

Revision Guide

Unit 1: Understanding ICT



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About this Guide – Information for Students

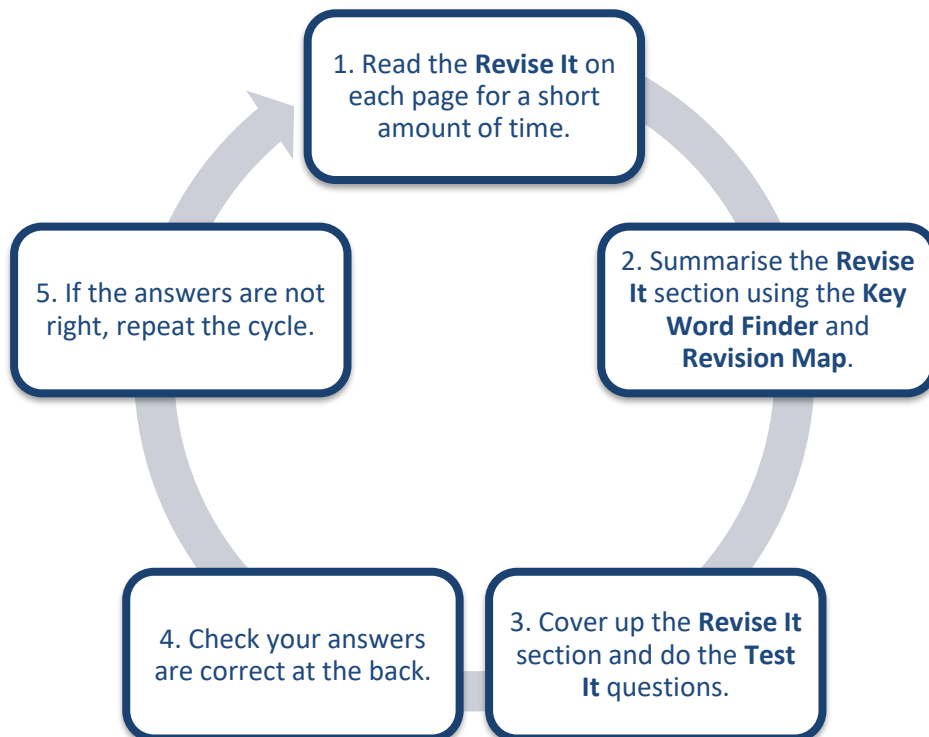
This guide has been designed in a way that makes it easier for your brain to absorb the information needed:

- Each page contains a **Revise It** section which provides short, bite-sized chunks of information that your brain should find easy to swallow.
- Bullet points and tables are used throughout to summarise the key points.
- Where possible, all kinds of diagrams are included so that you can learn in an interesting, visual way.
- Pictures are used throughout to make it easier to digest all of the information.
- A handy **revision checklist** is included so you can measure your own progress whilst preparing for the exam.
- **Key word finder** and **revision map** activities will help you to summarise each topic.

The guide has also been developed in a way to make it easier for you to test yourself:

- At the bottom of each page, you will find a **Test It** section with key questions.
- When you do the questions on each page, you should cover up the **Revise It** section to see what you know.
- You can check whether you are right by looking at the answers at the back.

Be Revise-Wise – How to Use this Guide to Do Well in Your Exams



Revision Checklist

When we revise, it is very important to keep track of our progress. There is always the danger that we will just keep revising what we are already good at and leave the difficult stuff. Every few weeks, you should put a date at the top of each column below and score your understanding of each topic out of 10. This will help you to focus on the areas which require the most work.

	14 th Jan	20 th Feb
1.1 Data and knowledge	5	8
1.2 Validation	1	2

1.1 Data and Knowledge							
1.2 Validation and Quality of Data							
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16.1 Codes of Conduct							
17.1 Data Protection							
18.1 Problems and Prevention							

1 Data and Information

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Data

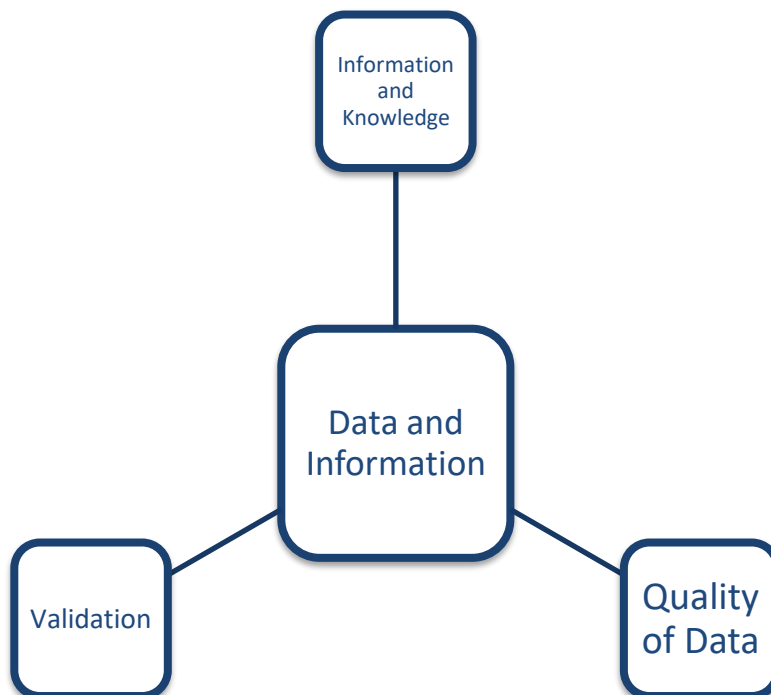
Information

Knowledge

Validation check

Revision Map

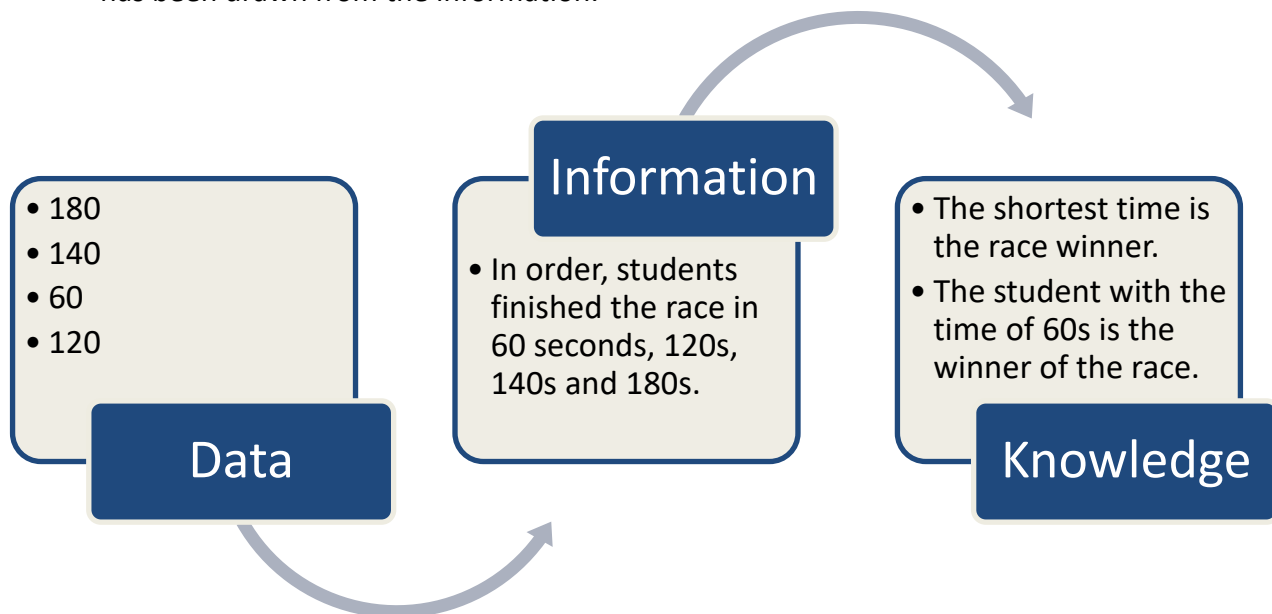
Add more stems to this revision map to note down what you learn in this chapter.



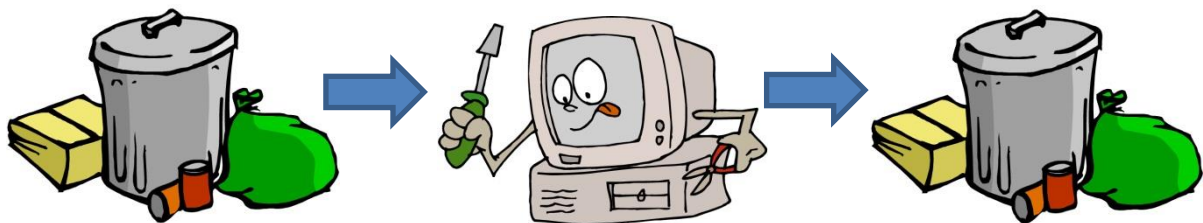
1.1 Data, Information and Knowledge

Revise it

- The terms **data**, **information** and **knowledge** are used to describe things which are stored on a computer.
- **Data** is *raw facts or figures*. Data has no meaning and can be a set of random words or numbers. Data can be readings from sensors or survey facts, etc.
- **Information** is data that has been *processed* to give it *meaning*. The data is no longer a useless set of words or numbers. It now *means* something.
- **Knowledge** is information when a rule or *set of rules* has been applied to it. A conclusion has been drawn from the information.



- **GIGO** means **Garbage In, Garbage Out**. If something wrong is input into a computer system, then something wrong will be output once it has been processed. If someone accidentally misses off a zero when entering the race times into a spreadsheet, the printout will say that the race winner took 6 seconds, not 60 seconds, to win the race.



When garbage is input and processed, garbage is output.

Test it

1. Explain what is meant by the terms *data*, *information* and *knowledge*. Provide a suitable example of **each**. (6 marks)
2. Explain what is meant by the term *GIGO*. (3 marks)

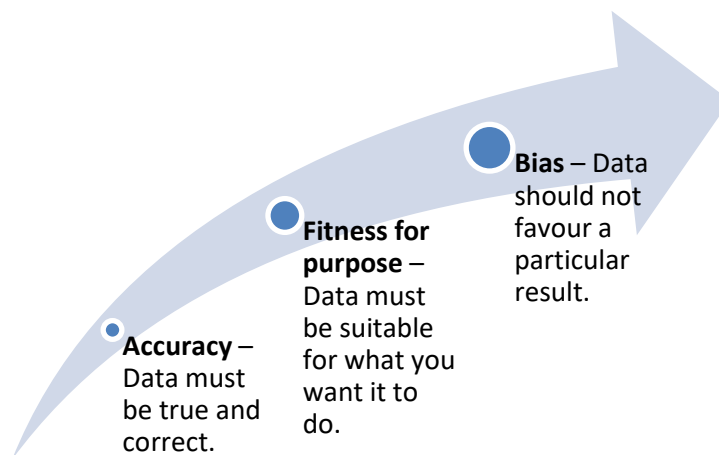
1.2 Validation and Quality of Data

Revise it

- Validation checks are used to ensure that only sensible data is entered into a computer. You will be entering data which is validation checked in nearly every form you fill in in the Internet (see some examples in the table below).
- The following **validation checks** are available in **single user** and **online systems**:

Type	Explanation	Example
Range check	Checks that numbers are between a certain range.	A movie site would check that a date of birth is before a certain date when renting 15-rated movies.
Format check	Makes sure that the correct mix of letters and numbers is entered.	Shopping sites may restrict postcodes to the following combination of letters (L) and numbers (O): LL00 OLL.
Presence check	Checks that a field is not empty.	When signing up to a social networking site, the username field must be filled in.
Check digit	An extra number added to the end of a longer set of numbers. This extra number is worked out by performing a calculation on the longer set numbers.	Bar codes or ISBN numbers will contain an extra number – a check digit – at the end. By looking at this, it will know if the longer set of numbers is incorrect.

- When entering data, **transcription** errors sometimes occur when copying data to a computer (when reading bad handwriting, for example). **Transposition** errors can sometimes happen when characters are accidentally swapped around (accidentally pressing Q instead of W, for example). Below are two ways to minimise these errors:
 - **Visually check** before submitting data by proofreading.
 - **Double-keying** data by entering it twice and checking both are the same.
- It is also important to make sure th data is of a good **quality**. If data isn't of a good quality, then there is danger of GIGO (Garbage In, Garbage Out) when it is processed. Below are some characteristics of good quality data.



