

This learning material was produced by the Project Management Unit of the Namibia Training Authority, operating under the auspices of the Ministry of Education, Government of the Republic of Namibia.

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## ICT Foundation Level

# USE BASIC COMPUTER EQUIPMENT AND ACCESSORIES

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Design and layout by Namibia Training Authority.

ISBN: *[DTP to insert nr.]*

**Acknowledgement:** The NTA gratefully acknowledges all the input, support and hard work that the following organisations have put in to the development of these manuals: CECS, Colleges of Education, Compuneeds Namibia, GESCI, IFESH, members of the ICT and Education Steering Committee, Microsoft, Ministry of Education, NAMCOL, NETA, NIED, Polytechnic of Namibia, Schoolnet, UNAM and WorldTeach.

May 2006

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Printed and distributed by:

Namibian College of Open  
learning (NAMCOL)  
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Design and layout by Namibia Training Authority.

ISBN: 99945-1-004-5

**Acknowledgement:** The NTA gratefully acknowledges the support of Australian Training Products (Pty) Ltd and the Australian Department of Education, Science and Technology for granting permission to reproduce selected text and diagrams from its manuals. The NTA also gratefully acknowledges the support of NIED, Unam, Polytechnic, Microsoft, Schoolnet, GESCI and the ICT Steering Committee for the information provided for this training manual as well as associated materials.

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# Introduction

## **Welcome to the training manual “*Use basic computer equipment and accessories*”.**

The purpose of this manual is to give you the knowledge and skills to use basic computer equipment and accessories.

It includes the identification and operation of main computer components, as well as the application of health and safety procedures when using a computer.

This manual is intended to introduce you to the computer and how you, as well as society, can use it. You will learn about the main uses of society and the effects computers have on society. In addition, you will discover what health risks you need to be aware of when using a computer and how to minimise those risks. Lastly, you will learn the main components of the computer and their functionalities.

## **What is in this manual?**

This training manual is divided into 3 sections:

- Section 1    Impact of computers on society
- Section 2    Health and safety standards when using a computer
- Section 3    Safe basic operations of a computer.

Each section starts with an introduction and explains the skills you will learn. At the end of the section you will have an opportunity to check your progress by answering some questions.

## **Skills you will learn:**

After you have completed this manual, you will be able to:

- describe the impact of computers on society
- describe and apply health and safety standards when using a computer
- demonstrate the safe basic operations of a computer.

## How to use this manual

Work through the manual from the beginning. You know that it is divided into 3 sections. It is a good idea to complete a whole section in one go if you can. At the beginning of the section you will find a list of *skills you will learn*. Read these carefully and return to them when you have completed your work. It is important that you do not move on until you have learned all the required skills.

Read each section carefully. You may come across new words which you do not know. These should be explained in the *glossary* at the end of the manual. You will learn many new technical terms as you progress through this manual and it is important that you learn them all well.

At the end of each section, you will find an opportunity to '*Check your progress*'. These questions have been carefully designed to help you to see how well you have understood and learned the topic. The answers are given at the end of the manual. You can choose to look at the answers before trying to complete the question yourself, if you want to. But the only person you will be cheating is yourself. No-one will take in your manual and mark it for you. You yourself must judge how well you are doing.

You may also find some practical activities. You will need to collect the required equipment and carry out these activities. Your instructor or supervisor will assist you.

At the end of each section, you will find a *Summary*. Again, you should read it carefully to review what you have learned. It is a good idea to check the *Skills you will learn* at the start of the section again and make sure you have achieved them all. If not, you may need to revise the section again.

## What these symbols mean

Symbols are placed in the left hand margin to draw attention to the type of information at that point. The symbols used in this manual are:



Read



*Demonstrate/discuss* - sometimes your instructor will demonstrate / discuss the use of tools and equipment.



*Check your progress* - these are easy exercises to test your understanding of the theory you have learnt. Typical correct answers are provided at the back of the manual.



*Practical activity* - these activities help you to practise some of the theory you have learnt.



*Learning activity* - these activities help you to relate the knowledge and skills in the sections to your own work station.



*Remember/Take Note*



*Revise*



*Safety/Caution/Beware*

# SECTION

# 1

## **Impact of computers on society**

# Introduction

In this section of the training manual you will learn about the main uses of computers and what impact the use of computers has on our society.

You will discover just some of the ways computers are used in society and how that use impacts on society.

## Skills you will learn

By the end of this section, you will be able to:

- list the main uses of computers in society
- describe the impact of computers on society.

# Uses of computers

Today's society is referred to as the Digital Age because of the world's dependence on technology. The modern world of high technology could not have come about, except for the development of the computer. Different types and sizes of computers find uses throughout society in the storage and handling of data, from secret governmental files to banking transactions to private household accounts.

Here is a list of some of the most common and important uses of computers in our society:

- write documents such as letters, memos, reports etc
- create illustrations for communication such as Internet and e-mail
- store and retrieve information for the future
- plan and visualise schedules
- operate cash registers
- connect to the Internet for easy communication and access to a wealth of information
- do banking via the internet
- international trading via websites
- calculating simple and complicated formulae with ease
- research and study purposes
- bookkeeping
- entertainment, like computer games and online shopping.

# Impact on society

Computers have numerous direct and indirect effects on our society. As you might already know or have guessed, some are good and some are bad.

## Employment

The introduction of computer-controlled technology has had considerable effect on employment patterns. Here are some of the changes:

- many of the manual tasks, such as assembly work and paint-spraying in factories, are now being performed by computer-controlled robots
- many industrial processes operate 24 hours a day and are continually being monitored and controlled by computers.
- there are fewer paper-based systems in offices. Some jobs such as filing clerks no longer exist. New jobs involving computers, including database administrators and programmers, have been created.
- more and more people work from home, with the advantage of no travelling and the freedom of being able to live in any part of the country, or the world, for that matter.
- computers are sometimes used to monitor the performance of their users. For instance, in supermarkets they can tell the management about the number of customers dealt with per hour or how many items are passed through the scanner in a day. Order clerks and airline booking clerks can have their work monitored the same way.
- there is a continual need to retrain people, who no longer spend year after year doing the same job. Job mobility is increasing and new technologies are constantly evolving.

## **Information access and storage**

As you learned above, probably the most important function of computers is their ability to store large amounts of data. The World Wide Web is probably the largest source of information and is available to anyone in the world with a computer and Internet connection. By the end of 2006, there were well over 120 million users connected to some 7 million websites. However, a good portion of information stored on computers is sensitive and critical, and if lost or accessed by the wrong person, could potentially create tremendous personal anxiety and global problems. Hacking, which means gaining access to computer system illegally, is on the rise and people are becoming in a sense more vulnerable as they store information on computer systems.

## **Communication**

The Internet has also tremendously increased people's ability to communicate with others from all over the world efficiently and (relatively) cheaply. Email, short for electronic mail, can be sent over the Internet with the click of your mouse. Unlike mail sent from NamPost, email is sent over wires so that the receiver gets the message almost immediately.



## CHECK YOUR PROGRESS 1

### IMPACT OF COMPUTERS ON SOCIETY

1. List the five most important uses of computers in your life.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

2. Briefly describe the impact that computers have on society.

1. Employment

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2. Information Access and Storage

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3. Communication

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## PRACTICAL ACTIVITY 1

### **IMPACT OF COMPUTERS ON SOCIETY**

Talk to a friend about how computer technology has impacted and affected his/her life. Discuss the social, issues that surround computer technology and their impact on Namibian society.

