header	text

1. Word processors help us to create _____-based documents.

2. Portrait and Landscape are two types of page _____.

3. Cut and Paste allows us to _____ text.

4. In _____ alignment, each line of text is the same length.

5. We can format _____ with the help of bullets.

6. The Tab key helps us to _____ a line.

7. A _____ gives us alternatives for a given word.

8. A _____ appears at the top of a page.

II. Circle the correct answer.   (6 marks)

1. The most commonly-used word processing program is Microsoft Word.   True/False

2. The F1 key can be used to run a spell checker.   True/False

3. Editing involves moving and copying text.   True/False

4. The Home tab buttons for the Cut and Paste used commands.   True/False

5. A thesaurus can give alternative words.   True/False

6. If we want to move a part of the text from one location to another, we use the Copy and Paste option.   True/False

Test Sheet

III. Tick five boxes to show which five of these statements are most likely to be true. (5 marks)

1. To start Word, you have to click on the Start Button on the Title Bar. ☐

2. The Word screen is also known as the menu window. ☐

3. The Home tab contains the Font and Paragraph groups. ☐

4. To delete unwanted text, we select the text and press the END key on the keyboard. ☐

5. To emphasize characters, we can use the bold option. ☐

6. Line spacing can be adjusted from the Paragraph group. ☐

7. We can add a word to the dictionary used by the spell checker. ☐

8. Text can only be displayed in one colour on a Word document. ☐

9. Text can only be aligned to the left, right, and centrally. ☐

10. Copy and Paste helps us to reproduce text in a different location. ☐

Answers to activity sheet

I.   What is...?

1.   A spell checker is a feature of a word-processor that helps us to identify spelling errors in text.

2.   A thesaurus is a feature of a word-processor that suggests words that have the same meaning as a particular word.

3.   Formatting is an activity that involves making changes to the way a document appears.

4.   A border is a band around the edges of a page. It improves the appearance of a document.

5.   Deleting is the process of removing text from a document.

6.   A header is a section of a page that appears at the top of every page of a document when it is printed. A footer is a similar section that appears at the bottom of each page. Headers and footers contain important information such as page numbers and the name of the author.

II.   Complete each sentence by circling the correct words in the brackets.

1.   A ((grammar checker)/footer) identifies problems with the way sentences are structured.

2.   If you type an incorrect character, pressing the (Tab/(Backspace)) key will delete it.

3.   The (Shift/(Delete)) key removes the character to the right of the cursor.

4.   To reproduce a section of text at another place in the document, we use the ((Copy and Paste)/Cut and Copy) commands.

5.   You can set the page size and orientation from the (Home/(Page Layout)) tab.

Answers to test sheet

I.   Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

indent	justified	thesaurus	lists
orientation	move	header	text

1. text	2. orientation	3. move	4. justified
5. lists	6. indent	7. thesaurus	8. header

II.   Circle the correct option.

1. (True)/False	2. True/(False)	3. (True)/False
4. (True)/False	5. (True)/False	6. True/(False)

III.   Tick five boxes to show which five of these statements are most likely to be true.

3.   The Home tab contains the Font and Paragraph group.

5.   To emphasize characters, we can use the bold option.

6.   Line spacing can be adjusted from the Paragraph group.

7.   We can add a word to the dictionary used by the spell checker.

10.   Copy and Paste helps us to reproduce text in a different location.

Teaching objectives

The objectives of this chapter are to:

- introduce students to spreadsheets
- identify the elements of a spreadsheet
- compare the different types of data that are used in a spreadsheet
- explain how a spreadsheet is created, edited, formatted, and saved in Microsoft Excel.

Learning outcomes

After completing this chapter, students should be able to:

- explain the advantages of spreadsheet software
- define the terms worksheet, workbook, column, row, cell, cell reference, range, and active cell
- explain the function of the Formula Bar
- create, edit, format, and save a worksheet.

Introduction for the teacher

Students are now familiar with one type of application software: the word processor. The purpose of this chapter is to introduce students to another application software: the electronic spreadsheet. It is important that students become fluent with the terminology related to spreadsheets. It is also important for students to know that Microsoft Excel is just one spreadsheet software of several. It is more popular than other software because of its user-friendliness and compatibility with different types of hardware.

This chapter is theoretical as well as based on practical application. In this chapter, students should first be introduced to spreadsheets. The components of a spreadsheet (cell, row, column, Formula Bar, gridlines) should be explained. The chapter follows with a discussion of the various editing and formatting options available to users.

Number of allocated periods: 4

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

How is data arranged on your report card?

Can we add up numbers in a Word document?

Reading and explanation (lab session) (30 minutes)

Discuss sections 8.1 to 8.3 on pages 75 to 78 of the textbook.

Discuss with students the different functions of an electronic spreadsheet. Students should be encouraged to come up with several types of documents that need to be produced: price lists, expenditure lists, and so on. In the lab, the students should be taught how to open the Microsoft Excel program. They should be able to do this on their own as they have learnt it in the previous chapter. However, you may need to refresh their memories. Once the Microsoft Excel window is open, ask students to recall the different elements of the Excel window.

The students should be able to identify the Title Bar and the Ribbon. Introduce the Formula Bar and explain its function. Students should be made familiar with the Excel environment by pointing out the spreadsheet and its rows and columns. Sheet tabs should be pointed out so that students know that a workbook contains several worksheets.