Test it

3. A supermarket website uses validation checking on a customer's *date of birth* field. Suggest **two** validation checks which could be used, with reasons. (4 marks)

2 Home Entertainment

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Megapixel

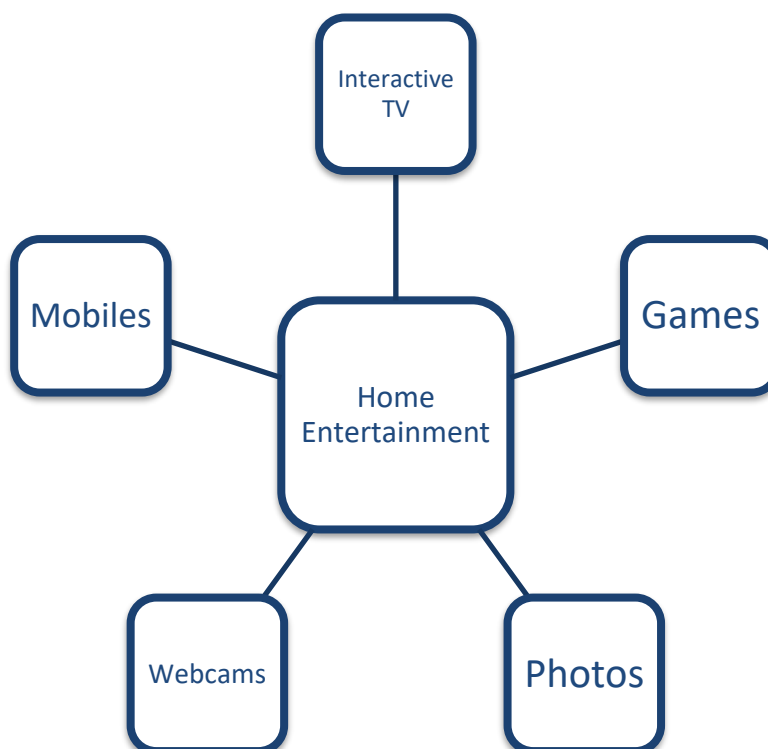
Download

MP3

Webcam

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



2.1 Interactive TV Services

Revise it

- There are many **interactive TV services** which are available, or could be made available soon, to people in the home. Below are some examples.

Service	Use	Advantages	Disadvantages
Pay-to-View	A fee is paid to access either specific TV channels or one-off purchases such as sports events or movies.	You don't need to leave the house to rent a film – easier for disabled people.	Some services are expensive and sometimes satellite signals can cut out.
Shopping	You can make small purchases, or even order pizzas, using a TV.	Quicker – you do not to leave the house.	You need a credit or debit card to buy – some people may feel uncomfortable.
Betting	People can bet on a wide variety of sporting events.	All winnings are paid straight into your account – you do not need to leave the house to get your winnings.	Online gambling can become addictive and some people may be tempted to spend more using a card rather than cash.
Dating	Online dating allows people to meet others through their TV.	People who are shy about meeting new people may feel less embarrassed in an environment which is not face to face.	Care is needed because there is no guarantee people are who they say they are.
Voting	In the future, it is possible that the UK may allow people to vote for their MPs online.	More people may vote because they do not have to find a polling station. It is cheaper because fewer people to count votes would need to be employed.	There is a danger of fixing votes if technology is used. It is also unfair for those who do not have an Internet connection.

Test it

- Provide **four** interactive TV services. (4 marks)
- Describe **one benefit** and **one drawback** of introducing online voting. (2 marks)

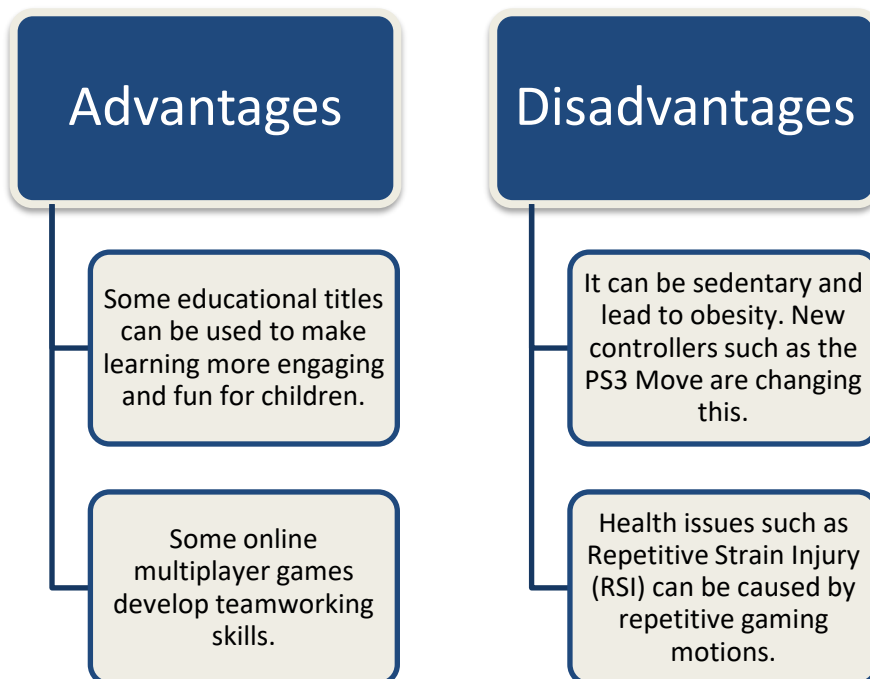
2.2 Gaming

Revise it

- Computer gaming is becoming a key use of ICT in home entertainment.
- Computer games can be played **online**, against other people over the Internet. Games can be played on **consoles** such as the PS3, Xbox or Wii.
- Typical **input** devices are joysticks, steering wheels or games controllers.
- Typical **output** devices are speakers and television equipment.
- Some controllers such as the Wii Remote even have a rumble feature and speaker built into them, which are also forms of output.
- **Gaming** has advantages and disadvantages:



Games controllers are input devices.



Test it

6. Give **two input** and **two output** devices required for gaming. (4 marks)
7. Describe **one** health issue associated with computer gaming. (2 marks)

2.3 Digital Photography

Revise it

- **Digital cameras** and **mobile phones** allow people to take photographs and **share** them via email, social networking sites, or SMS text messages.
- These images can be easily manipulated using **image manipulation** software on your computer. Images can be cropped (removing certain parts of the image), have red-eye reduction (removing red eyes when using a flash) and have filters applied (to change the colour and texture of an image).
- **Megapixels** are used to compare the quality of images taken by digital cameras: the more megapixels, the better the quality. A higher image quality requires more **storage**.
- A **megapixel** is made up of one million pixels. One **pixel** is simply a dot of light.
- Digital photography involves **input**, **storage** and **output** devices:



A typical digital camera

Input

- Image sensors on digital cameras
- Image sensors on mobile phone cameras

Storage

- Flash memory (e.g. SD/CF cards)
- Memory sticks
- Built-in mobile phone / camera memory

Output

- Camera screen
- Mobile phone screen
- Computer monitor
- Printer
- Digital photo frames

Test it

8. Explain what is meant by a *megapixel* **and** explain why they are important when purchasing a new camera. (3 marks)
9. Give **three** output devices used in digital photography. (3 marks)

2.4 Webcam and Social Networking Services

Revise it

- A **webcam** (short for web camera) is used to transmit still photos and videos across the Internet. They have various **uses** such as:
 - Friends and family can communicate face to face using an Internet connection. Some webcams also contain **microphones** so you can hear as well as see one another.
 - Webcams are used in **augmented reality** games such as the EyePet on PS3. They allow you to see yourself on screen whilst interacting with computer-generated characters and objects.
- The **disadvantages** of webcams are:
 - Inappropriate material – webcams can be used for pornographic content.
 - Online safety – video chat rooms can be used by paedophiles.
- **Social networking** sites are used to allow people to communicate using the Internet. Some typical social networking sites and their **uses** are:
 - **Twitter** – a **microblogging** site to send status updates to friends.
 - **Facebook/MySpace** – enables you to get in touch with people you have lost contact with via an online messaging service. You can also post videos, download music, post images, join groups with similar interests and comment on your friends' profiles.
- There are many **disadvantages** to social networking sites:



Webcam



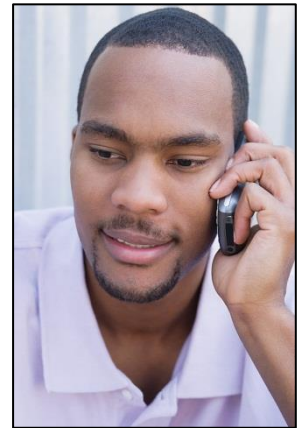
Test it

10. Give **three uses** of social networking sites. (3 marks)
11. Describe **one danger** of using social networking services. (2 marks)

2.5 Music and Mobiles

Revise it

- **Mobile phones** now offer a wide variety of services in addition to just **making calls** and sending **SMS text** messages. Some examples are:
 - Browsing the Internet
 - Digital photography with a built-in camera
 - Sending **MMS** (multimedia messages with images)
 - Email
- Some mobile phones and most computers allow you to **download** music. Downloading simply means taking a file from the Internet and saving a copy of it on your own phone or computer. Many music files are in **MP3 format**. This is because MP3 files are **compressed** to make the file size smaller and are therefore quicker to download.
- Many people also listen to a radio station when they are browsing the Internet by a process called **streaming**. There is a much wider variety of stations available when compared to normal AM/FM stations.



Most mobiles now do more than calling

	Downloading music/sound files	Listening to online radio	Mobile phones
Advantages	Downloads are available at any time (unlike high street stores). You only pay for the tracks you want – you don't have to buy the whole album. No storage space is required for CDs – MP3 players can store thousands of files.	There is a much wider variety of stations to listen to from all around the globe.	It may be useful for emergencies and parents may issue their children with mobile phones for this reason.
Disadvantages	Downloading files puts your computer at risk of viruses. People who download music illegally without paying are at risk of getting their Internet access blocked by their provider.	A fast Internet connection, such as broadband, is normally required to avoid delays.	Mobile phones can cause disruption in quiet spaces such as libraries, etc. Driving whilst operating a mobile phone is illegal because it causes accidents.

Test it

12. Other than calls or SMS, give **four** other tasks performed by a mobile phone. (4 marks)
13. Provide a definition of the term *download*. (2 marks)

3 Home and Personal Communication Systems

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

GIS

Broadband

Bluetooth

Satellite

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



3.1 How Computers Can Be Connected to the Internet

Revise it

- The Internet allows people to gain access to information about almost any topic. There are many different ways in which a computer may be connected to the Internet:

Service	Use	Advantages	Disadvantages
Broadband	Broadband modems connect to the Internet using a high-speed data link.	Broadband is much faster than methods such as dial-up. It also allows you to use the telephone and connect to the Internet at the same time.	There is a higher monthly charge when compared to dial-up. Broadband is still not available in some countryside areas.
Satellite	Satellites can be used to beam data signals to, and from, several satellites orbiting the earth.	Satellites allow people to gain high-speed access to the Internet where broadband and mobile network coverage is low.	It could be expensive to purchase and fit the equipment needed for a satellite connection.
Mobile	Using your mobile phone or a USB 'dongle', you can connect to the Internet via a mobile telephone company.	Mobile broadband is more convenient: you can connect to the Internet from anywhere with mobile network coverage.	The network coverage in some areas can lead to poor Internet access. Generally, this form of Internet access is slower than broadband.
Dial-up	Dial-up modems connect to a telephone line. They then dial the telephone number of your ISP (Internet Service Provider).	Dial-up is quite an affordable way to connect to the Internet – often costing the same price per minute as a local telephone call.	Dial-up is a slower option when compared to other methods such as broadband. Dial-up uses the phone line, so you cannot connect to the Internet and use your phone at the same time.
Cable	Cable Internet, such as that provided by Virgin Media in the UK, often comes bundled with TV and landline packages.	Cable Internet can provide a very fast Internet connection. It is also an affordable way to gain a high-speed connection.	Not all areas have access to cable Internet providers.