## Summary

Well done! You have completed Section 1 on the *Impact of computers on society*.

You should now be confident that you understand how the constant development of new technologies affect our society.

You should now be aware of some of the uses of computers in society as well as how computer use affects society in a variety of ways.

If you feel confident that you have achieved the above, you can move on to the next section, where you will learn about the health and safety of a computer.

If you are unsure of any part, go back and revise it or ask your instructor or supervisor for assistance.

# Section

# 2

## **Apply health and safety standards when using a computer**

# Introduction

In this section of the manual you will learn about the health risks associated with the use of a computer and the ways in which you can minimise the risk to yourself and others.

You will learn why it is important to maintain a clean working environment and the correct body posture you need to maintain when working on a computer.

## Skills you will learn

By the end of this section, you will be able to:

- list the health risk associated with using a computer
- describe ways of minimising health risks when using a computer
- list the reasons of maintaining a clean working environment when using a computer
- describe and demonstrate the appropriate body posture when using a computer

# Health risks when using a computer

As more and more work, education and recreation involves computers, you need to be aware of the health risks that you are exposed to as a user. This section serves only as an introduction to these potential hazards as you will want to continually update yourself on risks associated with computer use.

## Repetitive Strain Injury

Every computer user needs to be aware of **Repetitive Strain Injury (RSI)**. RSI occurs from repeated physical movements which can damage tendons, nerves, muscles, and other soft body tissues. The effect of the light-touch keyboards that allow high-speed typing and long periods of clutching and dragging the mouse slowly accumulate to cause computer-related RSI.

Symptoms of RSI include:

- tightness, discomfort, stiffness, soreness or burning in the hands, wrists, fingers, forearms, or elbows
- tingling, coldness, or numbness in the hands
- clumsiness or loss of strength and coordination in the hands
- pain that wakes you up at night
- feeling a need to massage your hands, wrists, and arms
- pain in the upper back, shoulders, or neck associated with using the computer.

## Eye Strain

Looking at a computer screen for extended periods of time can also cause ailments related to your vision. Improper lighting, glare on the monitor screen and sitting too far from the monitor can create unnecessary strain on your eyes. This can cause headaches, dry, red or tired eyes, temporary blurred vision and even more long-term vision problems.

The main causes of eye discomfort are thought to be:

- a very dry or dusty atmosphere
- very bright light sources in your field of view
- screen flicker or drifting
- reflection on the screen
- looking at near objects for continuously for long periods
- focusing on objects that are rapidly moving or not stable.



## Ways of minimising health risks

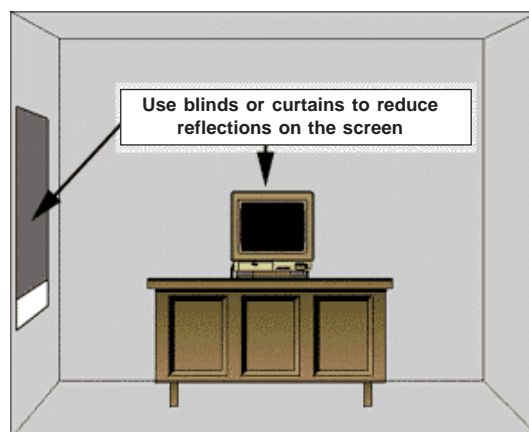
As you are taking your first steps to becoming a computer literate citizen by completing this manual, you will inevitably be using a computer more and more in your daily life. As such, you need to know how to keep yourself safe from the health risks just mentioned as being associated with computer use. Be aware of your body and how you feel. If you are experiencing pain or discomfort that you think is attributable to using the computer, stop and seek assistance.

Here are some tips to minimise health risks associated with computer use.

### Lighting

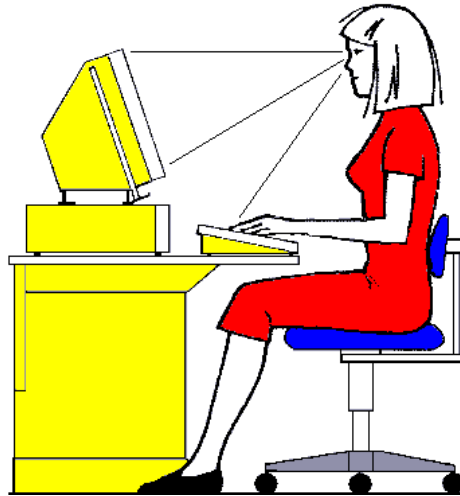
Glare is the main lighting concern when working with computers. To help minimise glare and reduce eye strain:

- the room should always be lit from above
- the windows should be fitted with non-reflective blinds or curtains, preferably beige
- work surfaces should be non-reflective and clean
- keep your monitor screen clean
- position computer screens away from light reflection and glare. The optimum position is at right angles to the sources of natural light coming through windows



- a more vertical screen is generally better for reflections and head posture
- if necessary, use a desk light to illuminate your documents to the same brightness as your screen

## Adjustable chair



Computer users tend to spend most of their day seated. As such, it is important that you are able to adjust your chair height in various ways and positions to prevent strains and other health problems. To provide comfortable support for each particular individual, the following features of a chair are important:

- easily adjustable chair height from 42-54 cm
- seat pan large enough to provide support to thighs and buttocks, but not pressing the back of your knees
- seat pan with a waterfall edge at the front to avoid pressure on the underside of your lower thigh
- easily adjustable seat pan tilt
- easily adjustable back rest tilt and height providing lumbar support
- easily adjustable arm height
- sturdy base with five legs and casters
- breathable material and a dense foam that gives way no more than 2.5 cm.

To adjust the chair to your specific needs:

1. stand in front of the chair. Adjust the height so that the highest point of the seat is just below your knee cap
2. sit so that the clearance between the front edge of the seat and the lower part of the legs just fits a clenched fist
3. adjust the angle and height of the backrest of the chair so that it supports the hollow of your lower back
4. adjust the seat pan tilt to a comfortable position.

When you sit at your computer workstation, ensure that when you put your fingers on the middle row of the keyboard your forearms and hands are horizontal, with your elbows vertically under your shoulders and not angled at the wrist.

*Figure 1: Wrong*



*Figure 2: Correct*

Here are some other good tips for adjusting your chair for best comfort:

- the computer screen should be at eye level so that little neck movement up or down is necessary
- the chair should be adjusted so that your forearms and wrists are horizontal to the keyboard and little wrist movement is necessary
- the chair should be at a level so that your legs are bent in a 90 degree angle with your feet flat on the floor.

A chair should be adjusted many times during the day. This will help to relieve muscle tension in specific muscle groups while loading others.

## Rest periods

It is important that you take periodic breaks as you work with a computer. The timing of breaks is more important than length of the breaks. Take short, frequent breaks before you become tired. A 2-3 minute break after 30 minutes of screen and keyboard work is more refreshing than a 15-minute break after 2 hours.

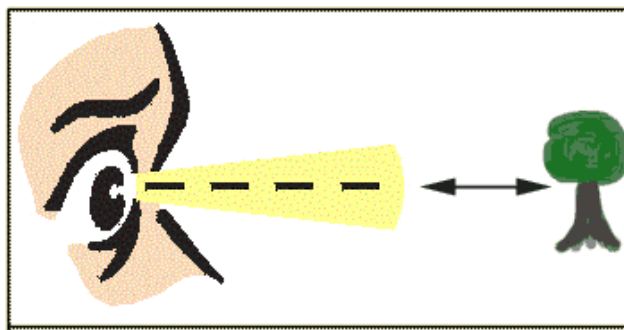
Taking a break need not mean going for a cup of coffee. Simply changing activities is a useful type of break. Alternate between screen and non-screen based tasks throughout the day. Make sure the change of activity uses different muscles and tendons to your computer work.