Students should be able to differentiate between text data (labels) and numerical data (values). Students should be able to identify a cell by row number and column letter. On your instruction, they could be asked to enter particular data in a specific cell.

Once students have become familiar with a spreadsheet, you might call out data relating to the prices of items on a shopping list and ask students to enter them on the spreadsheet. Students can also be asked to give suitable headings to the columns containing the names of the items and their prices.

By the end of the session, students should be able to navigate around a spreadsheet and enter data.

Homework assignment (5 minutes)

Assign questions 1 and 2 from section D (page 86) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss sections 8.4 to 8.4.5 on pages 78 to 81 of the textbook.

Homework assignment (5 minutes)

Assign questions 3 and 4 from section D (page 86) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 3

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss sections 8.5 to 8.5.3 on pages 81 and 82 of the textbook.

Homework assignment (5 minutes)

Assign sections A, B, and C as homework.

Period 4

Starter activity (5 minutes)

Reading and explanation (lab session) (20 minutes)

Discuss sections 8.6 to 8.8 on pages 83 and 84 of the textbook.

Lab activity (10 minutes)

Assign section F on page 87 do be completed in the lab.

Homework assignment (5 minutes)

Assign question 5 from section D (page 86) and section E (page 87) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 85 to 87

A. **Fill in the blanks.**

1. Formula Bar   2. labels   3. three   4. Clipboard   5. Cells

B. **State whether the following statements are true or false. Rewrite the false statements to make them true.**

1. False. Spreadsheets are used for organizing numerical data.

2. True.

3. False. The cell currently being worked on is the active cell.

4. True.

5. True.

C. **Select the correct option for each question.**

1. a   2. b   3. c   4. d   5. a

D. **Answer the following questions.**

1. **What is an electronic spreadsheet? Name a commonly-used spreadsheet program.**

   An electronic spreadsheet is an application program that allows text, numbers, and formulae to be entered into a grid of rectangular cells. The most widely-used spreadsheet program is Microsoft Excel.

2. **Define the following: row, column, and cell.**

Row	A row is a horizontal division of a worksheet. It is denoted by a number.
Column	A column is a vertical division of a worksheet. It is denoted by a letter.
Cell	A cell is a box at the intersection of a row and a column. It is denoted by a row number and column letter.

3. **What is the purpose of the Formula Bar?**

   The Formula Bar is used to enter a formula in a cell. It is also used to change a formula or make changes to the data in a cell.

4. **What are the two types of text that can be entered in a spreadsheet?**

   The two types of text that can be entered in a spreadsheet are labels and values. Labels include data in the form of letters while values include numbers.

5. **Name three types of documents for which you would use a spreadsheet instead of a Word document.**

   1. Marks sheets   2. Monthly bills   3. Price lists

E. **Write paragraphs to answer the following questions.**

1. **Explain how spreadsheets might be useful to the following people: a teacher, a banker, a housewife.**

    A teacher can use spreadsheets to prepare attendance sheets and results sheets. The teacher can also use spreadsheets to organize students into groups and teams for various activities and projects. A banker can use spreadsheets to make calculations and find out the account balances of different clients. A housewife can use spreadsheets to record expenses on various items such as utility bills, fuel, groceries, school fees, and so on. She can also use it to plan activities for the family.

2. **How can formatting options help to make information on a spreadsheet more relevant for the reader?**

    Formatting options can be used to mark out information that is relevant to the reader. Conditional formatting can be used to indicate data that meets a certain condition or requirement of the reader. Bold, underline, and other formatting options can help the reader to identify important details on the spreadsheet.

F. **Lab exercise**

For the teacher: The two activities can be distributed to separate groups of students. Ask students to recall the functions and formulas they have been using with spreadsheets so far. Allow students to collect information for the second activity prior to starting work on the computer to avoid disciplinary problems later on.

G. **Project**

For the teacher: Advise students that they should seek assistance from their parents in compiling information for this project. Actual amounts are not needed but students should be encouraged to share what they have learnt in class with their parents.

Additional information for the teacher

- **A template** is a workbook file that includes pre-defined settings that can be used as a pattern to create many common types of workbooks. Every Excel workbook is based on a template.

- **A formula** is an equation that performs an operation on data contained in a worksheet.

- **Functions** are pre-written formulas that are used to perform certain types of calculations automatically.

- Whenever a number in a referenced cell in a formula changes, Excel automatically recalculates all formulae that are dependent on the changed value.

- The contents of a worksheet can be copied or moved to another location in the worksheet or between worksheets. This saves time as you do not have to enter the same information again.

- A **relative reference** is a cell or range reference in a formula the location of which is interpreted in relation to the position of the cell that contains the formula.

- Alignment setting allows one to change the horizontal and vertical placement and the orientation of an entry in a cell.

- A **style** is a combination of formats that can be quickly applied to a selection.

- A **graphic** is a non-text element or an object, such as a drawing or a picture, that can be added to a worksheet. Pictures are inserted as embedded objects. An embedded object becomes part of the Excel workbook and can be opened and edited using the program in which it was created.