Test it

- Name **one advantage and one disadvantage** of broadband Internet connections. (2 marks)
- Other than broadband or dial-up, name **two** other *methods* of connecting to the Internet. Provide **one advantage and one disadvantage** of **each**. (6 marks)

3.2 Connection Technologies

Revise it

- In order to allow devices to speak to one another and enable the **connection** and **communication** of devices, various connection technologies are used.



Network cables are rapidly being replaced with new connection technologies

Technology	Uses	Advantages	Disadvantages
Wireless	Wireless technology enables you to connect to the Internet in public places such as airports and restaurants (also known as Wi-Fi 'hotspots'). Wireless technology can also be used in the home with a wireless router .	Fewer restrictions on where high-speed Internet connections are available. You can work in any area which is a Wi-Fi hotspot or anywhere in your own home. There are also no wires to stumble over.	It may be easier for hackers to gain access to your data when you use public Wi-Fi hotspots. There is currently research taking place into whether wireless data signals are a health risk.
Bluetooth	Bluetooth can be used to operate a wireless keyboard/mouse and share files between mobile phones and other digital devices. It also connects your car speakers to your mobile to operate a hands-free calling system.	Bluetooth is a wireless technology which means that no cables need to be purchased. Bluetooth is also quick to set up: it often requires no software to be installed on your computer.	Bluetooth can only be used to connect devices in the same room. Again, research is taking place to investigate whether these wireless signals are a health risk.
GIS (Geographical Information Systems)	Systems which manage and display geographical information, e.g. satellite navigation ('sat nav') systems such as TomTom, and mapping applications such as Google Earth.	You can save money and help the environment by using less fuel and choosing the shortest routes. You can also save time by viewing a fairly accurate ETA (Estimated Time of Arrival).	'Sat navs' have been in the news for sending drivers of big lorries down rural routes. Sometimes, the mapping data is also not up to date which is inconvenient. Accidents may be caused if people are tempted to use 'sat nav' whilst driving.

Test it

- Name **two** uses of *Bluetooth* connection technologies. (2 marks)
- Explain **three** problems with using *geographical information systems*. (6 marks)

4 Home Business

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Verification

Double Keying

Visual Check

Parity Check

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



4.1 Online Shopping

Revise it

- Shopping has become a very popular and convenient online activity. Shopping websites are like **databases**, but all of the technical details are hidden from the shopper – all the shopper sees is a professionally designed web page.
- The **database** of products allows you to **buy and browse** online goods and services. You can normally **search** for products, and **sort** lists of products, by various fields such as **price**, **reviews** or **number in stock**. The desired items can then be added to an online **shopping basket** and items can be paid for at a **checkout** using a debit/credit card. They are then **delivered** directly to your door.
- There are benefits and drawbacks of online shopping to both the **customer** and the **business**:



Shopping is a popular online activity.

Customer

- **Advantages:** Products can be purchased any time which is most convenient. Disabled people or people living far away from a store do not need to leave the house since goods are delivered. Goods are cheaper due to the shop having to pay less overheads like rent.
- **Disadvantages:** You cannot try on clothes before buying. There is a risk of unauthorised use of financial details, which can lead to credit card fraud.

Business

- **Advantages:** There is a wider customer base than with a normal shop and trading can take place at any time. It is cheaper because no street stores need to be rented.
- **Disadvantages:** If the server fails, no business can happen. Not everyone has the Internet so some customers can be lost. There is a high initial cost and technical skill required to set up.

Test it

18. Explain why some customers may not feel safe when buying online. (2 marks)
19. State **two** reasons why a business may want to switch to online-only trading. (2 marks)

4.2 Verification and Online Booking

Revise it

- Online shopping and booking sites attempt to stop errors when data is entered into their online forms. This is called **verification**.
- People using the site will perform several **visual checks** before placing an order: they will double-check that their address and order details are correct before submitting.
- The site itself will perform a **double-keying** check by asking you to enter your email address or password twice.
- Shopping and booking sites will also use a **parity check** to ensure that the order you make is received correctly.
- **Booking sites** are normally used to book holidays or flights, etc. Using booking sites has advantages and disadvantages:



Booking sites are used for holidays.

Advantages

Customer: Booking can take place from home, which is more convenient for disabled people. You can access Internet reviews of hotels and resorts before you leave.

Business: The booking company does not have to pay commission to agents or pay wages for staff to input data – it is cheaper.

Disadvantages

Customer: Some booking sites may not be genuine and may attempt to steal your card details. Not everyone has Internet facilities available at home.

Business: Booking/travel agencies may close causing unemployment. Package tours may die out because people are creating their own holiday packages.

Test it

20. Explain **three** types of *verification* check, with reasons, which could be used when booking and shopping online. (6 marks)

5 Organisations: School, Home and Environment

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

OMR

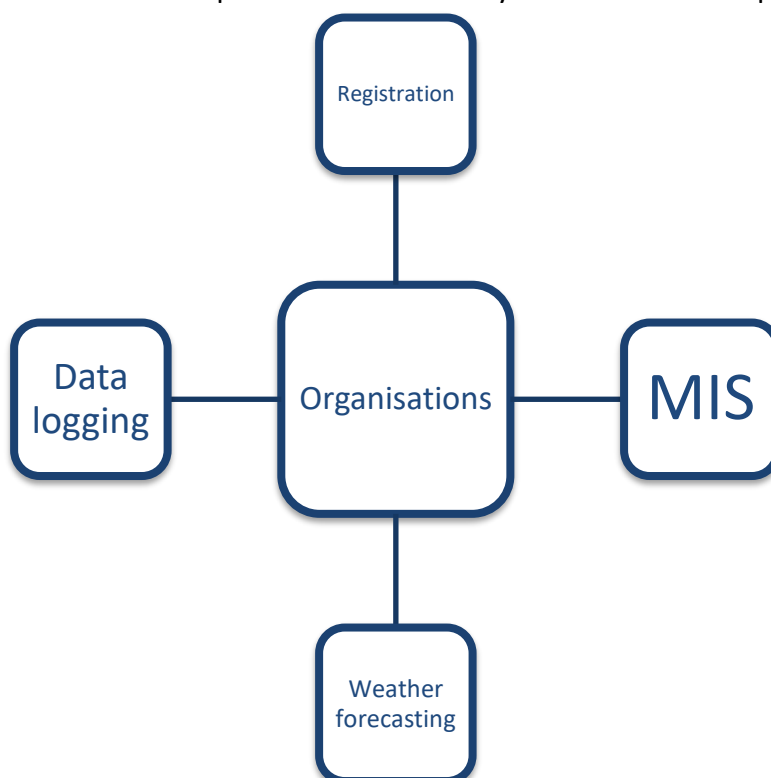
Biometrics

MIS

PIR

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



5.1 School Registration Systems

Revise it

- Using ICT, the attendance registration of school pupils can now take place in numerous different ways.

Method	Use	Advantages	Disadvantages
Paper-Based	AM/PM marks are logged on a piece of paper by the form tutor and are returned to the attendance office.	Paper-based methods are not reliant on computer networks if computer networks are unavailable.	If left unattended, students can change their marks. Mistakes are often difficult/untidy to change.
Keyboard Entry	Marks are typed into the computer by the form tutor. Marks are stored on a central server.	It is much easier to produce attendance statistics. There is no need to return paper registers to an attendance office.	Teachers are still required to register each pupil rather than the pupils registering themselves.
Optical Mark Recognition (OMR)	Form teachers log whether pupils are present by shading a box on a sheet of paper for their form. Sheets for the different forms are then batched and scanned into the computer.	A lot of multiple-choice tests are marked using OMR, so the initial cost of purchasing an OMR reader may provide more value for money.	Registers are batch-processed so they are not 'live' or 'real-time': some latecomers would not be registered if they arrived late.
Smart Cards	These cards contain computer chips and can hold more information than magnetic strips. They are placed into card readers as pupils arrive.	Smart cards hold more data than swipe cards so they can provide multiple functions: they can act as payment cards in canteens or record library loans.	There is a reliance on the ICT system. If the system goes down, registration would be a problem.
Magnetic Strip Cards	Magnetic strip cards are used to enable pupils to 'swipe' into school.	Magnetic strip cards are affordable to purchase and manufacture.	Pupils can 'swipe in' others not present. Cards can be forgotten.
Biometric	Pupils scan their fingerprints or eyes to log their attendance each day.	Students do not have to remember things like cards. It is impossible for other students to mark in someone who is not there.	Biometric is an expensive option and some parents worry about the privacy of a fingerprint database.

Test it

- Name **two** forms a biometric registration system might take. (2 marks)
- Give **two** reasons why a school may replace a paper-based registration system. (2 marks)

5.2 Management Information Systems (MIS)

Revise it

- **Management Information Systems** are used by managers. They provide managers with the data they need to **make decisions**, and strip away all other unnecessary data.
- If a head teacher is concerned about attendance, for example, a **MIS** may provide the head teacher with attendance totals at different times of year. It would hide all of the individual marks which are not so helpful in allowing the head teacher to make decisions.
- Other uses of a MIS might include listing which classrooms are empty and which teachers are free at a particular time. This would enable the head teacher to make a decision about who and where to allocate classes to.
- Using a MIS has several advantages and disadvantages:



A MIS helps managers to make decisions.

Advantages

Teachers are able to focus on other more important things like planning lessons.

A MIS can be used for writing timetables and spotting truancy patterns.

Disadvantages

MIS software can be expensive. Staff need to be trained, which can also be expensive.

There needs to be adequate security and access control because of personal data.

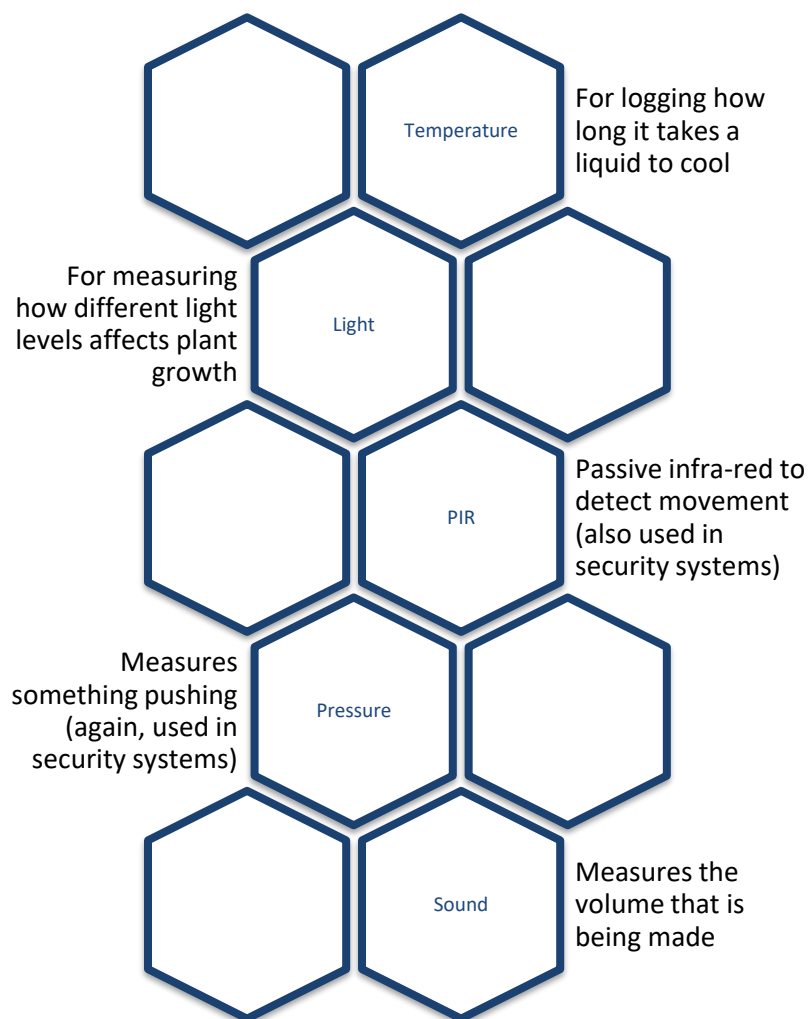
Test it

23. Explain what is meant by the term *MIS* and give **two** advantages **and** disadvantages of using one. (6 marks)

5.3 Data Logging in School Activities

Revise it

- **Data logging** is used in schools for science experiments.
- **Sensors** automatically collect data readings over a set period of time called a **logging period**. The time between each reading is called the **logging interval**.
- Data from sensors is sent to the computer by wires. The computer then allows an **analysis** of the data collected by performing **calculations** and creating **charts**.
- Data logging is **more accurate** because people can't make mistakes like forget to take readings: readings can be taken **automatically** at any time.
- Data logging hardware, however, can be **expensive** and there is a danger that the equipment will go wrong.
- Data logging has many types of **sensors**:



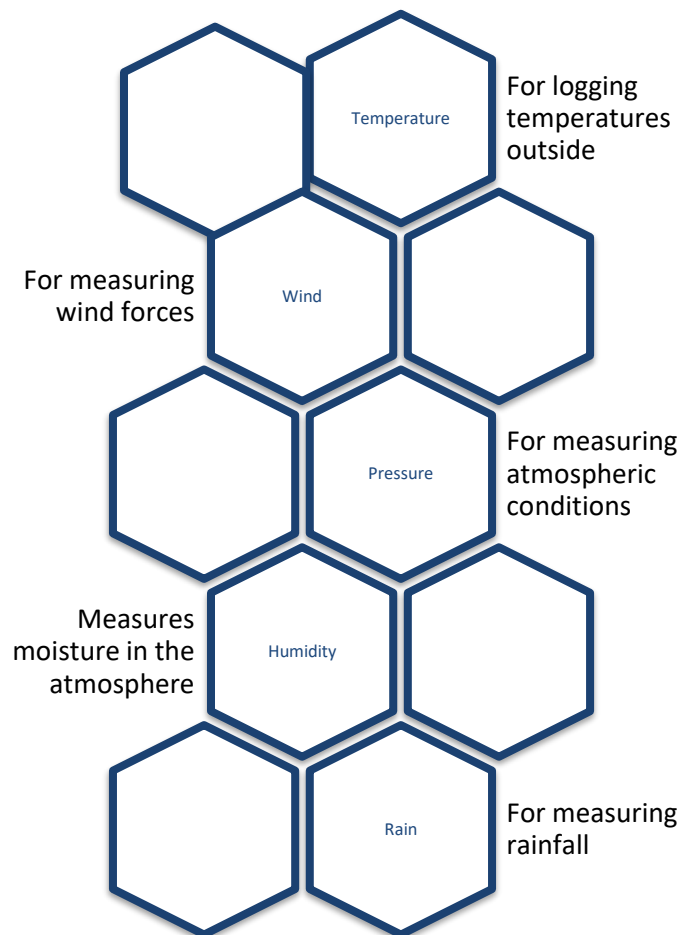
Test it

24. Describe the difference between a *logging rate* and *logging interval*. (2 marks)
25. Name **two** ways in which logging data may be analysed using a computer. (2 marks)

5.4 Weather Forecasting Systems

Revise it

- **Weather forecasting systems** are used to tell you the weather by TV or the Internet.
- **Sensors** are **input** devices used to feed information into a computer. The computer then **outputs** this data as a **weather map** which is shown on TV and news websites.
- The same **benefits** of **automatic** data collection at set intervals apply, like with data logging. The same **disadvantages** of equipment **cost** and **over-reliance** on technology for accuracy also apply.
- Weather forecasting uses the following **sensors**:



Rainfall and wind sensors are used in weather forecasting systems.



Test it

26. A weather report tells you to expect *strong winds* in the North and *high temperatures* in the South. What **two** sensors would have been used to collect this data? (2 marks)

6 Emerging Technologies

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

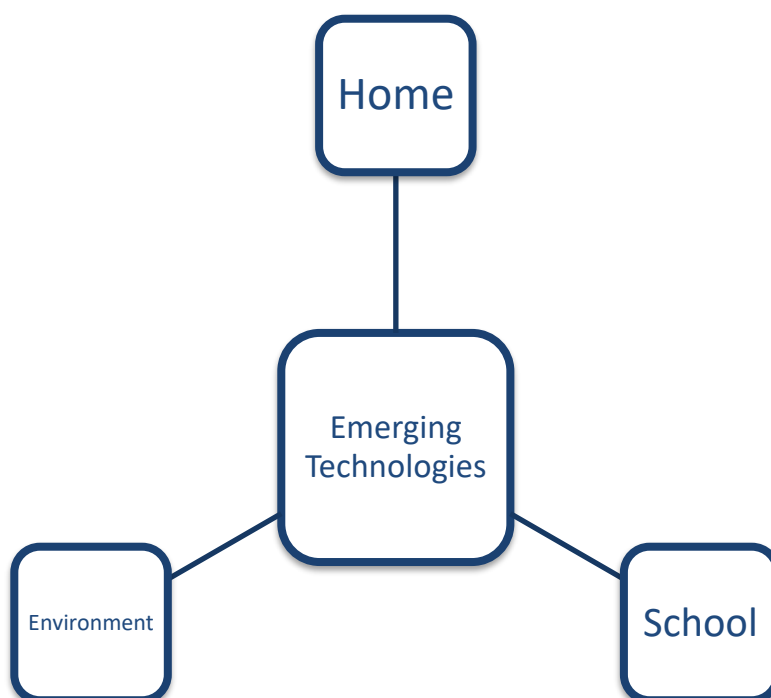
VLE

3D TV

Weather Forecasting

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



6.1 Home, School and the Environment

Revise it

- **Emerging technologies** are changing the way we lead our lives at **home** and in **school**, and are changing the **environment** in which we live.
- Below are some examples, with some **advantages** and **disadvantages** for each:



Webcams are an emerging home technology.

For this section, you will need to keep yourself up to date with the very latest developments in technology. Watching the news on TV or viewing technology news websites is a good start.

Home

- In the home, new 3D televisions are currently being developed. Webcams are allowing for more immersive augmented reality games. Mobile phones can do more tasks than ever before.
- **Advantage:** 3D televisions allow a more realistic gameplay and viewing of programmes. Mobile phones enable people to use the Internet wherever there is network coverage.
- **Disadvantages:** Watching TV and playing games are both sedentary activities leading to obesity concerns. There are concerns about the inappropriate use of webcams.

School

- VLEs or Virtual Learning Environments are emerging which enable pupils to gain access to resources and take tests online. Biometric registration systems are changing the way pupils are registered and management information systems are helping schools with timetabling.
- **Advantage to pupils:** Pupils can gain access to feedback and grades at any time with a VLE.
- **Advantage to staff:** Teachers can spend more time doing important things like planning.
- **Disadvantage to pupils:** Not every pupil will have access to the Internet and the VLE at home.
- **Disadvantage to staff:** Teachers need to be trained on using the new technology.

Environment

- Weather forecasting systems are able to predict, with some accuracy, what the weather will be. They can do this by looking at patterns in sensor readings.
- **Advantage:** Sensors are able to take readings accurately at any time and never miss a reading.
- **Disadvantage:** There is a worry that we rely on technology too much in our everyday lives.

Test it

27. Describe an emerging technology in *schools* and provide an *advantage and disadvantage* of this technology. (4 marks)

7 ICT and Learning

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Voice Recognition

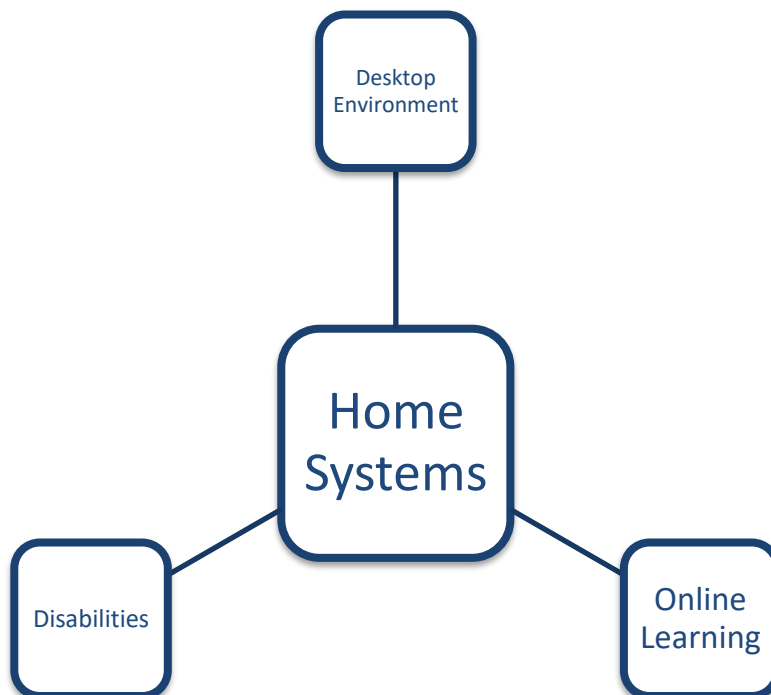
Braille Keyboard

Control Panel

Text to Speech

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



7.1 The Desktop Environment

Revise it

- The desktop environment is a **GUI (Graphical User Interface)** which enables you to make changes based on your needs or preferences.
- You can change the following aspects of the desktop environment:
 - Adjust the size of **windows** if you need to see more on screen.
 - Change **mouse** settings such as the speed of the cursor on screen.
 - Make **icons** larger if you are visually impaired.
 - Change the screen **resolution**, or number of pixels, to alter how vivid the picture looks.
 - Change the **colour** scheme if you suffer from colour blindness.
 - Decide what **position** on the screen you would prefer toolbars to appear.
 - Change **graphics** such as desktop wallpapers.
 - Change the **contrast** to see all items clearly and prevent eye strain.
 - Change the **volume** to a level which is comfortable and avoids ear damage.
- Some other **features** of the desktop environment are:



Mouse settings can be customised.

On-screen help and shortcuts	<ul style="list-style-type: none"> • On-screen – help enables you to troubleshoot and solve common computer problems. • Shortcuts enable you to carry out common tasks, like opening programs, quicker by pressing certain keys in combination.
Control panel and print settings	<ul style="list-style-type: none"> • You can change hardware and software settings, set up parental controls, manage security, and set accessibility options using the control panel. • You can change the print quality, colour settings, and choose a printer using print settings.
Password protection	<ul style="list-style-type: none"> • You can make sure that your data is secure by using a password to gain access to your documents on the computer.
Folder management	<ul style="list-style-type: none"> • You can easily create folders to organise files – setting up a sensible file structure means you never forget where anything is on your computer. Tools such as move, copy, delete and rename are also useful.

Test it

28. Give **three** common tasks you may carry out using an operating system's *control panel*. (3 marks)
29. Describe what is meant by the term *shortcut* in a desktop environment. (2 marks)

7.2 Online Learning and Learning with Disabilities

Revise it

- There are various ways in which learning may take place with a computer in and out of school. Some of the ways are:

Name	Explanation	Advantages	Disadvantages
Online tutorials (e.g. BBC Bitesize)	Websites may provide text and image content to help you learn about a topic.	Students can be kept more engaged using ICT with multimedia content such as video. Material can be available on the Internet at any time, any place.	Students may miss out on the social interaction of learning with others. A teacher is not available to explain things if you do not understand.
Online assessment (e.g. exams)	Tests or examinations are completed on the computer and are sometimes instantly marked by the computer itself.	Multiple-choice questions can be marked instantly. Teachers save time – they only have to mark verbal-style questions.	Not all questions can be marked automatically, such as verbal-style questions. If the assessment system is unavailable, there will be problems.
Virtual Learning Environment (VLE)	This is an online system which manages most aspects of teaching and learning using ICT.	Teachers can upload presentations and set quizzes which are automatically marked by the computer. Students can see their marks or revise online at any time.	It may take some time for both staff and students to familiarise themselves with the VLE. With some non-free solutions, schools will have a high initial cost.

- There are also **learning devices** and **software** which can help students with **disabilities**:

Device/Software	Explanation of Use
Braille keyboard	A type of keyboard which uses Braille to help the visually impaired to type.
Microphone	People unable to use keyboards can give verbal commands to their PC.
Touch sensitive data entry device	Touch screens are used in mobile phones such as Apple's iPhone. They can be operated by those with poor motor skills.
Voice recognition software	This software recognizes the words being spoken into a microphone. It enables control of a PC and dictation into programs like Word.
Text to speech software	Programs like Microsoft's Narrator reads aloud what is shown on the screen. This helps those who are visually impaired.
Customized desktop environments	Accessibility options in operating systems like Windows allow you to change contrast and colour, magnify text, and use on-screen keyboards.