Take short pauses from your work to stretch.

Use your formal breaks to get away from your keyboard and screen. Help to relax your eyes by finding somewhere that allows you to look at a distant object.

Here are some more tips for relieving strain on your body from extended periods of computer use:

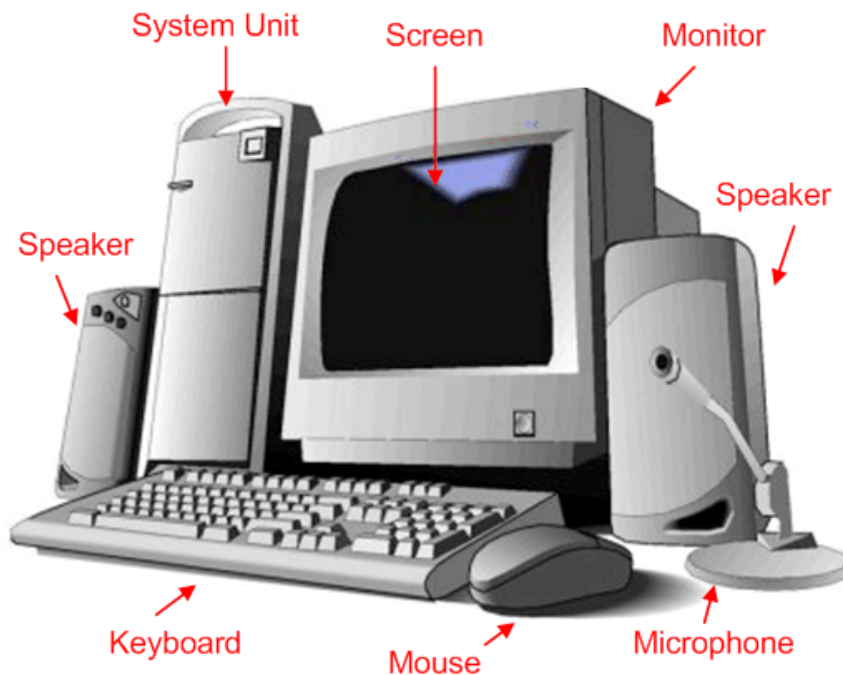
- look away from the screen every few minutes at a distant object.



- alternate work tasks
- use a stretching routine to relax the body
- keep the mouse at keyboard level
- do not grip the mouse tightly
- click the mouse lightly.

# Reasons for maintaining a clean working environment

Computers, as all technology, can break. Computer maintenance is necessary to increase the computer's lifespan. To minimise the money spent on fixing your computer as well as preventing possible hazards, you should always ensure that your computer is safe from dirt, dust, light, heat, liquid and other potentially harmful substances.



## Heat

Heat is the greatest enemy to a computer as it causes the internal components to wear out and lowers the performance of your system. Here are some tips for avoiding your computer overheating:

- check the ventilation around the system
- if the computer is placed in an enclosed cabinet, cut a hole in the back of the cabinet behind the cooling fan. This will draw cool air into the system
- have at least 100mm of space to the rear of the computer, in order not to block the flow of air into the computer.

Here are some tips for protecting your monitor:

- the top and rear of your monitor should be kept clean at all times
- papers, books, boxes, etc, should **not** be put on top of the monitor

- the ventilation slot in the top of the monitor allows excess heat to escape. If that heat is not released, it causes abnormal wear to the monitor's internal parts and can cause colour shifting, screen flickering and screen failure.

## Cleaning the computer

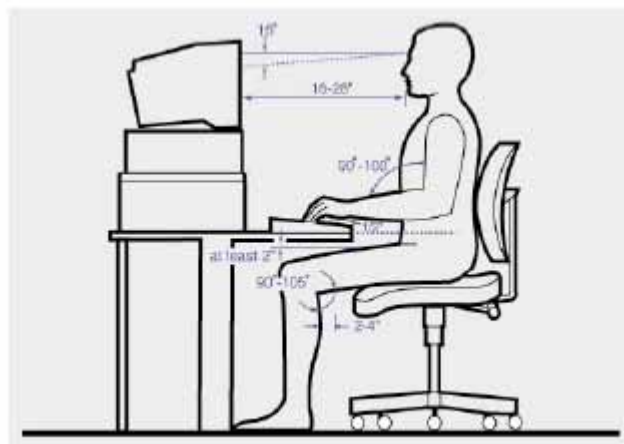
Cleaning your computer is very important to ensure that dust and dirt do not cause damage to the computer. Dust keeps the chips of your components hot. The more dust, the hotter they get. Even a small amount can raise internal temperature of your components by 5%, shortening the lifespan of your system. You should clean all parts of the computer, the keyboard, the mouse, the monitor and the system unit. Use covers for all parts of your computer when not in use.

## Posture

Computer workstations should be set up to accommodate your body postures.

You should be able to sit comfortably in the chair, using as much of the chair back as possible to avoid back problems.

Proper workstation setup:



### Tips for healthy sitting posture

- Make an effort to sit correctly - very upright. Most of us have learned to sit habitually in a slumped posture which is bad for our backs.



*Figure 3: The spine loses its natural curves if you slouch*

- Adjust the backrest on your chair to give support to your lower spine.



*Figure 4: Adjust the position of the backrest so you can sit back in the chair, without the front of the cushion pinching the backs of your knees.*

- Keep open angles. Hips, elbows, and knees should be at slightly open angles (greater than 90 degrees). Sitting erect or leaning forward increases the strain on the lower back. This is for short term use, but is not recommended for prolonged periods of time.
- Keep thighs parallel to the floor. Your thighs should be roughly parallel to the floor.
- Recline slightly. Reclining eases pressure off your lower back.
- Avoid pressure points. Uncomfortable pressure (such as on the back of your knees) can impede blood circulation.

- Rest feet flat on floor. Your feet should be flat on either the floor or a footrest.
- Get a footrest if you need one. Otherwise, if your chair is too high, you may find yourself sliding forwards and either slumping or sitting upright with your back unsupported.
- Move around. Making slight adjustments to your sitting posture throughout the day is healthy.

### **Distance from monitor**

Check the distance of the monitor. For most people to view the screen comfortably it should be about 55 - 65 cm away, so that your eye focus muscles do not have to work too hard.

If you are sitting much closer than this, consider if there is a problem with your eyesight, the screen quality or settings, or the desk depth. Usable desk depth can often be increased by pulling the desk away from the wall and allowing the monitor to overhang at the back.



Check the side-to-side position of the monitor - it should be directly in front of you.

Do not put the monitor in the corner - either it will be hard to get close enough to the keyboard, or you will be twisted and your back and neck may develop problems.