Activity Sheet

I.   What is...?

1.   What is a spreadsheet?

_____

_____

2.   What is an active cell?

_____

_____

3.   What is a sheet tab?

_____

_____

4.   What is a range?

_____

_____

5.   What is the Formula Bar?

_____

_____

6.   What is a frame?

_____

_____

II.   Complete each sentence by circling the correct words in the brackets.

1.   Spreadsheets are used to organize (data/programs) and perform calculations.

2.   A workbook contains several (work files/worksheets).

3.   Each column is identified by a (point/letter).

4.   The intersection of a (row and a column/column and a worksheet) creates a cell.

5.   (Contents/Labels) can contain any combination of letters, numbers, spaces, and non-numeric characters.

Test Sheet

I. **Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.** **(4 marks)**

cell reference	row numbers	Autofill	values
bottom	rows	columns	active

1. A worksheet is a rectangular grid of columns and ＿＿＿＿＿＿＿＿＿.

2. Each cell on a worksheet is known by its ＿＿＿＿＿＿ ＿＿＿＿＿＿.

3. The address of the ＿＿＿＿＿＿＿ cell is given by the row number and column letter.

4. The vertical bar of the frame displays ＿＿＿＿＿ ＿＿＿＿＿＿.

5. Sheet tabs are present at the ＿＿＿＿＿＿＿ of worksheets.

6. Data can exist as labels or ＿＿＿＿＿＿＿.

7. The ＿＿＿＿＿＿＿ feature is used to enter a pre-defined series of data.

8. Merge and Center is used to display cell contents across several ＿＿＿＿＿.

II. **Circle the correct answer.** **(6 marks)**

1. Worksheets are used to organize numeric data only. True/False

2. Scroll bars are used to change font styles. True/False

3. An Excel file is called a workbook. True/False

4. The Formula Bar displays the address of the active cell on its right. True/False

5. A worksheet represents the work area on the screen. True/False

6. Cells are formed by the intersection of rows and columns. True/False

III. **Tick five boxes to show which five of these statements are most likely to be true. (5 marks)**

1. The + and – symbols are examples of values. ☐

2. Data can be edited from the Formula Bar. ☐

3. A range of cells can be selected only with the help of a keyboard. ☐

4. Clear helps us to delete cell contents. ☐

5. Data can be aligned from the Font group. ☐

6. The Autofill feature speeds up the data entry process. ☐

7. In a spreadsheet, data can be entered into any inactive cell. ☐

8. To move the cell contents from one location to another in a spreadsheet we can use the Merge and Center feature. ☐

9. Microsoft Excel can be used to create a price list. ☐

10. Scroll bars are used to move only up and down a worksheet. ☐

Answers to activity sheet

I.   What is...?

1.   A spreadsheet is a rectangular grid of cells that is used to organize, analyse, and manipulate data.

2.   An active cell is the cell that has been selected.

3.   A sheet tab is a tab that allows us to move from one worksheet to another by clicking on it.

4.   A range is a block of cells that lie adjacent to each other.

5.   The Formula Bar is an area used to enter a formula in a cell. It is also used as an area where changes can be made to data in a cell.

6.   A frame consists of a horizontal bar and a vertical bar that contain column and row references.

II.   Complete each sentence by circling the correct words in the brackets.

1.   Spreadsheets are used to organize (data/programs) and perform calculations.

2.   A workbook contains several (work files/worksheets).

3.   Each column is identified by a (point/letter).

4.   The intersection of a (row and a column/column and a worksheet) creates a cell.

5.   (Contents/Labels) can contain any combination of letters, numbers, spaces, and non-numeric characters.

Answers to test sheet

I.   Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

cell reference	row numbers	Autofill	values
bottom	rows	columns	active

1. rows   2. cell reference   3. active   4. row numbers

5. bottom   6. values   7. Autofill   8. columns

II.   Circle the correct answer.

1.   True/False   2.   True/False   3.   True/False

4.   True/False   5.   True/False   6.   True/False

III. Tick five boxes to show which five of these statements are most likely to be true.

1.   The + and – symbols are examples of values.

2.   Data can be edited from the Formula Bar.

4.   Clear helps us to delete cell contents.

6.   The Autofill feature speeds up the data entry process.

9.   Microsoft Excel can be used to create a price list.

OXFORD
UNIVERSITY PRESS

MULTIMEDIA PRESENTATIONS

9

Teaching objectives

The objectives of this chapter are to:

- introduce students to multimedia presentations
- explain the components and features of a PowerPoint presentation
- identify the various forms of data that can be inserted on a slide
- explain how a presentation is created, formatted, saved, and run.

Learning outcomes

After completing this chapter, students should be able to:

- explain the advantages of presentation software
- define the terms presentation, slide, placeholder, slide show, Title Slide, Normal View, and Slide Transition
- insert text, Clip Art, diagrams, audio files, and video files on a slide
- create, format, and run a slide show.

Introduction for the teacher

Students are now familiar with word processing and electronic spreadsheet programs. The purpose of this chapter is to introduce students to another application software: multimedia presentation software. It is important that students become fluent with the terminology related to multimedia presentations. It is also important for students to know that Microsoft PowerPoint is just one presentation software of several. It is more popular than other software because of its user-friendliness and compatibility with different types of hardware.

In this chapter, students should first be introduced to a presentation. The components of a multimedia presentation (slide, template, placeholder, slide show) should be described. The chapter continues with a discussion of the various editing and formatting options available to users.