Test it

30. Name **three devices** and **three software** types to help learners with disabilities. (6 marks)

8 Applications Software

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Generic

Specialized

Bespoke

Application

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



8.1 Purpose, Use and Information Sources

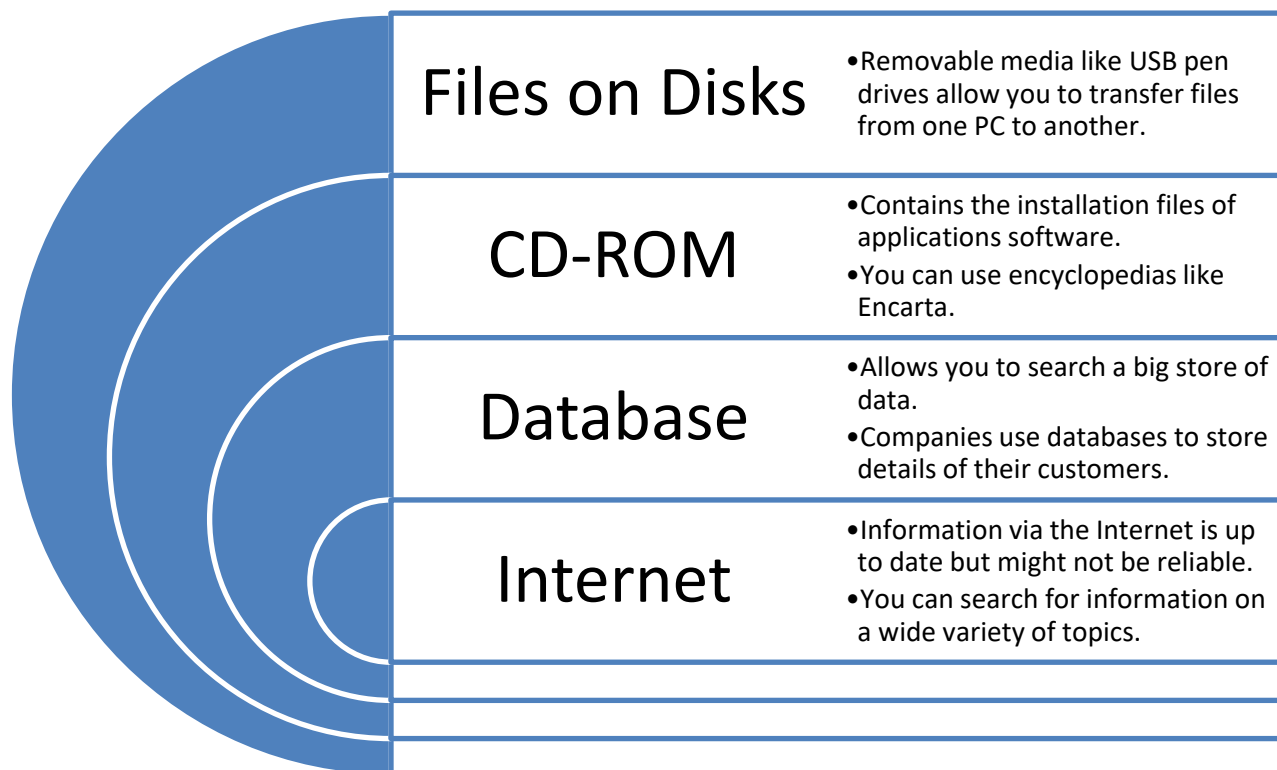
Revise it

- **Applications** software is software that is designed to carry out a particular **set of tasks**. It works with the **operating system** (software which **controls** all other software and hardware).
- Applications software comes in three main types:
 - **Generic** software can be used for a wide variety of tasks, e.g. **word processing** (for writing letters), **spreadsheets** (for performing different kinds of calculation), **presentation** (for presenting slides), **information handling / database** (for storing customer details).
 - **Specialised** software is used for a smaller range of tasks, e.g. **accounting** software (used only for tasks like paying wages).
 - **Bespoke** software is created for a specific organisation and specific tasks within this one organisation. This option is often very expensive.

Creating a letter is just one way that generic word-processing software can be used.



- Information in a company can come from four main **sources**:



Test it

31. Describe what it means to install a new *application*. (2 marks)
32. Describe an information source, with reasons, to find the latest share prices. (2 marks)

9 Information Handling (Databases)

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Query

Data Integrity

Report

Search Engine

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



9.1 Updating, Deleting, Sorting and Searching for Data

Revise it

- Databases are used to **store** and **organise** large amounts of data on a computer. Databases are used in many aspects of everyday life.
- Data may need to be **deleted** or removed from a database. An example of where data would need to be deleted is if a customer dies.
- If data is no longer correct, it will need to be **updated**. An example would be when a customer has recently moved and their address details have changed.
- With databases, you can also **sort** data in either **ascending** order (A–Z, 0–10) or **descending** order (Z–A, 10–0). An example would be if a company needs to find a customer who placed an order on a particular day – it is much easier to find the customer if the order list is sorted by name.

Ascending sorts

1	Bruford
10	Jenkins
999	Maidment

Descending sorts

Maidment	999
Jenkins	10
Bruford	1

- You can also **search** databases by creating **queries**. Queries are written in the form of **Field-Operator-Criteria**:

Search	Field	Operator	Criteria
Find a customer with a surname of 'Smith'.	Surname	=	Smith
Find orders with more than 10 items.	Number of Items	>	10
Finds customers not in Caerleon.	Town	<>	Caerleon

- Queries with one search like this are called **simple** queries. **Complex** queries combine two or more simple searches together by putting AND or OR in the middle. **Surname = Smith AND Town <> Caerleon** finds all customers named Jones who also do not live in Caerleon.
- Examples of different query **operators** are shown in the table below:

Operator	Example	Explanation
=	Town = Newport	Finds customers living in Newport.
<>	Town <> Newport	Finds all customers apart from those living in Newport.
>	Items > 10	Finds orders with more than 10 items.
<	Items < 10	Finds orders with less than 10 items.
AND	Town = Newport AND Items > 10	Finds orders with more than 10 items that were also made by a customer living in Newport.
OR	Town = Newport OR Items > 10	Finds either orders with more than 10 items or orders made by a customer in Newport.
LIKE	LIKE Town = New	Finds customers which live in a town beginning with 'New'.

Test it

33. A teacher is searching a Management Information System. He wants to find students in the *form class* of 10M who opted to take the *subject* of Art. Write the query terms that he would need to enter into the computer using the form of field-operator-criteria. (7 marks)

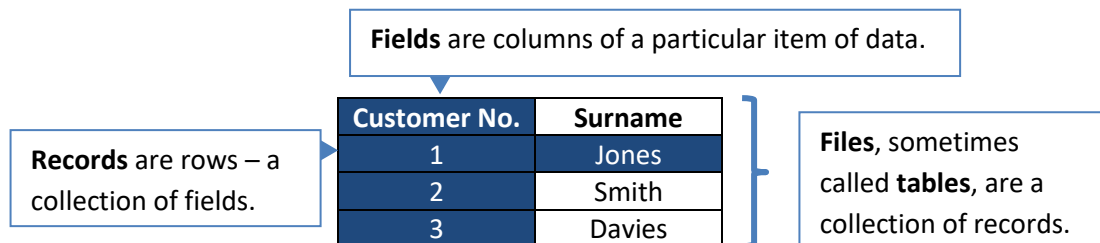
9.2 Data Types and Parts of a Database

Revise it

- Databases can hold different types of data. You will normally decide upon what **data types** are required for a database by drawing up a **data dictionary** beforehand.
- Below are different data types you need to know:

Data type	Explanation	Examples
Number	Stores numbers only	Quantity in stock, shoe size
Text	Stores letters, numbers and spaces	First name, postcode, telephone number (because of the spaces in the middle)
Date	Allows only dates to be entered	Date of birth, date of order
Time	Allows only times to be entered	Time of order, time of transaction
Currency	Must begin with a currency sign like \$ or £	Stock price, selling price
Boolean	Used where only two choices are available	Male/female, true/false, yes/no
Lists	Used where the user is given a list of choices they can pick from a drop-down menu	Size (XS, S, M, L, XL), preferred method of contact (mail, SMS, telephone, email)
Picture	Pictures of products or people	Product image, screen picture
Sound	Used to organise sound or music	MP3 track
Video	Organises video files	Video file

- Databases are made up of **fields**, **records** and **files**:



- Some fields are **key fields**. These are **unique** – no other record will have a field which is the same. Key fields are used in many aspects of ICT in society. **Car registration numbers** and **national insurance numbers** are key fields and are unique to a particular person or thing. In the example above, customers can have the same surname, so each one is assigned a unique **customer number**.
- Search engines** are big databases of websites. You can use a search engine like Google to carry out a search using **key words** to search this database.
- When you carry out **searches** or **queries** using a database, you can present the information in a **report** which can be printed. Reports should:
 - Contain only **relevant** information and be appropriately **formatted**.
 - Contain a sensible **title**, **date** and **page numbering**.
 - Use **calculated fields**, if necessary, to make the report more useful. A report called 'Order Receipt', for example, could add up all of the *price* fields to produce a new *total* field.

Test it

- Explain the relationship between *fields*, *records* and *files*. (3 marks)
- Give **three** features of a *report* produced by a database management system. (3 marks)

9.3 Validation, Benefits and Security

Revise it

- In order to ensure that **sensible** data is entered into a database, several **validation checks** can be used:
 - **Lists** – You are forced to make a choice from a drop-down list, so unallowed data cannot be entered.
 - **Range check** – Range checks can make sure only sensible data is entered. In an order, it would not make sense to add a quantity of zero, so a range check of '>0' (greater than 0) could be added.
 - **Format checks** – These are used to check that the correct combination of letters and numbers are entered. **Input masks** can be used for format checking. Look at the following examples where 0 means number only, and L means letter only:
 - **Postcode:** LL00 0LL
 - **Telephone number:** (00000) 000 000
 - **Date of birth:** 00/00/0000
-
- Telephone number fields use input masks.*
- Information handling using a computer has the following **benefits**:
 - **Faster access to data** – By using simple or complex queries, you can find the data you want a lot more quickly when compared to filing cabinets.
 - **Variety of output formats** – Search results can be viewed on screen, printed as reports or transferred elsewhere. This cannot be done with paper-based filing cabinets.
 - **Data integrity** – Validation checks ensure that data is more accurate by stopping data which is not sensible. This cannot be done with paper-based forms.
 - In order to keep data **secure**, a data handling system will make use of the following features:
 - **Password protection** – Passwords are combinations of letters and numbers which you must type in correctly to access the information handling system. For passwords to remain secure, the following **password protocols** (rules) should be followed:
 - Passwords should be changed regularly.
 - Passwords should not be obvious or easily guessed.
 - Passwords should be kept private.
 - **Access rights** – Staff can only see certain data and carry out certain functions which apply to them. Checkout staff in a shop, for example, may be able to **read** the number of items in stock but not change them. The manager, however, will have **read-write** access: he/she can also change the stock levels whereas checkout staff cannot.
 - **Backup procedures** – Copies of the data will be kept in case there is an accidental loss of data. A **backup policy** will be created by a company to outline:
 - **Who** has the job of making the backup.
 - **What** backup medium will be used.
 - **Where** the backup will be safely kept.
 - **How** often the backup will take place.