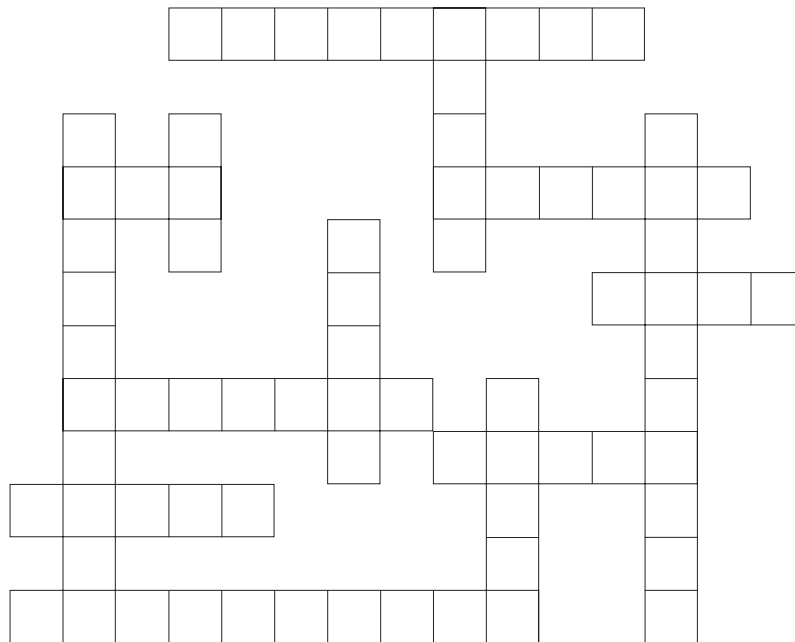




## CHECK YOUR PROGRESS 2

### APPLY HEALTH AND SAFETY STANDARDS WHEN USING A COMPUTER

1. Crossword



**ACROSS**

1. This is a health risk associated with looking at a computer screen for extended periods of time
6. This type of atmosphere can aggravate eye strain
7. Adjust the backrest of your chair so that it supports this part of the lower back
9. The ideal chair should have this many legs
10. RSI damages these in the body
12. Work surfaces should be this
13. Rooms should be lit from this direction
14. The 'R' in RSI stand for this

**DOWN**

2. Computer screens should be positioned at this angle to natural light
3. This type of chair is essential when working at a computer workstation
4. The computer screen should be level with this part of your body
5. When you put your fingers on the middle row of the keyboard your forearms and hands should lie this way
8. Your chair seat pan should not press the back of these
11. Position screens away from this



## CHECK YOUR PROGRESS 2

2. What are the reasons for maintaining a clean work station

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3. Describe the best body posture when sitting in front of a computer workstation

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## PRACTICAL ACTIVITY 2

### APPLY HEALTH AND SAFETY STANDARDS WHEN USING A COMPUTER

Sit at your computer workstation. Are you able to sit with the correct body posture? Take note of what is not correct. How can you adjust yourself or the workstation accordingly?

This questionnaire will guide you through improving your workstation. To do this questionnaire interactively, go to <http://www.openenerg.com/dse/mainform.html> (if you have an internet connection).

For each question, tick the box with a click  if the answer is NO.

<b>Desk</b>	<b>No</b>
1. Is there enough space on your desktop for the flow of work?	<input type="checkbox"/>
2. Is there adequate leg room (height, width and depth)?	<input type="checkbox"/>
3. Is the desk deep enough for the monitor to be at least 55-60cm from the eyes?	<input type="checkbox"/>
4. If the monitor is located at one end of the desk, is there legroom to roll the chair to that end of the desk, so you can sit square to it?	<input type="checkbox"/>
5. Do you have, and habitually use, a comfortable resting place for your hands/wrists when not keying (in the lap, a gel wrist rest)	<input type="checkbox"/>
6. Is the layout of the desktop equipment satisfactory?	<input type="checkbox"/>
<b>Chair</b>	<b>No</b>
7. Is your chair at a height that means your elbows are at approximately the same height as the desk edge when you are using the keyboard?	<input type="checkbox"/>
8. Is the bottom-cushion a suitable length for your upper leg length, i.e. can you sit fully back in the seat without any pressure behind the knee?	<input type="checkbox"/>
9. If fitted, are the armrests at a suitable and supportive height when you are sitting upright?	<input type="checkbox"/>



## PRACTICAL ACTIVITY 2

10. Can you get the chair close enough to the desk to type with your elbows vertically under your shoulders?
11. Does the backrest support the small of your back (lumbar spine) in an upright posture?
12. Does the foam on the bottom and back of the chair cushion your fist when you press hard into them?
13. Is the chair comfortable?
14. Can the backrest be adjusted to provide adequate support and encourage good posture?
15. Is the chair stable and undamaged?

**Footrest** **No**

16. With the seat and desk adjusted correctly for the elbows, are the feet firmly on the floor without compressing the underside of the thighs?
17. If a footrest is required, is an appropriate one present?
18. If not, are you going to get one without a Health & Safety intervention?

**Display screen equipment** **No**

19. Is the top of the visible area at eye height when you are sitting upright?
20. Is the monitor at a suitable distance from your eyes (55-65cm)?
21. Is the monitor directly in front of you so that you do not sit twisted?
22. Is the screen free from glare and reflections?
23. Is the information on the screen well defined and easy to read?
24. Is the image stable and flicker free?
25. Are you free from discomfort in the eyes and neck?



## PRACTICAL ACTIVITY 2

26. Is the screen tilted between 0 and 15 degrees up from the vertical?

27. Can you adjust the brightness and contrast easily?

### Keyboard

**No**

28. Is the keyboard angle set to prevent an angle through the wrist when typing?

29. Is the keyboard at a distance from you that puts your elbows vertically under your shoulders when typing?

30. Are you aware that you should move the keyboard over for intensive mouse or keypad use?

31. Is the standard keyboard width satisfactory (e.g. can you use the mouse without having to reach excessively to the side)?

### Mouse

**No**

32. Is the mouse close enough to be used without extending the arm at the elbow?

33. Does the mouse run smoothly on its mat and work accurately, without fiddling?

34. Do you know how to clean the mouse?

35. Do you know how to adjust the tracking speed and double-click interval?

36. Do you know how to minimise mouse use by using quick keys, styles and templates?

### Document Holder

**No**

37. Can all of your tasks be completed without the need to refer to paper documents?

38. If so, does the duration of these tasks mean you do not need a document holder (e.g. 20 minute stints)?

39. Can documents be reviewed with your head in a balanced posture?



## PRACTICAL ACTIVITY 2

40. If no, has a document holder been provided?
41. If yes, is the document holder of a suitable size and position?

**Other equipment** **No**

42. Is other equipment at the workstation appropriate for its use?
43. Is the extra equipment located in a position that is compatible with correct posture?

**Space and room layout** **No**

44. Is there adequate access to the workstation?
45. Is there space to manoeuvre the chair?
46. Does the layout of the immediate work area allow the job to be done in a correct posture?
47. Is there sufficient storage space?
48. Are the cables in a safe and secure position, such as to avoid tripping?
49. Is the monitor positioned at right-angles to the windows, or at least optimally within structural constraints?
50. Is the work area free from obstructions and hazards to prevent, for instance tripping over something?

**Lighting** **No**

51. Is there adequate lighting for all the tasks?
52. Is the background behind the screen slightly less bright than the screen?
53. Is the lighting positioned to prevent glare and reflections?
54. Do the windows have effective blinds to control daylight?



## PRACTICAL ACTIVITY 2

### Noise

No

55. Is the workstation quiet enough for concentration and conversation?
56. If NOT, is the noise from something not part of the workstation?

### Temperature and humidity

No

57. Is the temperature comfortable, most of the time?
58. Can you adjust the temperature locally?
59. Is humidity normally comfortable for your eyes and sinuses?
60. Is the work area free from draughts?

### Training and information

No

61. Have you been shown how to adopt a good posture at the workstation?
62. Have you received information on how to avoid tiredness of the eyes?
63. Have you been made aware of ways to detect and avoid stress at work?
64. Have you received information about the provision of eyesight tests?
65. Have you been informed about taking breaks and to change work activities?
66. Have you had training and information in how to adjust your workstation?
67. Do you know where to report workstation problems?