Students should learn how to create informative as well as attractive multimedia presentations using Microsoft PowerPoint. They should also learn how to use design templates. The topics covered in this chapter include changing the font size and style, checking presentation for spelling errors, viewing the slides in a presentation, checking the style of slide show, adding pictures, video, sound, and animation effects to make presentations more effective, and running the slide show.

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

Can music be incorporated in a word document?

Can film clips be incorporated in a spreadsheet?

Reading and explanation (lab session) (30 minutes)

Discuss sections 9.1 to 9.4.2 on pages 89 to 91 of the textbook.

You should discuss with students the different functions of a multimedia presentation. Encourage students to come up with several topics that can be elaborated on with the help of a multimedia presentation. In the lab, teach students how to open the Microsoft PowerPoint program. They should be able to do this on their own as they have learnt it in the previous units. However, you may need to refresh their memories. Once the Microsoft PowerPoint window is open, ask students to recall the different elements of the PowerPoint window.

The students should be able to identify the Title Bar and the Ribbon. Introduce the slide, placeholder, Notes pane, task pane and explain their functions. Students should be made familiar with the PowerPoint environment by pointing out the different elements and explaining them.

Before students start working on their presentations, assign them a topic. Give them adequate time to plan the content of their slides. This is also an important skill. Explain the procedure for adding text on the Title Slide.

Homework assignment (5 minutes)

Assign questions 1 and 2 from section D (page 100) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss sections 9.4.3 to 9.4.5 on pages 91 to 95 of the textbook.

Homework assignment (5 minutes)

Assign questions 3 and 4 from section D (page 100) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 3

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss sections 9.4.6 to 9.4.8 on pages 95 to 98 of the textbook.

Assign sections A, B, and C (pages 99–100) to be completed in the classroom.

Homework assignment (5 minutes)

Assign question 5 from section D and section E (page 100) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

OXFORD
UNIVERSITY PRESS

Suggested answers to end-of-chapter questions on pages 99 to 101

A. Fill in the blanks.

1. multiple   2. microphone   3. placeholders   4. template   5. thumbnails

B. State whether the following statements are true or false. Rewrite the false statements to make them true.

1. False. A template is a model slide.

2. True.

3. True.

4. False. Normal View is used to view a single slide and the Notes area.

5. False. Additional notes can be inserted in the Notes area.

C. Select the correct option for each question.

1. d   2. a   3. c   4. d   5. b

D. Answer the following questions.

1. What is a slide show?

A slide show is a presentation on a particular topic. A slide show is a series of slides. Each slide contains text or visual information on one part of the topic. Each slide is displayed to an audience for as long as it is needed for the information to be understood by them.

2. What is the purpose of the Notes pane?

In the Notes pane, the presenter can type notes to himself. These notes might contain additional explanation. The presenter can refer to these notes while giving the presentation so that he or she does not forget any important information.

3. What are the three presentation views? Describe them.

The three presentation views are described below:

1. Normal View

   Normal View is used to focus on a slide. Normal view splits the screen into three major sections: the Outline and Slides tabs, the Slide pane, and the Notes pane. The Outline and Slides tabs on the left side of the window enable us to shift between two different ways of viewing our slides. The Slides tab shows thumbnails of the slides. The Outline tab shows the text on the slides. The Slide pane in the centre of the window shows a large view of the slide on which we are currently working. The Notes pane below the Slide pane is used to type notes.

2. Slide Sorter View

   The Slide Sorter View shows thumbnails of all the slides. In Slide Sorter view, we can easily add, delete, or change the order of slides.

3. Reading View

   The Reading View is used to view the slides as they would appear in the final presentation.

4. Why is animation used in a presentation?

Animation is used to control how objects move around the slides. Animation enables us to create interesting and attractive presentations. Animation helps people remember things for a longer time.

5. **List three types of information (text, Clip Art, diagrams, and so on) that you would use in a presentation on the following:**

    a. **My School**

        1. A photograph of my school

        2. The address of my school

        3. An interview with my principal

    b. **How to make a sandwich**

        1. A photograph of a sandwich

        2. A list of ingredients

        3. A video of a person making a sandwich

    c. **Modern inventions in computers**

        1. Photographs of early computers

        2. A video of modern computers being used

        3. A timeline of the different generations of computers

E. **Write paragraphs to answer the following questions.**

    1. **'Slides should be informative, with a lot of text.' Do you agree with this statement? Why or why not?**

        I disagree with this statement because slides should not have a lot of text. A presentation should support the explanation of the presenter and should contain important points. The slides should be informative but the information should be in the form of bullet points, charts, and other images. The audience should focus on the presenter instead of the presentation.

    2. **Discuss a few topics which you would choose to use animation features in your presentation.**

        I would choose animation features for a presentation on the water cycle. I would use the Entrance feature to show different labels on the diagram as I introduce them. I would use the Emphasis feature to highlight important changes in the cycle. Similarly, I would use animation effects for a presentation on the solar system. The Entrance feature would help me to introduce each planet. The Exit feature would be used to focus on a single planet at a time.

F. **Lab exercise**

    For the teacher: The two activities may be assigned to separate groups in the lab. Make sure that some images are present on the computers so that students can access them easily. Encourage them to use the Internet to search for additional images. For the second activity, you can experiment with peer learning by having the students use the presentation to explain their ideas to students from a different class who may not have learnt to use Microsoft PowerPoint yet.