Test it

36. Give **three** components of an organisation's *backup* procedures. (3 marks)
37. Explain how an information handling system improves data *integrity*. (3 marks)

10 Email

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

BCC

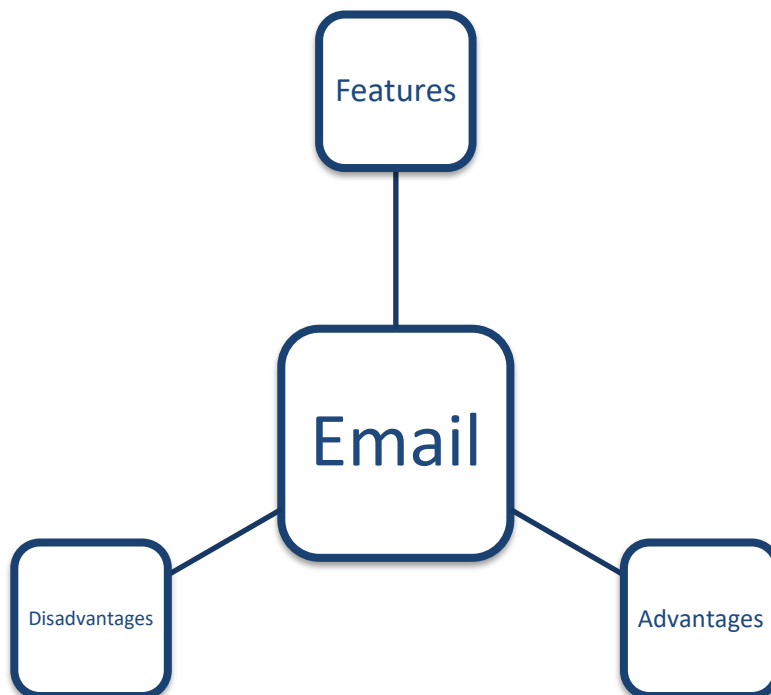
CC

Spam Filter

Parental Controls

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



10.1 Using Email

Revise it

- An email is an electronic message sent between PCs via the Internet. Email is used for work and leisure purposes by people every day.
- The following are features of email:

Feature	Explanation
Compose	You can compose or create a new email message to send to an email address .
Signature	A signature can be saved to your email client , which it will remember to put at the bottom of each message. This may include a name, job position and address details.
Group email	You can create a distribution list to send your email to many addresses at once.
CC	Carbon Copy. People can see the other addresses that you have sent your group email to.
BCC	Blind Carbon Copy. People cannot see the other addresses that you have sent your group email to.
Attachments	You can attach files such as word-processed documents to your message.
Forward	You can re-send any useful messages you receive to other people.
Address book	You can save the names and email addresses of people you email regularly as contacts . This means that you don't have to remember their email addresses.
Folders	You can group certain emails into folders or name email groups . All emails from work contacts can appear in one folder, whilst all other emails appear in another.

- The advantages and disadvantages of email are:

Advantages

- Email is quick – messages are received almost instantly.
- Files can be easily attached to emails.
- There is less paper – better for the environment.

Disadvantages

- File attachments can contain harmful viruses.
- There is a lot of spam or junk emails sent.
- Email accounts could be hacked into.
- To prevent misuse, appropriate measures can be taken:
 - **Spam filters** can be used to reduce junk email received.
 - To prevent viruses, attachments from people we do not know should not be opened and **virus scanners** should be used just in case.
 - **Parental controls** can be used to filter out abusive language.



Spam is a disadvantage of email.

Test it

38. Describe the difference between the *CC* and *BCC* features of email. (4 marks)
39. Give **two** precautions to prevent harmful *viruses* when using email. (2 marks)

11 Spreadsheets

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Absolute/Relative Cell Referencing

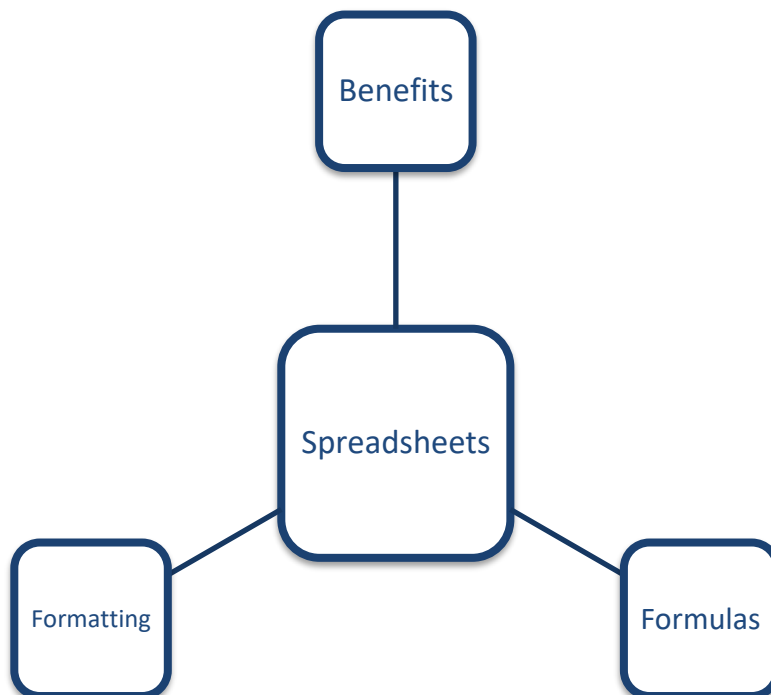
Formatting

What IF Investigation

Formula

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



11.1 Parts of a Spreadsheet

Revise it

- **Spreadsheets** are used to **perform calculations** using a computer.
- Spreadsheets are made up of three main parts:

	A	B
1	Customer	Order Cost
2	Jones	£4.00
3	Smith	£6.00
4		
5	Total	=B2+B3

Labels are headings explaining the data.

Data is the text or numbers you type in.

Formulas are automatic calculations.

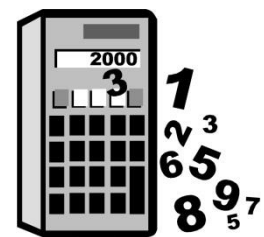
- There are four main types of **formula** used in spreadsheets:

Formula	Explanation
=A1+B1	The plus sign here adds up cells A1 and B1.
=A2-B2	The minus sign takes away B2 from A2.
=A3*B3	The asterisk sign multiplies A3 by B3.
=A4/B4	The forward slash sign divides A4 by B4.

- **Functions** are more advanced calculations that the spreadsheet can do. Below are some examples of functions that you need to know:

Function	Explanation
=SUM(A1:E1)	This SUM function is used to add up the cells A1, E1, and everything in between. Without this, we would have a very long formula of =A1+B1+C1+D1+E1!
=AVERAGE(A1:E1)	AVERAGE will find the average of cells A1, E1, and everything in between.
=IF(A1>49,"Pass", "Fail")	IF functions make decisions. If the test score is larger than 49, the test result of 'Pass' will be displayed. Otherwise, the result of 'Fail' will be displayed.
=MIN(A1:E1)	This finds the smallest number in the range of cells A1 to E1.
=MAX(A1:E1)	This finds the largest number in the range of cells A1 to E1.

- The following are examples of **formatting techniques** that can improve a spreadsheet:
 - Coloured **borders**, or lines, can be added to the edge of each cell.
 - Cells can be formatted according to their **data type**, e.g. cells with money can automatically have a pound (£) sign placed at the front by assigning a **currency** data type.
 - Cells can be **merged** or combined together, e.g. cells A1:C1 can merge to form one big cell of A1.
 - The **font** can be changed, e.g. font style, colour, bold or italics.
 - The **background fill** tool can change the colour of the cells.



Spreadsheets are clever calculators.

Test it

40. Write a suitable *function* to find the average test scores in cell range B23:B30. (3 marks)
41. Give **three formatting techniques** to improve the appearance of a spreadsheet. (3 marks)

11.2 Replicating Formulas and Benefits

Revise it

- When you **replicate** (drag) a formula down a spreadsheet, the cells in the formula will change depending on what row the formula is in. This feature is called a **relative cell reference**. If we need to, we can stop this from happening by placing **dollar (\$)** signs before each letter and number of the cell reference. Now when we **replicate** the formula, we will have fixed, **absolute cell references**.

	A	B	C
1	Item 1	Item 2	Item 1 + 2
2	£4.00	£1.00	=A2+B2
3	£6.00	£6.00	=A3+B3
4	£2.00	£4.00	=A4+B4
5	£3.00	£7.00	=A5+C5

Relative cell referencing

Absolute cell referencing

	A	B	C
1	Item 1	Item 2	Item 1 + 2
2	£4.00	£1.00	=\$A\$2+\$B\$2
3	£6.00	£6.00	=\$A\$2+\$B\$2
4	£2.00	£4.00	=\$A\$2+\$B\$2
5	£3.00	£7.00	=\$A\$2+\$B\$2

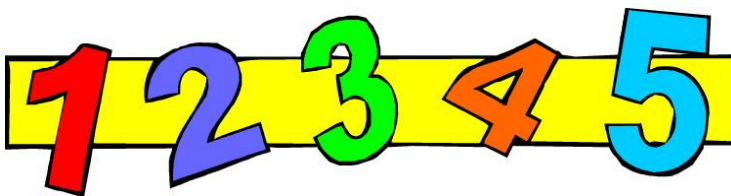
- Below are some of the **benefits** of using spreadsheets:

When data changes, formulas automatically recalculate.

Computers do not make mathematical errors like humans, but GIGO (Garbage In, Garbage Out) still applies!

Charts and graphs can be produced and customized very easily.

You can change information in a spreadsheet model to make and test predictions (what IF investigations)



Spreadsheets can make working with a numbers a lot easier.

Test it

42. Explain the benefit of using *formulas* in a spreadsheet. (2 marks)
43. Explain what is meant by the term *spreadsheet model*. (2 marks)
44. Compose a formula to *add* the contents of *absolute* references A1, B4 and C7. (6 marks)

12 Data Logging and Control

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Feedback

Non-Feedback

Sensor

Control Signal

Revision Map

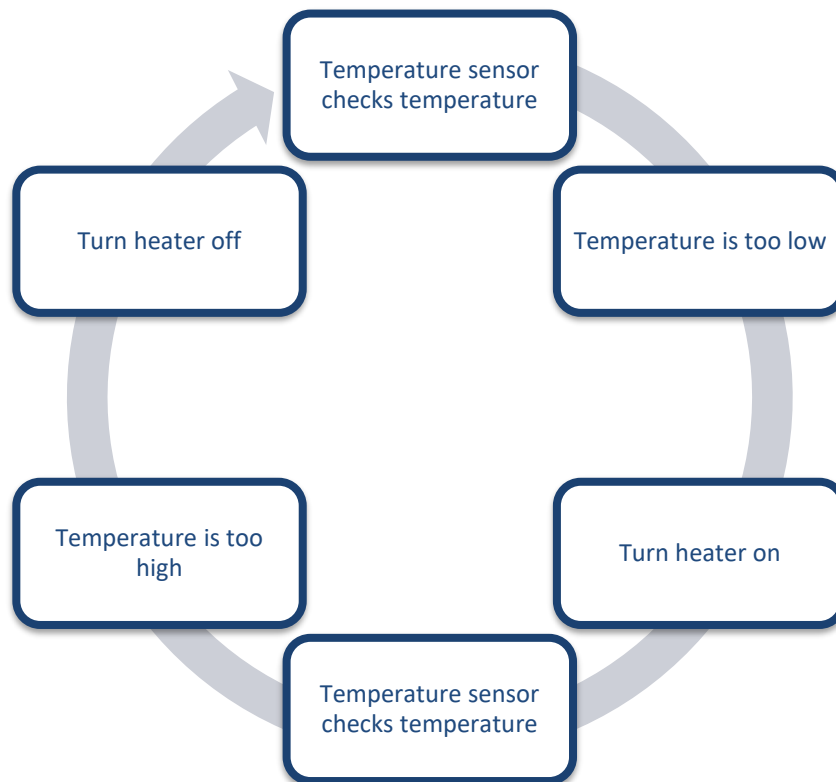
Add more stems to this revision map to note down what you learn in this chapter.



12.1 Control Systems in Everyday Life

Revise it

- In Sections 5.3/5.4 you learned about data logging with sensors in school activities and its benefits and drawbacks.
- The data that is collected from sensors can control and monitor many areas of everyday life. Data from **sensors** is first **processed** by a computer. The computer then decides whether or not to send a **control signal** to other devices such as motors or lights. This process is called a **control system**.
- Control systems come in two types:
 - **Feedback systems (feedback loops)** – This is where the **output** of the control system **changes** the input. Look at the following example used in central heating systems – the heater output will affect the heat sensor input:



- **Non-feedback** – This is where the output of the control system *does not* affect the output. A burglar alarm system with a **pressure pad**, **PIR (passive infra-red) light beam** and **body heat sensor**, for example, will activate a siren if somebody touches the pad. The siren output does not affect the input.
- There are other examples of control systems in everyday life:
 - **Toys** – Some have PIR sensors to make a sound or movement when someone moves near.
 - **Gaming** – The Playstation Eye can detect the Playstation Move using light sensors.
 - **Smart meters** – Sensors can measure and record how much electricity is being used.