## PRACTICAL ACTIVITY 2

### Cleaning activities

**No**

68. Is your workstation tidy and cleaned regularly?
69. Is your equipment cleaned regularly?

### Tasks and postures

**No**

70. Do you never or only infrequently have to hold the phone and type at the same time?
71. Do you type with your wrists not resting on the table?
72. Are your wrists in a flat, neutral position when you are typing?

## Summary

Well done! You have completed Section 2 on *Apply health and safety standards when using a computer*.

You should now know the major health risks associated with prolonged computer use and ways to prevent those risks. This includes the best body posture when using the computer workstation and tips for maintaining your equipment.

If you feel confident that you have achieved the above, then move on to the next section, where you will learn to identify the main components of a computer.

If you are unsure of any part, go back and revise it or ask your instructor or supervisor for assistance.



# Section

# 3

## Identify main components of a computer

# Introduction

In this section of the manual you will learn about the main components of a computer such as the system unit, monitor, keyboard, mouse, printer and the connections.

You will also learn about the functions of each of these main components.

## Skills you will learn

By the end of this section, you will be able to:

- list and describe the main components of a computer

# Computer components

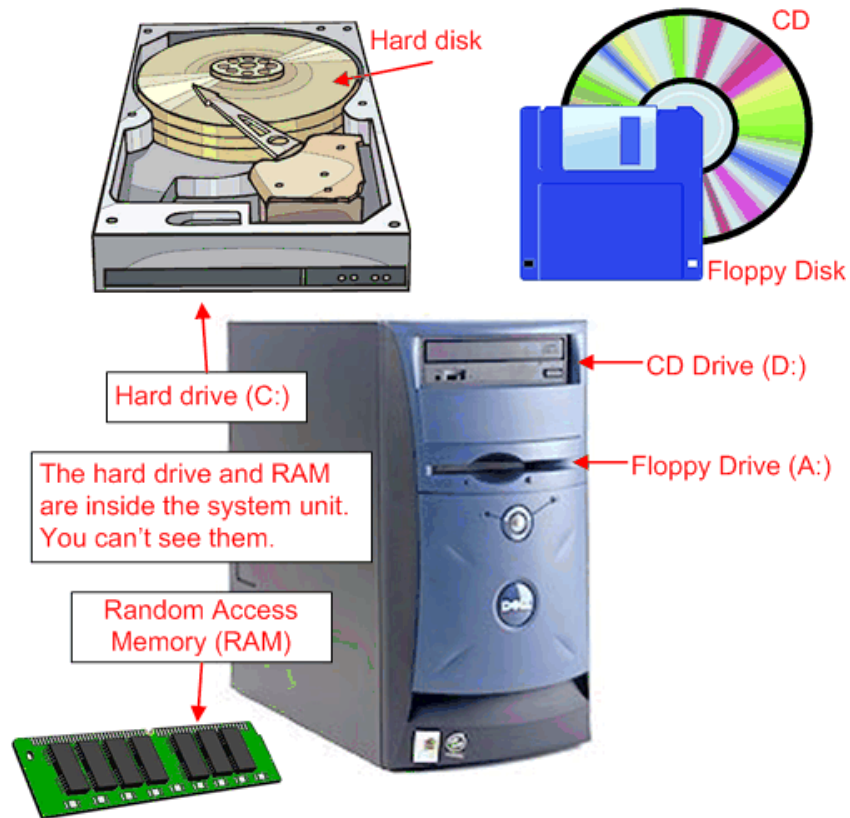
Your PC (Personal Computer) is a system consisting of many components. Some of those components, like computer programs, are “software”. The things that you can actually see and touch are called the hardware. In this manual, we will describe the components of a desktop system (as opposed to a laptop computer). The hardware you will learn about in this beginner manual consists of:

- system Unit
- random Access Memory (RAM)
- central Processing Unit (CPU)
- monitor
- keyboard
- mouse
- sound card
- speakers
- printer
- scanner.

## The system unit

The “System Unit” is the name given to the main computer box that houses the various elements. Within the system unit is the motherboard, which contains all the main components, such as the central processing unit, commonly known as the CPU. The system unit also houses items, such as the **floppy / CD-ROM** drives and the hard disk. All programmes and data currently “in your computer” are actually stored on the hard disk.

The floppy drive and CD drive are often referred to as *drives with removable media* or *removable drives* for short, because you can remove whatever disk is currently in the drive, and replace it with another. Your computer’s **hard disk** can store as much information as tens of thousands of floppy disks, so do not worry about running out of space soon on your hard disk.



System Units come in two basic varieties, the tower version (shown above) and desktop version (shown below, which is seldom used today), which is designed to sit on your desk and allows you to place the monitor on top of the system unit.



Figure 5: Desktop version

## Ram

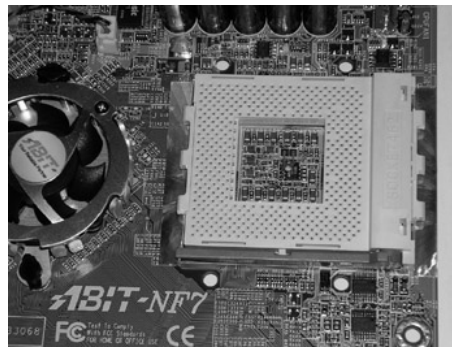
There is too much “stuff” on your computer’s hard disk to use it all at the same time. Typically, you will only use a small amount of all that is available. The stuff that you are working with at any given moment is stored in random access memory (RAM, or called ‘memory’). The advantage of using RAM to store whatever you are working on is that RAM is very fast, much faster than any disk. For you, “fast” translates to less time waiting and more time being productive.



As soon as the computer is shut off, whether intentionally or by accidental power outage, everything in RAM disappears, just as quickly as a light bulb goes out when the plug is pulled. This why you do not want to rely on RAM to hold everything

## The CPU

The CPU is the 'brains' of your computer. It is the CPU that performs all the calculations within the computer and is also responsible for the smooth running of the operating system (Microsoft Windows and other programmes). The speed at which the CPU operates is measured in megahertz (MHz) and gigahertz (GHz).



*Figure 6: The CPU*

## Monitor

The monitor is a television-like screen that displays the information that you enter through the keyboard. You can also see what is on your computer through the monitor. Monitors come in different sizes, ranging from 15" to 21" screens.



*Figure 7: The Monitor*

## Keyboard

A computer keyboard is an input device designed specifically for the computer and modeled after a typewriter keyboard. Keyboards are designed for the input of text and characters, and also to control the operation of the computer. Physically, keyboards (together with a mouse) are an arrangement of rectangular or near-rectangular buttons, or “keys”. Keyboards typically have characters printed on the keys and in most cases, each press of a key corresponds to a single written symbol. However, to produce some symbols (e.g. question mark, dollar sign) requires pressing and holding several keys simultaneously, or in a certain order; other keys do not produce any symbol, but instead affect the operation of the computer, or the keyboard itself.