G. **Project**

    For the teacher: Bring in an interesting news story or article about e-waste to the class. Raise important questions for discussion in the class so that students can get some preliminary ideas for the project. After students have given their presentations, discuss their recommendations and list some simple steps that students can implement in daily life.

Activity Sheet

I.   What is…?

1.   What is Microsoft PowerPoint?

_____

_____

2.   What is a placeholder?

_____

_____

3.   What is meant by slide layout?

_____

_____

4.   What is a slide show?

_____

_____

5.   What is slide transition?

_____

_____

6.   What is the Title Slide?

_____

_____

II.   Complete each sentence by circling the correct words in the brackets.

1.   Slide Sorter View shows (thumbnails/commands) of all the slides.

2.   Normal View splits the screen into (three/two) major sections.

3.   (Normal View/Slide Sorter View) allows us to focus on a single slide and see everything on the slide at a glance.

4.   We use the (Slide Show View/Notes pane) when we want to view slides as they will appear in the final presentation.

5.   We can use the (Paste option/WordArt option) to add special text effects to our presentation.

Test Sheet

I.   Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.   (4 marks)

background	Illustrations	presentations	placeholders
interactive	Ctrl+M	Multimedia	template

1.   PowerPoint is currently the most common software used for making ＿＿＿＿＿＿＿＿＿＿ .

2.   A system that allows users to ask questions is said to be ＿＿＿＿＿＿＿＿＿.

3.   A ＿＿＿＿＿＿＿＿ provides a model for a slide.

4.   Shading, texture, and gradient can be used to change the ＿＿＿＿＿＿＿＿ of a slide.

5.   We can use ＿＿＿＿＿＿＿＿ to hold objects on our slides.

6.   Diagrams can be inserted on a slide from the ＿＿＿＿＿＿ group.

7.   A new slide can be inserted by pressing the ＿＿＿＿＿＿＿＿ keys.

8.   ＿＿＿＿＿＿＿＿ involves using more than one form of communication.

II. Circle the correct answer.   (4 marks)

1.   A multimedia presentation uses text to make a presentation attractive.   True/False

2.   Multimedia can be used in schools and offices.   True/False

3.   The Title Slide contains the same placeholders as the Text Slide.   True/False

4.   Shapes allows us to insert cartoons on a slide.   True/False

5.   We can set a photograph as the background of a slide.   True/False

6.   Normal View allows us to focus on one slide at a time.   True/False

7.   Animation controls how objects move around on a slide.   True/False

8.   We can add music to a slide.   True/False

OXFORD
UNIVERSITY PRESS

Test Sheet

III. Tick four boxes to show which four of these statements are most likely to be true.

(4 marks)

1. It is necessary to use a template in every presentation. ☐

2. Slide layout involves making changes to the text of a slide. ☐

3. Normal and Slide Sorter are types of presentation views. ☐

4. Entrance and Emphasis are types of animation effects. ☐

5. Slide Transition can be adjusted from the Transition group.. ☐

6. The Notes area is a placeholder. ☐

7. Multimedia is used to train people for dangerous jobs. ☐

Answers to activity sheet

I. What is...?

1. Microsoft PowerPoint is a presentation software that allows us to use text, pictures, and sound to create informative and attractive presentations.

2. A placeholder is a location on a slide where data can be inserted.

3. Slide layout refers to the arrangement of placeholders on a slide.

4. A slide show is a sequence of slides that provide information on a particular topic.

5. Slide transition refers to the sequence in which slides follow each other during a presentation.

6. The Title Slide is the first slide of a presentation. It displays the title of the presentation and the name of the presenter.

II. Complete each sentence by circling the correct words in the brackets.

1. Slide Sorter View shows ((thumbnails)/commands) of all the slides.

2. Normal View splits the screen into ((three)/two) major sections.

3. ((Normal View)/Slide Sorter View) allows us to focus on a single slide and see everything on the slide at a glance.

4. We use the ((Slide Show View)/Notes pane) when we want to view slides as they will appear in the final presentation.

5. We can use the (Paste option/(WordArt option)) to add special text effects to our presentation.

Answers to test sheet

I. Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

background	Diagram Gallery	presentations	placeholders
interactive	Ctrl+M	Multimedia	template

1. presentations	2. interactive	3. template	4. background
5. placeholders	6. Illustrations	7. Ctrl+M	8. Multimedia

II. Circle the correct answer.

1. True/(False)	2. (True)/False	3. True/(False)	4. True/(False)
5. (True)/False	6. (True)/False	7. (True)/False	8. (True)/False

III. Tick four boxes to show which four of these statements are most likely to be true.

4. Normal and Slide Sorter are types of presentation views.

5. Entrance and Emphasis are types of animation effects.

6. Slide Transition can be adjusted from the Transitions group.

8. Multimedia is used to train people for dangerous jobs.

LOGO: AN EDUCATIONAL PROGRAMING LANGUAGE

10

Teaching objectives

The objectives of this chapter are to:

- introduce students to Logo
- explain the importance of commands or primitives to control a computer
- introduce the term syntax and explain its importance
- explain the advantages and use of procedures.