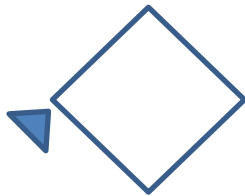
Test it

45. Describe what is meant by *feedback/non-feedback* in control systems. (4 marks)

12.2 Writing Instructions

Revise it

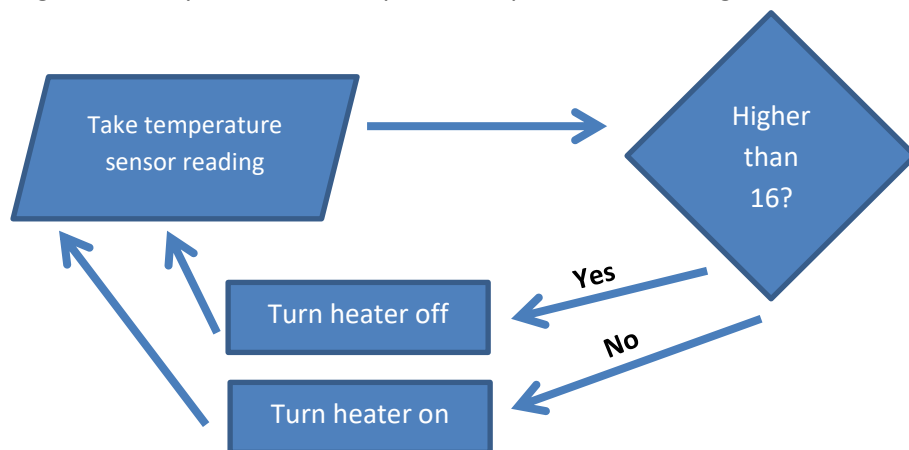
- In the exam, you may be asked to write a sequence of instructions to control a screen image or external device.
- Take a look at the following example of a drawing created by instructions given to an on-screen turtle:



In this example, RT means 'right turn' and is followed by the number of degrees. FD means 'forward' and is followed by the distance in centimeters.

INSTRUCTIONS: FD10, RT90, FD10, RT90, FD10, RT90, FD10

- You may be required to complete a process diagram. Take a look at the following diagram for a central heating feedback system which keeps the temperature at 16 degrees.



- Bit pattern tables** are used to show how **computer bits** switch equipment on or off. 1 means **on** and 0 means **off**. In this example of a **dishwasher**, during the main wash, the following **bit pattern** would be produced:

Water heater	Water dispenser	Water drainer
1	1	0

Test it

- Complete the next **three** steps in this sequence to create a basic *triangle* using an on-screen turtle: FD20, RT60. (3 marks)

13 Desktop Publishing

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Spellchecker

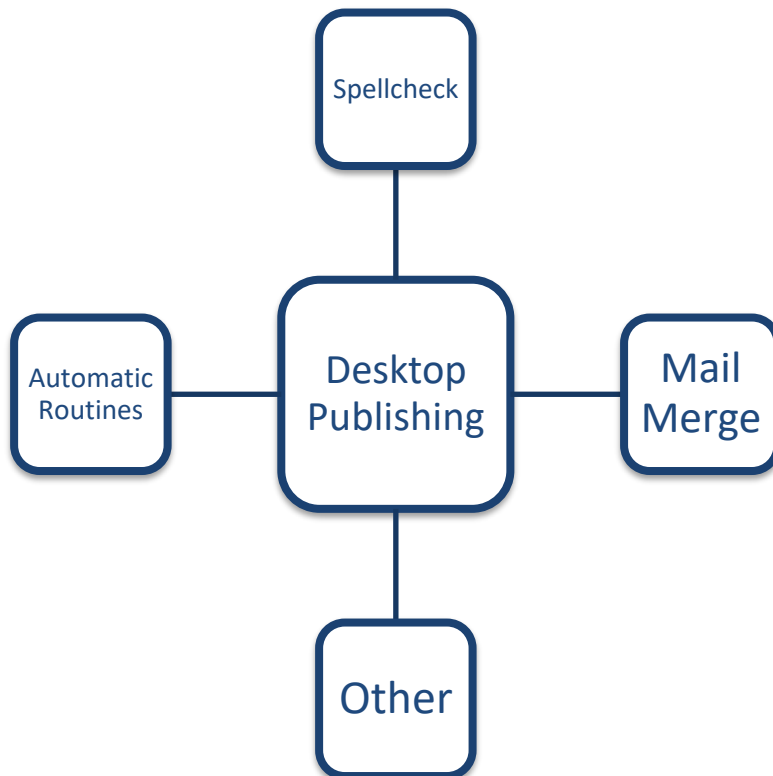
Pagination

Mail Merge

Watermark

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



13.1 Features of DTP

Revise it

- **Desktop publishing** software, or **DTP** for short, allows you to make professional-looking documents like posters or newsletters. Some of its main features are:

Spellchecker / Online Thesaurus

- **Spellchecker** – Checks your spelling (not grammar) as you type.
- **Thesaurus** – Looks for synonyms, or words with the same meaning, as you type

Mail Merge

- Lets you send out personalised documents by connecting to a database. All customers in the database can have their own personalised letter with different names and addresses on each.

Automatic Routines

- **Style sheets** – Allows the user to define different styles for things such as text and headings, in order to make formatting consistent.
- **Headers and Footers** – Text or images that automatically appear at the top and bottom of each page.
- **Pagination** – You can add automatic page numbering. You must also avoid widows and orphans (this just means keeping paragraphs together and looking professional, rather than having the last few words of a paragraph dangling off onto a new page).
- **Automatic contents production** – Text of a certain style can be identified as headings and form an automatic table of contents (see the front of this guide).
- Other techniques that you can use with DTP software are:

Feature	Explanation
Font	You can change the font type (Arial, Comic Sans), style (bold, italic) or size (12pt, 14pt).
Justification	Text can be aligned left , centre , right or fully justified (against both left and right margins).
Importing	Different file formats can be imported. Images can be imported from Clip Art and text can be imported from other file formats such as CSV , TXT or RTF .
Tabulation	You can set tabs on a page to create bullet point lists with a consistent indent (distance from left margin).
Tables	Tables , like this one, are useful for summarising the key facts and can be customized.
Borders	Coloured borders , like the one around this 'Revise It' box, can add emphasis to a section.
Line spacing	Lines can have single line spacing, like on this page, or can have an empty line placed in between each line of text – this is called double line spacing.
Graphics	Graphics can be manipulated : they can be resized (made bigger or smaller), cropped (part of the image cut off), rotated (spun round) or mirrored (flipped over).
AutoShapes	You can draw lines or shapes and change the colour or thickness of your drawings.
Watermarks	An image of light contrast can be added to the background of the page and can feature the insignia or logo of a company.

Test it

47. Describe the difference between an online *spellchecker* and *thesaurus*. (2 marks)
48. Give **three** ways in which DTP software offers *graphic manipulation*. (3 marks)

14 Web and Presentation Software

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Audience

Link

Animation

Transition

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



14.1 Good Practice

Revise it

- When designing websites using web software and slide presentations using presentation software, a number of good practice design recommendations can be made:
 - **Sequencing instructions** – Provide a few instructions to tell your user about how they can navigate your website or presentation.
 - **Animations** – Slide presentations can use some basic animations to make the information look interesting on screen. Websites may use Adobe Flash animations or animated GIFs.
 - **Transitions** – It is possible to animate the way that slides and web pages move from one slide or page to another.
 - **Links** – Hyperlinks allow users to move between different slides and pages by clicking a text link, image or button.
 - **Consideration of target audience** – Presentations and websites must be designed in a way which is appropriate for the people who are viewing it. A colourful presentation with Clip Art images, different animations/transitions may appeal to children, but a cleaner, more professional appearance may suit business people. Similarly, business people may be able to cope with lots of difficult language and complicated concepts whereas children may not.
 - **Standard navigation techniques** – People will already be used to seeing buttons like 'Home page', 'Back' and 'Next'. It makes sense to add these familiar buttons.
 - **Disability considerations** – You can do the following things to make your work accessible to people with disabilities:
 - **Sound** – You can record a narration in addition to the text to help those who are visually impaired.
 - **Fonts** – Don't use a font size which is too small. Use clear, readable font types to help visually impaired people.
 - **Pop-up comments on images** – 'ALT tags' can be used to describe each of the images for accessibility.



*Be sure to use clear **fonts**.*

Test it

49. Give **three** *disability considerations* in website design. (2 marks)
50. Provide **five** *design considerations* when creating a slide-based presentation for a target audience of 5–7 year olds. (5 marks)

15 Legal and Ethical Issues

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Copyright, Designs & Patents Act

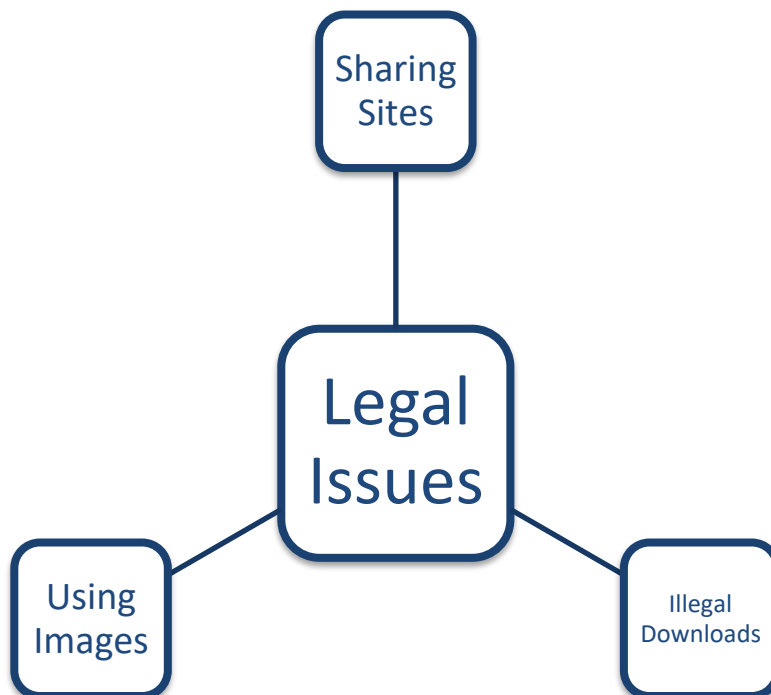
Intellectual Property

Permission

Illegal

Revision Map

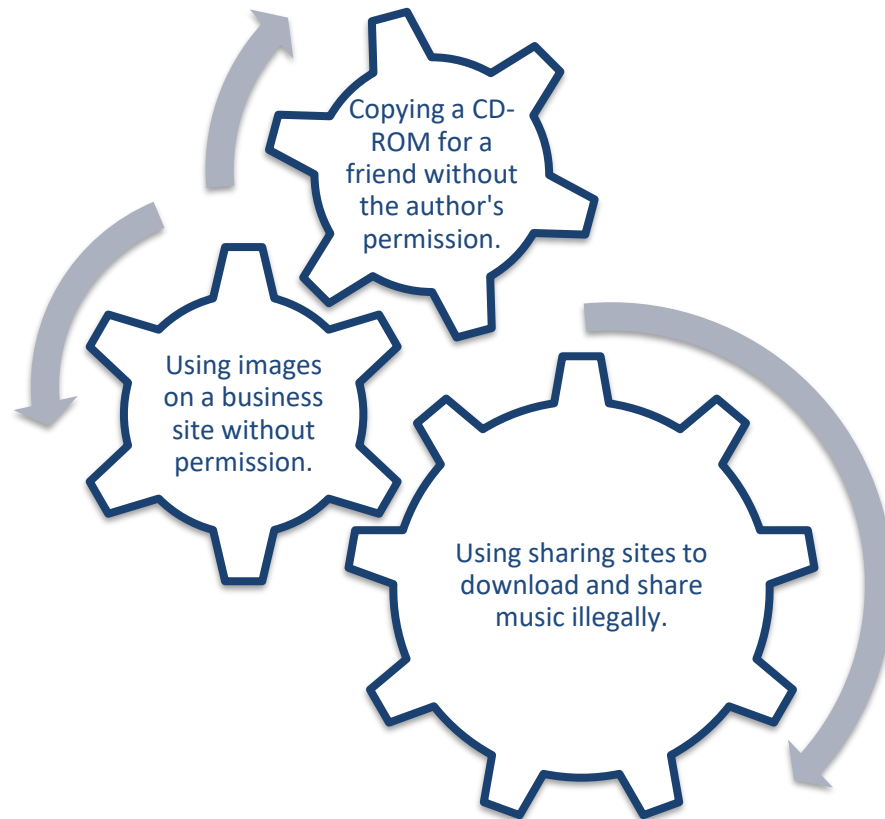
Add more stems to this revision map to note down what you learn in this chapter.