*Figure 8: The keyboard*

### The Cursor

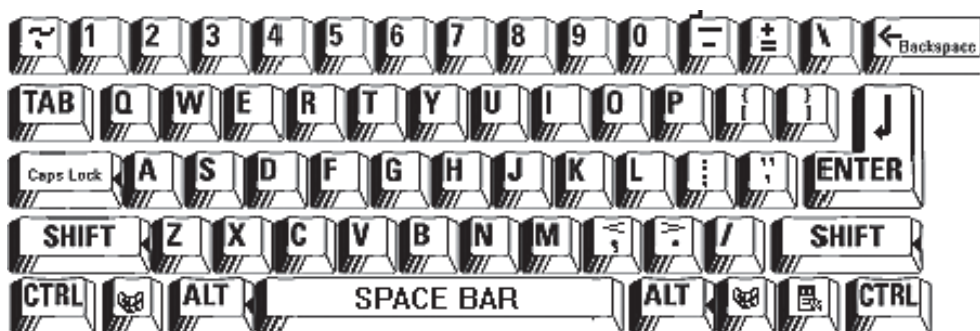
Before we discuss any keys, you need to understand the concept of the cursor. Whenever you are using a word processor, you see a vertical blinking line. That is the cursor at the place where you enter text (also known as the **insertion point**). Any text you type will appear where the cursor is. The cursor can be moved around by clicking the new location with the mouse or by using the cursor pad (which will be discussed later).

### Keyboard layout

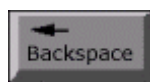
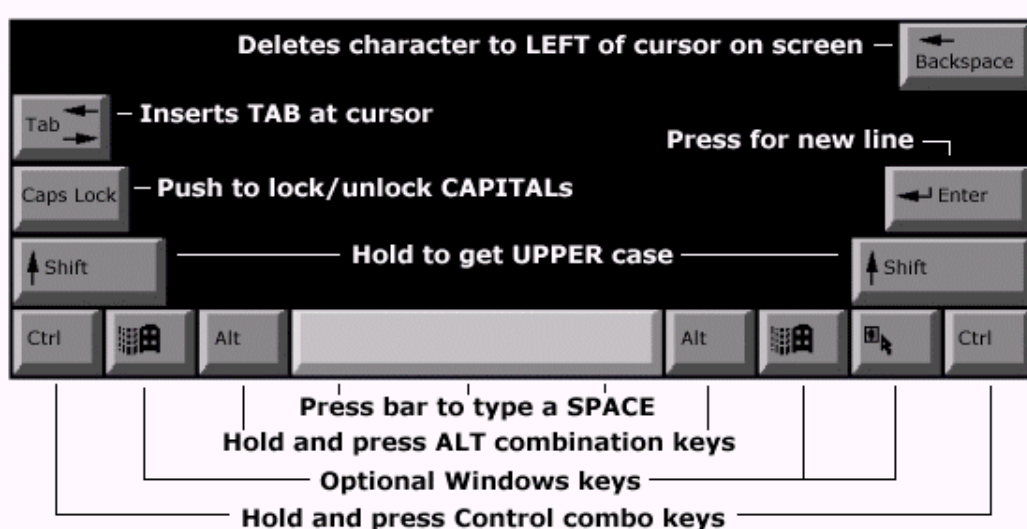
The keyboard can be divided into 4 groups of keys, mostly known as keypads. They are (1) The main keyboard, (2) The Function keypad, (3) The Cursor (movement) keypad, and (4) The Number keypad

#### 1. The main keyboard:

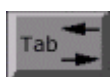
The major component of this block of keys is the alphanumeric keypad, which includes letters, numbers and symbols. A quick press on any letter and a lower case version of that letter will appear in your word processing document (where the cursor is).



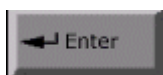
Within the main keyboard, there are several other keys that need further explanation.



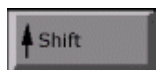
The **Backspace** key allows you to delete characters or images to the left of the cursor.



The **Tab** key will move the cursor over about five spaces or about one centimeter each time you press it. Use the **Tab** key to indent the first line of a paragraph. Also use the 'Tab' key when you want to vertically align two or more items of different lines.

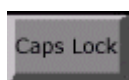


The large key to the right end of this part of the keyboard is usually labelled **Enter** and may have an arrow that starts down then breaks to the left. It is also sometimes labelled **Return**. Use this key when you must have a new line in your document – such as for a new paragraph or the next line of your address. Do not use it when you are in the middle of a paragraph and your cursor is nearing the right side of the document (called 'right margin'). All word processing programs will automatically "word wrap" your words down to the next line when you reach the end of the current line.



Notice that several keys have two characters printed on them. For example, the number '1' has an exclamation point '!' located above the '1'. To get the character on the top of each key, hold one of the two **Shift** keys down while you quickly tap the required key such as to get the exclamation mark, hold down 'Shift' and quickly tap the '!/1' key. Do the same thing if you want a capital or upper case letter. Notice that you must also hold the 'Shift' key to get other punctuation as well: the colon ':', the double quotation mark '"', and the question mark '?'.

Regular Character	Shifted Character	Regular Character	Shifted Character
' (grave accent or acute)	~ (tilde)	[ (left bracket)	{ (left brace)
1	! (exclamation mark)	] (right bracket)	} (right brace)
2	@ (at sign)	a	A
3	# (hash sign)	s	S
4	\$ (dollar sign)	d	D
5	% (percentage sign)	f	F
6	^ (circumflex)	g	G
7	& (ampersand – means 'and')	h	H
8	* (asterisk)	j	J
9	( (left parenthesis)	k	K
0	) (right parenthesis)	l	L
- (hyphen)	_ (underscore)	; (semi-colon)	: (colon)
= (equal sign)	+ (plus sign)	' (apostrophe)	" (quotation mark)
q	Q	z	Z
w	W	x	X
e	R	c	C
t	T	v	V
y	Y	b	B
u	U	n	N
i	I	m	M
o	O	, (comma)	< (left angle bracket)
p	P	. (full stop)	> (right angle bracket)
		/ (forward slash)	? (question mark)
		\ (backward slash)	(or)



On the left side of the keyboard there is a **Caps Lock** key. When pressed, this key causes the function of the 'Shift' key to be reversed for letter keys ONLY. For instance, if you press **Caps Lock**, then all the letters you type will be capitals or upper case; if you press 'Shift' key and letter, with **Caps lock** on, the letter will be lower case. In the upper right corner of your keyboard you should find three small lights. One is labelled *Num Lock*, another *Caps Lock* and the last *Scroll Lock*. Notice that if you press the **Caps Lock** key,

the light next to the word Caps Lock will be lit. (circle/point to middle light to indicate) Be careful because the 'Caps Lock' is easily hit when you are reaching for the *Tab* or *Shift*.



The long, white key at the bottom of the keyboard is called the **Space Bar**. Tap the **Space Bar** once to make ONE space in your document. DO NOT use the '**Space Bar**' to:

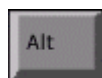
- insert spaces so objects on two different lines will line up. The size of the space changes when you change fonts or font sizes (covered in next section). Use 'Tab' instead
- center text between the left and right margins. Same reason as above. Use the 'Align Centre' button (covered in next section)
- indent a paragraph. Use 'Tab'.

On the bottom row of the keyboard you will find a number of keys that are used less frequently.

Can you find the keys marked **Ctrl** or 'Control'?




and **Alt** or 'Alternate'?



These keys are similar to the *Shift* key in that when you press these two keys nothing happens. It is only when pressed with other keys that they work. What 'Control' and 'Alternate' do can changes from programme to programme. In a word processor, there are some standard uses. For instance, *Ctrl* + 'S' will save your document. *Alt* + the underlined letter in a menu bar will open that menu list.

Along the bottom row, on most newer keyboards, are three more

keys. One with the Windows' logo on it  appears on both sides of the *Space Bar*, while a third key only appears on the right side. You can use the logo key to open the "Start" menu – just like clicking on "Start" with the mouse. Once the "Start" menu opens, you can move through it by using the cursor arrow keys (to be explained shortly).