Learning outcomes

After completing this chapter, students should be able to:

- identify Logo as an educational programming language
- explain the functions of the Graphics Window, Commander Window, and Turtle
- use appropriate commands to create shapes in a Logo environment
- create, edit, save, and load procedures.

Introduction for the teacher

Now that students are fairly familiar with using different types of application software, they should be encouraged to think about how software is created. In other words, you should ask students how a particular application software knows what task to perform when a certain button on the toolbar is clicked or a certain key on the keyboard is pressed. Students should know that a computer is not an intelligent device and therefore somebody has to instruct it about how to perform various tasks and respond to different commands.

The purpose of this chapter is to introduce students to the aspects of programming. Logo is an educational programming language. Like Paint, students can use it to draw pictures, but it does not work by using the mouse. Users have to give instructions for every single step to be taken by the program in drawing an object on the screen.

At the onset, students should be introduced to Logo as educational software. They should then be introduced to Logo terminology like Graphics window, Commander window, and Turtle. Students should then be taught the primitives. Again, students should recall this activity from what they have learnt about DOS in Chapter 5. The importance of correct syntax should also be stressed.

Once students are fluent with commands, you should explain that a group of commands can be given in a single go. This can be done with the help of a program or procedure. This saves the user's time. The examples given in the chapter should be practised to ensure students' fluency and grasp over writing procedures.

The Logo software can easily be downloaded from the World Wide Web.

Number of allocated periods: 3

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

How does the computer know that it has to go to the next line when we press Enter?

Who tells this to the computer in the first place?

How can we give instructions to a computer to perform a particular task?

Reading and explanation (lab session) (30 minutes)

Discuss sections 10.1 to 10.6 on pages 103 to 105 of the textbook.

Introduce students to the Logo software and its purpose. Next, teach students how to open the software from the Start Menu or the desktop. Once students have opened the software, familiarize them with the different elements of the Logo environment.

Introduce the Graphics window as the area where the drawing will appear. Introduce the Turtle as the cursor that is used to draw an object in the Graphics window. Introduce the Commander window and explain that it is used to give instructions to the Turtle about how it should move about in the Graphics window.

Introduce the term **primitive** as the commands that are given to the Turtle. You might introduce the forward and back commands depending on the readiness level of the students. Students might be encouraged to experiment with attempting to draw different objects on the screen.

Homework assignment (5 minutes)

Assign question 1 from section D (page 114) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss section 10.7 on pages 105 to 109 of the textbook.

Homework assignment (5 minutes)

Assign questions 2 and 3 from section D (page 114) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 3

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss section 10.8 on pages 110 to 111 of the textbook.

Assign section E on page 115 to be attempted on the computer.

Homework assignment (5 minutes)

Assign sections A, B, and C and questions 4 to 6 from section D as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-chapter questions on pages 113 and 115

A. Fill in the blanks.

1. programming   2. cursor   3. primitives   4. zero   5. procedure

B. State whether the following statements are true or false. Rewrite the false statements to make them true.

1. False. Commands are inserted in the Commander window.

2. True.

3. False. The PENERASE command is used to correct mistakes in the drawing

4. True.

5. True.

C. Select the correct option for each question.

1. a   2. c   3. d   4. a   5. c

D. Answer the following questions.

1. What is the difference between the Graphics window and the Commander window?

The Graphics window is the area where a drawing is made according to instructions given by the user. The Commander window is the area where instructions are given for making a drawing in the Graphics window.

2. Explain the function of the BACKWARD command.

The BACKWARD command moves the Turtle back a certain number of steps without turning its head.

3. What is syntax? What happens when we use incorrect syntax when entering commands into a computer?

Syntax is the arrangement of words and symbols in a sentence so that they make sense. When we use incorrect syntax when entering commands into a computer, the computer does not carry out our commands and displays an error message.

4. What is the difference between a primitive and a procedure?

A primitive is a command that makes the Turtle perform a specific task. A procedure is a set of primitives that are related to a particular task.

5. Show the output when the following sets of commands are run in LOGO:
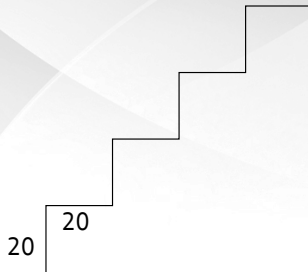
a.   **FD 30**   **RT 120**   **FD 30**   **RT 120**   **FD 30**

b.   **LT 30**   **FD 60**   **RT 120**   **FD 30**   **RT 120**   **F D   6 0**
   LT 120   **FD 30**

6. **Write the primitives for drawing the following figures:**

a.

20

20

FD 20	RT 90	FD 20	LT 90	FD 20	RT 90
FD 20	LT 90	FD 20	RT 90	FD 20	LT 90
FD 20	RT 90	FD 20			

b.

20

40
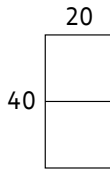
| LT 90 | FD 20 | RT 90 | FD 20 | RT 90 | FD 20 |
| RT 180 | FD 20 | RT 90 | FD 20 | RT 90 | FD 20 |

c.

40

20
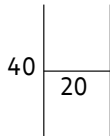
| FD 40 | RT 180 | FD 20 | RT 90 | FD 20 | RT 90 |
| FD 20 | RT 180 | FD 40 | | | |

E. **Lab exercise**

For the teacher: Ask students to recall the steps used to draw a rectangle on the stage. Have them recall the properties of a triangle and chalk out the steps required to draw the triangle for this exercise. Once students have noted down the steps, you could direct them to draw the triangle in Logo.