15.1 Copyright Misuse

Revise it

- As new technology has developed, new laws were required to deal with the new technology.
- The **Copyright Designs and Patents Act 1988** is used to make sure that **intellectual property** is protected. It makes sure that things such as text, music, images or software are not copied **without permission**.
- Here are examples of things that are **illegal** under this act:



*Copying a CD for a friend may seem harmless, but it means that the people who made the music or software do not get paid for their hard work. This is why this is illegal under the **Copyright, Designs and Patents Act**.*

Test it

51. Give the name of the law which protects *intellectual property*. (1 mark)
52. State **three** pieces of *digital content* that is covered by copyright misuse law. (3 marks)

16 Staying Safe Online

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Personal Data

Code of Conduct

Misuse of Images

Language

Revision Map

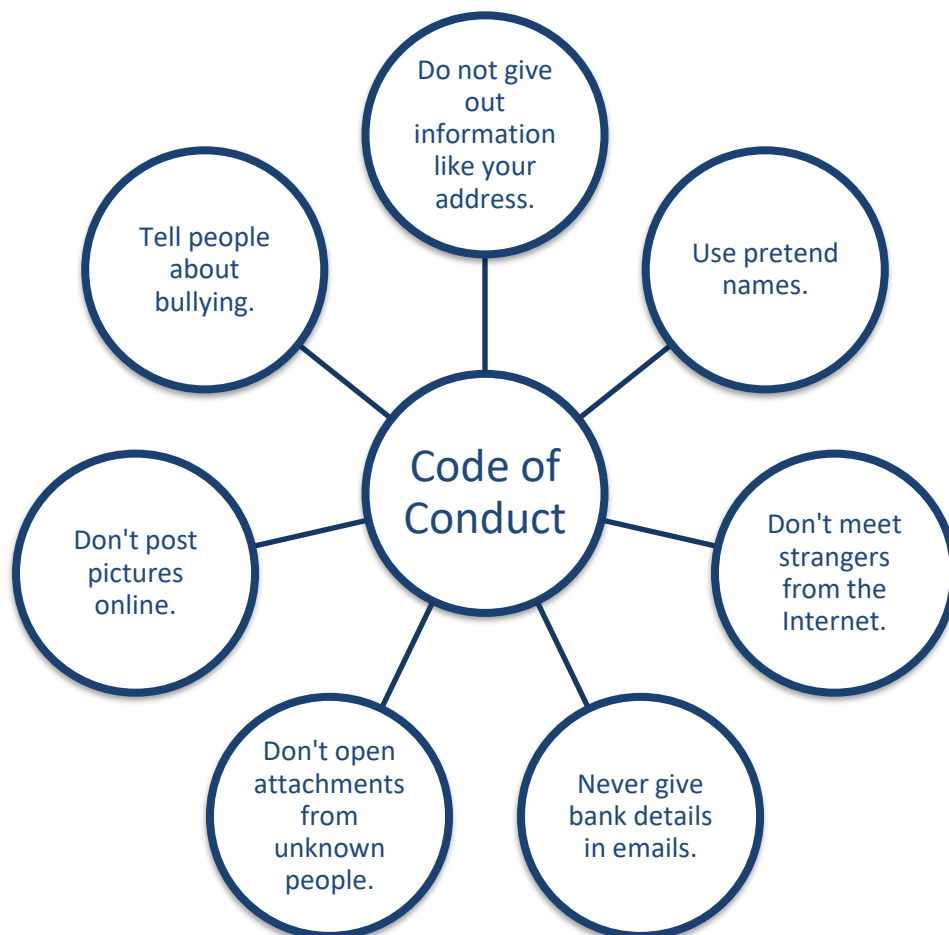
Add more stems to this revision map to note down what you learn in this chapter.



16.1 Codes of Conduct

Revise it

- There are several dangers society is facing as a result of the growth of the Internet.
- Some dangers are:
 - **Disclosure of personal data** – When online, you should not provide anyone with any personal information such as name or address because there is no guarantee they are who they say they are.
 - **Misuse of images** – You should be careful about posting images online. Images on school websites can be edited and uploaded to paedophilic, pornographic websites. Your image could be altered in an unkind way and lead to bullying.
 - **Inappropriate language** – When you go online, it is possible to see swear words, illegal racist material or material used for bullying. Web nanny or parental control software can be used to filter out inappropriate sites like these, which are unsuitable for children.
- A **code of conduct** can be followed in order to protect yourself when online and avoid inappropriate disclosure of personal information:



Test it

53. Name **three** dangers of Internet use. (3 marks)
54. Describe **one** function of Internet *parental control* software. (2 marks)

17 Data Protection Issues

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Backup

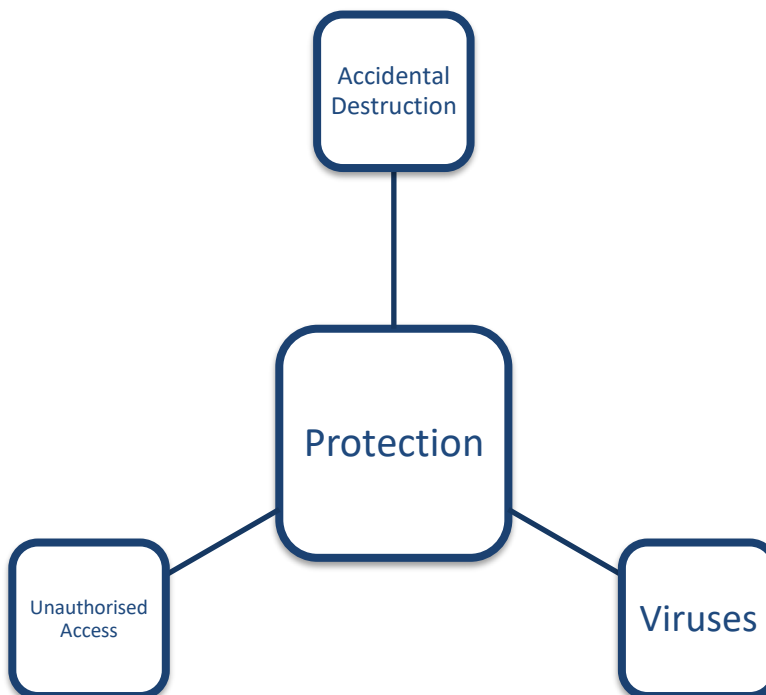
Viruses

Firewall

Biometric Locks

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



17.1 Methods of Protection

Revise it

- Data can be damaged in several ways and there needs to be suitable methods of **data protection**. Some ways in which data can be protected from different threats are listed below:

Accidental destruction of data

- Providing training to all users to reduce the risk of accidentally deleting files.
- Keep backup copies of everything. This means that if there is a natural disaster such as a fire, data will not be lost.
- All software should be tested for bugs before it is released.

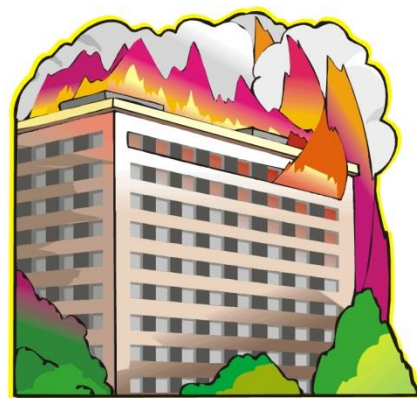
Deliberate damage by viruses and malicious activity

- Install a virus scanner on your computer so that any viruses are immediately placed in a safe area on the computer.
- Do not allow people to use flash memory like USB sticks on the computers – this can be a source of viruses.
- To prevent fired employees from deleting data to get revenge on their bosses, staff should not be made to work a notice period.

Stopping stored or transmitted data from unauthorised access

- Use a firewall to stop people from gaining unauthorised access to a computer system from a network. This stops them seeing things that they are not meant to see.
- Use password protection on all computers to stop other people from using the computers if they do not know the password.
- Use physical security like biometric locks to stop people from gaining access to rooms which contain sensitive data.

Backups are needed so that data is not lost if a disaster like a **fire** strikes. It is important that this backup is kept in a **different location** – a backup is useless if it is also burned away in the fire.



Test it

- Name **one** piece of software that can be used to prevent *virus infection*. (1 mark)
- Explain **three** precautions against *viruses* and *malicious activity*. (6 marks)

18 Health Issues

Key Word Finder

Find the following key words in this chapter and write your own definition of each in the boxes.

Ergonomic

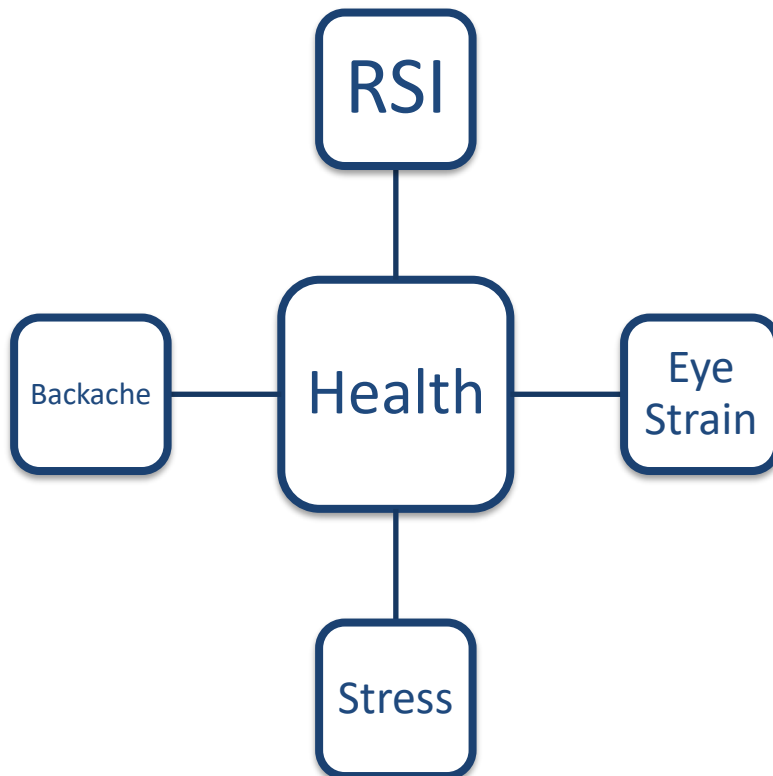
Anti-Glare Filter

Training

Wrist Rest

Revision Map

Add more stems to this revision map to note down what you learn in this chapter.



18.1 Problems and Prevention

Revise it

- There are a number of health problems that are associated with increased computer use. Here are some of them along with methods to prevent these health issues occurring:

RSI (Repetitive Strain Injury)	Cause: Repeatedly typing using a keyboard or navigating using a mouse.
	Prevention: Take regular breaks to do different things, use an ergonomic (designed to fit the human body) keyboard or mouse, use a wrist rest.
Eye Strain	Cause: Having too much glare on the screen or poor lighting conditions.
	Prevention: Attach anti-glare filters to all monitors to reduce glare, fit blinds to reduce glare, use good lighting (flourescent tubes).
Backache	Cause: Not sitting with a proper posture in your chair or working with not enough space.
	Prevention: Use a chair which can be adjusted properly, use a foot rest, adopt the correct posture.
Stress	Cause: Worrying about keeping up with technology, using poorly designed software, technical problems.
	Prevention: Train all staff to use the software correctly, test all software to reduce technical problems, make sure software is easy to use, take regular breaks.



Test it

57. Give **two** input devices that may alleviate the symptoms of *RSI*. (2 marks)
58. Explain what is meant by *RSI* and give **two** possible causes of *RSI*. (5 marks)