The other key  will, sometimes, open different menus.

## 2. The function keypad:

At the top of the keyboard is this row of keys known as the function keypad.



The first key, labelled **Esc** or 'Escape' is your "escape hatch." If you find yourself someplace you do not want to be, pressing 'Esc' may get you out, but it may not. In a word processor, 'Esc' will not do anything.

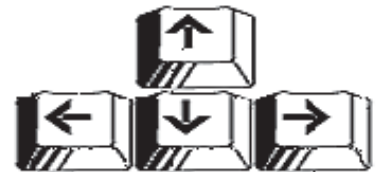
The remaining keys are labelled F1 through F12. These are the "Function" keys and have different functions in different programmes. In word processing, and in general, 'F1' will call up a "Help Menu." "Function" keys can also be used in combination, such as 'Alt' + 'F4' which will exit you from the programme currently operating or selected.





The above keys, at the far right of the Function Key section, are largely ignored. Since you will almost certainly not be using any of these keys for some time, we will not spend time discussing them in this manual.



### 3. The cursor (movement) keypad:

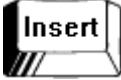
To the right of the main keyboard is the cursor control pad. At the bottom are four arrow keys. Pressing any one of these keys will move the cursor a short distance in the direction of the arrow. It will move the cursor a character or letter to the right or left or move the cursor a line up or down. If the cursor is already at the left end (beginning) of a line, pressing the left arrow will force the cursor up to the end of the previous line. Then, pressing the right arrow will move it down to the beginning of the next line.




Of the six keys above the arrows, two are not cursor movement keys ('Insert' and 'Delete'). The other keys may act somewhat differently in other programs, but in word processing, they usually do the following:

-  pressing '**Home**' will move you to the beginning of the current line with the cursor.
-  pressing '**End**' will move you to the right end of the current line with the cursor.

-  Pressing '**Page Up**' will move you about a half a page upwards through your document.
-  Pressing '**Page Down**' will move you about a half of a page downwards through your document

 For some word processors, the 'Insert' key will switch between "Insert" mode and "Typeover" mode. "Insert" mode is the normal mode for a word processor. If you move the cursor back between two letters and type a new letter, the letter will appear where the cursor was and all the letters to the right will move over to make room. In other words, you add a new letter where the cursor is. No letters or characters are lost or erased.

In "Typeover" mode, the letter you type replaces the letter to the right of the cursor. For example, suppose you have typed the word "tap". Now you move the cursor back between the "a" and "p". (How would you do that?) Then you type the letter "r". If you are in "Insert" mode, you now have the word "tarp". But, if you are in "Typeover" mode, you have the word "tar". Usually, "Insert" mode is more useful and less confusing. However, if you are doing a lot of editing where you must reverse letters or correct spellings, you may find "Typeover" mode useful.

 Finally, the 'Delete' key. Similar to the 'Backspace' key that will erase the character to the LEFT of the cursor, the 'Delete' key will erase the character to the RIGHT of the cursor. In both cases, any other letters to the right of the cursor will back up to fill in the space. This is a very important point to remember. Don't forget, the 'Backspace' key usually has an arrow pointing left because it erases to the left. The 'Delete' key does the opposite.

#### 4. The number keypad:

The number pad is at the far right end of the keyboard. It is designed to closely resemble a calculator keypad. This pad is mainly used only when you have a lot of numbers to be typed in. If you are typing in only a few digits, you may find it better to use the number keys at the top of the regular keyboard. Several years ago, these keys were also used to control the cursor. If you look closely, you will find all of the same



keys as you will find in the cursor pad. To use this pad to control the cursor, 'NumLock' must be off. That means the little light labelled 'Num Lock' must be off. To switch from controlling the cursor to entering numbers, press 'NumLock'.

In addition to the '-' and '+' keys (which are used to indicate subtraction and addition), we have a "/" key which is used to indicate division and a "\*" key which is used to indicate multiplication. These keys will only type these characters into a document. The number pad can, however, be used with a "Calculator" program to perform actual calculations. Notice that there is second 'Enter' key as well. In almost all cases, where you have two keys with the same label, you can use either one without any problems.

## The mouse

A mouse is an input device that can control the cursor. A mouse is a pointing device that allows you to enter data into you document by clicking on figurative graphics called icons. Icons are shortcuts to application programmes in a computer. You can use a mouse to open, save and close a file by clicking on the appropriate icons. You can also use a mouse to instruct a computer to print. A mouse can highlight text, allow you to copy and paste it elsewhere.



*Figure 9: The mouse*

## Speakers

Many computers are equipped with a sound card. This allows you to listen to sounds and music that are played through programs on computer, usually played through speakers. If you have a microphone and suitable software, you can also record sounds. You can even purchase special software that will allow you to talk to your computer and get the computer to type the words you have spoken on your screen. In time, this software may replace the keyboard.



*Figure 10: The speakers*

## Printers

A printer, also called a computer printer, is used to produce hard paper copies of text and/or graphics of documents. Most common printers are the inkjet and laser printers. Many printers are primarily used as computer peripherals, and are permanently attached to a computer, which serves as a document source. Other printers, commonly known as network printers, can print a hard copy for any user on the network.



*Figure 11: Printer*

## Scanners

Scanners allow you to scan printed materials such as photos, into your computer, which can then be stored within the computer. These pictures can be altered, resized and printed as required. The action of a scanner is similar to that of a photo copier. You get different types of scanners such as the flatbed scanner (most popular), hand-held scanners, drum scanners, planetary scanners and 3D scanners.



*Figure 12: Flatbed scanner*

You also get a scanner that functions as a printer and photocopier (3-in-1 printer, copier and scanner).