F. **Project**

For the teacher: Encourage students to be creative as well as simple in performing this project. Students should be encouraged to set realistic goals about what they can achieve in Logo. They should draw a rough sketch of the computer on paper to assess whether they can draw it in Logo.

Activity Sheet

I. What is…?

1. What is Logo?

   _____

   _____

2. What is a command?

   _____

   _____

3. What is the difference between Paint and Logo?

   _____

   _____

4. What are the commands for making the Turtle turn?

   _____

   _____

5. What is a procedure?

   _____

   _____

6. What is the syntax for loading a procedure?

   _____

   _____

II. Complete each sentence by circling the correct words in the brackets.

1. A unique feature of Logo is (Turtle Graphics/Turtle Menu).

2. The FD command moves the Turtle (sideways/forward).

3. The left primitive turns the Turtle to its left by a specified number of degrees. This is known as (turning/running) in an anticlockwise direction.

4. Commands are typed in the (Commander/Graphics) window.

5. The (PENUP/PENERASE) command lifts the Turtle's pen from the screen.

Test Sheet

I. **Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.** (4 marks)

cursor   HIDETURTLE   BYE   word

edit   syntax   primitive   CLEARSCREEN

1. The Greek word *logos* means _____.

2. The Turtle in the Graphics window represents a _____.

3. We can _____ a procedure to make changes to it.

4. FD 90 has the correct _____.

5. The _____ primitive prevents the Turtle from blocking the screen.

6. We can clear the Graphics window by typing _____.

7. To end a LOGO session, we type _____ in the Commander window.

8. A command is also called a _____.

II. **Circle the correct answer.** (6 marks)

1. LOGO stands for Logic-Oriented Graphic-Object.   True/False

2. The PENERASE command replaces the pen with an eraser.   True/False

3. Loading allows us to save the instructions so that we can recall them later.   True/False

4. For clearing the Commander window for a new drawing, we can type CT.   True/False

5. When we exit LOGO, all the procedures that we had created are automatically saved in the memory.   True/False

6. The LEFT primitive turns the Turtle to its left by a specified number of degrees.   True/False

Test Sheet

III. Tick five boxes to show which five of these statements are most likely to be true. (5 marks)

1. Logo is used to draw simple shapes and do simple calculations. ☐
2. The main Logo screen is divided into two windows. ☐
3. The Graphics window is the main window where the Turtle moves around and draws. ☐
4. When you start Logo, the Turtle appears in one corner of the screen. ☐
5. The GO command is used to make the Turtle disappear from the screen. ☐
6. Creating procedures helps us save time. ☐
7. We can type RIGHT or RT to turn the Turtle to the right. ☐
8. To start creating a procedure, we type WRITE in the Commander window. ☐
9. We can save a procedure by selecting Save from the File Menu. ☐
10. Logo is an advanced programming language. ☐

Answers to activity sheet

I.   What is...?

1.   Logo is an educational programming language that uses Turtle Graphics.

2.   A command is an instruction given to the Turtle in Logo.

3.   In Paint, we control the movement of the tools directly with the help of the mouse. In Logo, we enter commands to direct the movement of the Turtle.

4.   We can use the LEFT and RIGHT commands to make the Turtle turn by a certain number of degrees.

5.   A procedure is a group of commands for drawing a certain figure.

6.   The syntax for loading a procedure is LOAD "MYPROGRAM for a procedure named MYPROGRAM.

II.   Complete each sentence by circling the correct words in the brackets.

1.   A unique feature of Logo is (**Turtle Graphics**/Turtle Menu).

2.   The FD command moves the Turtle (sideways/**forward**).

3.   The left primitive turns the Turtle to its left by a specified number of degrees. This is known as (**turning**/running) it in an anticlockwise direction.

4.   Commands are typed in the (**Commander**/Graphics) window.

5.   The (**PENUP**/PENERASE) command lifts the Turtle's pen from the screen.

Answers to test sheet

I.   Complete the following statements by filling in the blanks with the correct terms. Each word or phrase can be used only once.

cursor	HIDETURTLE	BYE	word
edit	syntax	primitive	CLEARSCREEN

1. word   2. cursor   3. edit   4. syntax

5. HIDETURTLE   6. CLEARSCREEN   7. BYE   8. primitive

II.   Circle the correct answer.

1.   True/**False**   2.   **True**/False   3.   True/**False**

4.   **True**/False   5.   True/**False**   6.   **True**/False

III.   Tick five boxes to show which five of these statements are most likely to be true.

2.   The main Logo screen is divided into two windows.

3.   The Graphics window is the main window where the Turtle moves around and draws.

6.   Creating procedures helps us save time.

7.   We can type RIGHT or RT to turn the Turtle to the right.

9.   We can save a procedure by selecting Save from the File Menu.

OXFORD
UNIVERSITY PRESS

Teaching objectives

The objectives of this chapter are to:

- explain the nature of the Internet as a network
- identify the uses of the Internet
- explain the use of search engines
- explain email and its uses.

Learning outcomes

After completing this chapter, students should be able to:

- explain how the Internet works
- use the Internet for a number of tasks, e.g. information search, playing games, etc.
- use search engines to search for information on a variety of topics
- compose and send email using an email service.

Introduction for the teacher

The purpose of this chapter is to introduce Internet and email to students before they use these tools in later years. The point is not to equip students with the skills required for online research or communication, but to open their minds to the possibility of enhanced information search and communication methods at their disposal. Explain the features of the Internet and how it can be used by people in daily life. Avoid going into explanations of the technical aspects of the Internet. Explain how search engines can be helpful for students when studying outside the classroom and when preparing projects.

Number of allocated periods: 2

Period 1

Sample lesson plan for a 40-minute period

Starter activity (5 minutes)

Ask students the following questions:

What is the Internet?

Have you ever received email?

Reading and explanation (lab session) (30 minutes)

Discuss sections 11.1 to 11.1 on pages 117 and 118 of the textbook.

Open the web browser on a computer and ask students to describe what they see on the screen. Explain that this screen is the gate to a wealth of information and convenience for people from different walks of life. List the uses of the Internet given on page 117. Ask students how they would search for information in a library. Steer them towards describing the use of a catalogue or similar document available in your school library. Next, open the Google search engine on the browser and explain that online search engines can be used to perform the same function online. Explain the use of keywords and conduct a few searches using Google.

Homework assignment (5 minutes)

Assign questions 1-4 from section D (page 121) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Period 2

Starter activity (5 minutes)

Reading and explanation (lab session) (30 minutes)

Discuss section 11.2 on pages 118 and 119 of the textbook.

Homework assignment (5 minutes)

Assign sections A, B, C, and E (pages 120 and 121) as homework. Clarify what is required of students in their answers. You should stress that reproducing from the textbook is not desirable.

Suggested answers to end-of-unit questions on pages 120 and 121

A. **Fill in the blanks.**

   1. network   2. email   3. search engine   4. password   5. keywords

B. **State whether the following statements are true or false. Rewrite the false statements to make them true.**

   1. True.

   2. True.

   3. True.

   4. False. Bing is a search engine.

C. **Select the correct option for each question.**

   1. a   2. b   3. c   4. c   5. d

D. **Answer the following questions.**

   1. **List three advantages of the Internet.**

      The Internet offers several advantages to users. Some of these advantages are access to more information than a normal library, instant and free email, and online banking.

   2. **What is a search engine? Name three common search engines.**

      A search engine is an application that enables us to search for information on the Internet. Google, Bing, and Yahoo Search are three search engines commonly used.

OXFORD
UNIVERSITY PRESS

3.   **Why do we enter keywords in a search engine?**

We enter keywords in a search engine so that the search engine can find information on the Internet related to those keywords. The results of the search are displayed in the form of a list of web pages.

4.   **What does email stand for? What is it used for?**

Email stands for electronic mail. It is used for sending electronic messages to other people over the Internet.

E.   Write paragraphs to answer the following questions.

1.   **Explain how the Internet can make common daily tasks easier.**

The Internet can make common daily tasks easier by providing access to a lot of information. People can use online maps to get directions to a particular place. They can visit online shops and buy different types of goods. Students can read books and magazines online and expand their knowledge.

2.   **State three advantages of email over ordinary mail. You may have to read beyond the textbook to answer this question.**

Email is much faster than ordinary mail. Email is delivered in seconds but ordinary mail takes days to reach the recipient. Email costs almost nothing but ordinary mail involves spending on stamps and other expenses such as going to the post office. Email is secure as it does not get lost. Ordinary mail can get lost instead of arriving at its destination.

F.   Lab exercise

For the teacher: You may ask students to recall the demonstration carried out in the first period for this chapter. Encourage them to perform a keyword search using the same approach for this exercise. Ask them to follow the correct structure of an essay when compiling the information they have collected online.

G.   Project

For the teacher: Encourage students to collect information from people from diverse backgrounds such as family members, friends, house help, shopkeepers, and so on. Advise them to be accompanied by a parent or trusted adult at all times. Ask students to share their findings with their classmates.

Activity Sheet

I.   Write two keywords you would use to search for information on the following topics:

1.   The major inventions of Thomas Edison

_____

2.   The countries where cotton is grown

_____

3.   The names of the longest rivers in the world

_____

4.   How to perform long division

_____

5.   The rules for using punctuation marks

_____

Test Sheet

I.   Answer the following questions.   **(10 marks)**

1.   What is a network?

_____

_____

2.   What is the Internet?

_____

_____

3.   What is online shopping?

_____

_____

4.   What is a keyword?

_____

_____

5.   What is a password used for?

_____

_____

Answers to activity sheet

I.   **Write two keywords you would use to search for information on the following topics:**

1.   Edison, inventions

2.   Countries, cotton growing

3.   world's longest rivers

4.   long division method

5.   using punctuation marks correctly

Answers to test sheet

I.   **Answer the following questions.**

1.   A network is a group of computers connected in a way that they can share information with one another.

2.   The Internet is a vast worldwide network of computers. It can connect all the computers in the world.

3.   Online shopping is the practice of buying goods such as clothes, books, and toys on the Internet instead of from a shop.

4.   A keyword is a word or phrase entered in a search engine. The keyword is used by the search engine to find related information on the Internet.

5.   A password is used to protect an email account from being accessed by someone other than the owner.

Teaching Notes

Teaching Notes