*Figure 13: 3-in-1 printer, copier and scanner*

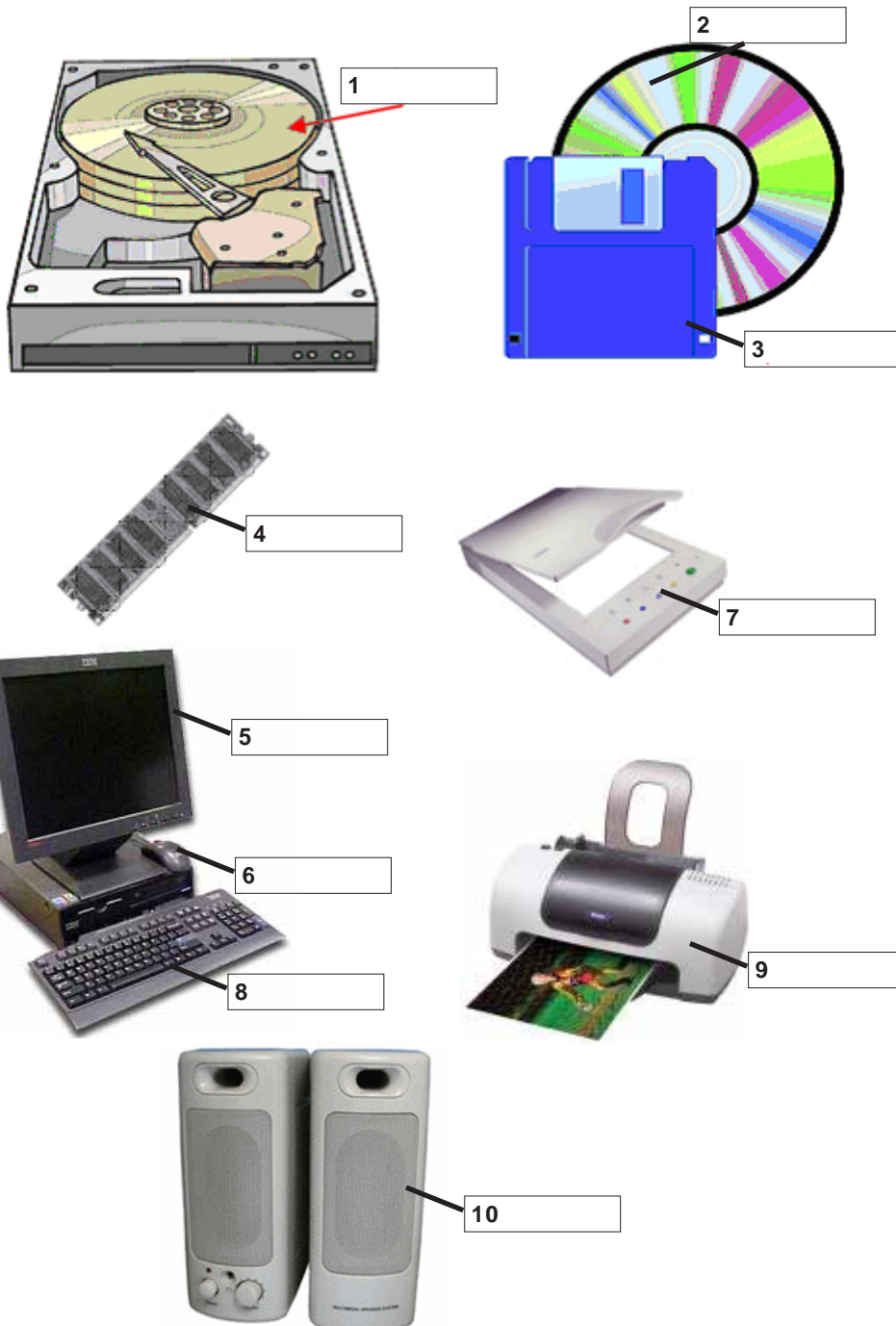
As you become a seasoned computer user, you will learn about other parts of the computer and their functions.



## CHECK YOUR PROGRESS 3

### MAIN COMPONENTS OF A COMPUTER

1. Label the components and describe what they do:





## CHECK YOUR PROGRESS 3

1. \_\_\_\_\_ : \_\_\_\_\_
2. \_\_\_\_\_ : \_\_\_\_\_
3. \_\_\_\_\_ : \_\_\_\_\_
4. \_\_\_\_\_ : \_\_\_\_\_
5. \_\_\_\_\_ : \_\_\_\_\_
6. \_\_\_\_\_ : \_\_\_\_\_
7. \_\_\_\_\_ : \_\_\_\_\_
8. \_\_\_\_\_ : \_\_\_\_\_
9. \_\_\_\_\_ : \_\_\_\_\_
10. \_\_\_\_\_ : \_\_\_\_\_



## PRACTICAL ACTIVITY 3

### MAIN COMPONENTS OF A COMPUTER

1. What key would you use to move to the next line?
2. What key would you use to erase a character to the left of the cursor?
3. What key moves the cursor over about five spaces?
4. How would you make a capital A?
5. How would you make an 'at' sign?
6. How would you make a colon?
7. What key would you use to erase a character to the right of the cursor?
8. What key would you use to reverse the function of the Shift key?

## Summary

Well done! You have completed Section 3 on “*Use basic computer equipment and accessories*”.

You should now be able to identify the main components of the computer and their basic functionality.

If you feel confident that you have achieved the above, congratulations - you have successfully completed the module *Use basic computer equipment and accessories*.

If you are unsure about anything, go back and revise or ask your instructor or supervisor for assistance.

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# Glossary

Application	:	This is also called a computer programme on computer software. It is a set of instructions written in computer code that enables a computer to perform specific tasks — normally with some help from you, the user.
Client	:	A computer that uses the services of another computer called a server. When you are using the Internet to download information to your computer, your machine is a client.
E-mail	:	Is a short form for electronic mail, as opposed to snail mail, the realm of the NamPost.
Hard Copy	:	A permanent human-readable text and/or graphics of documents stored in electronic form, usually on physical print media such as paper or transparencies.
Hard Disk	:	Is a computer component that stores your programme and data files. This is different from RAM, because the information stays stored even if the power is turned off.
Internet	:	The interconnection of over 100,000 computer networks world-wide. The Internet allows an estimated 120 million computer users to exchange email and information.
Multimedia	:	Is the combining of audio, video and data. Internet browsers have multimedia capability due to the addition of plug-ins.
Network	:	Is at least 2 computers linked together (through modem, cable, satellite etc) and have the ability to share files or other resources.
Online	:	A comprehensive term embracing the Web, Internet and intranets
RAM (Random Access Memory)	:	Is memory that computer software uses to run programs. Similar to a hard drive except the data is lost when the computer is turned off.
Server	:	A computer that provides services to another computer — called a client.

WWW

(World Wide Web) : The World Wide Web provides a way of linking the computers on the Internet through HTML tags and using hyperlinks that allow you to click on a link and advance to another location on the Web.



Write down additional words that you do not understand.  
Ask your instructor to explain the meaning of those words.

# Answers to check your progress

## Check your progress 1

1. Your list could include any of these listed in the manual, or any others that you can think of.
  - Write documents such as letters, memos, reports, etc.
  - Create illustrations for communication such as Internet and e-mail
  - Store and retrieve information for the future
  - Plan and visualise schedules
  - Operate cash registers
  - Connect to the Internet for easy communication and access to a wealth of information
  - Internet Banking
  - International trading via websites
  - Calculate simple and complicated formulas with ease
  - Research and study purposes
  - Book keeping
  - Entertainment, like computer games and online shopping

## 2. Employment

The introduction of computer controlled technology has had considerable effect on employment patterns. Here are some of the changes:

- Many of the manual tasks such as assembly work and paint-spraying in factories, are now being performed by computer-controlled robots
- Many industrial processes operate 24 hours a day and are continually being monitored and controlled by computers.
- There are fewer paper-based systems in offices. Some jobs such as filing clerks no longer exist. New jobs involving computers, including database administrators and programmers, have been created.
- More and more people work from home, with the advantage of no travelling and the freedom of being able to live in any part of the country, or the world for that matter.
- Computers are sometimes used to monitor the performance of their users. For instance, in supermarkets they can tell management about the number of customers dealt with per hour or how many items are passed through the scanner in a



2. You need to maintain a clean workstation to extend the lifespan of your computer for as long as possible. Dust, dirt, light, heat and liquid can all severely damage your computer.
3. Sit upright and adjust the back of your chair to support your lower spine. Hips, elbows, and knees should be at slightly open angles (greater than 90 degrees). Thighs should be parallel to the floor and you should recline slightly to keep pressure off your back. Get a footrest if you need one and keep 55 - 65 cm away from the monitor. And remember to get up and move around periodically.

### **Check your progress 3**

1. Hard disk: Stores everything on your computer.
2. CD: A removable storage drive.
3. Floppy: A removable storage drive.
4. RAM: Stores what you are working on at the current moment.
5. Monitor: Displays the information you enter through the keyboard.
6. Mouse: An input device that can control the cursor.
7. Scanner: Allow you to scan printed materials into you computer, which can then be stored within the computer.
8. Keyboard: Input device for text and characters, and also to control the operation of the computer.
9. Printer: Used to produce hard paper copies of text and/or graphics of documents.
10. Speakers: With a sound card, you can connect them and listen to sounds and music.