

4

Software

- 1 Tick (✓) the appropriate column, in the following table, to indicate whether the named software is an example of system software or application software.

Software	System (✓)	Application (✓)
Photo editing software		
Graphics manipulation software		
Compiler		
Spreadsheet software		
Printer driver		
QR code reader		
Anti-virus software		
Screensaver		

- 2 a Give **three** of the general features of system software.

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- b Give **three** of the general features of application software.

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c Give **three** examples of utility programs.

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3 Use the following list of words and phrases to complete the paragraph below.

Each word or phrase can be used once, more than once or not at all.

» anti-virus	» disk defragmenter	» infected	» security system
» background	» file compression	» locked	» smaller
» blocks	» file management	» quarantine	» tracks
» bootstrap	» head movements	» screensavers	» user
» contiguous	» heuristic checking	» sectors	» utility

Running software in the on a computer will constantly check for virus attacks. Many utilities check software for certain behaviour which would indicate a possible virus; this is known as Any possible files or programs which are infected are put into until deleted by the or automatically deleted.

As a hard disk drive (HDD) becomes full, used for data and files will become scattered over different and on the disk surface. A will rearrange the of data and files into sectors wherever possible, thus reducing the scattering of data. It also reduces the number of HDD

Many computers use which automatically launch when a computer has been inactive for a period of time. They form part of the, so that a user is automatically logged out after a certain period of time and the will indicate that the computer is now

4 a Write down **five** of the functions of a typical operating system.

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b The interface between a computer and a user is either a command line interface (CLI) or graphical user interface (GUI).

i Explain the terms CLI and GUI.

CLI:

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GUI:

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ii In the table below, six statements about interfaces are given. Tick (✓) the appropriate box to indicate whether each statement refers to a CLI or GUI interface.

Statement	CLI (✓)	GUI (✓)
The user is in direct communication with the computer		
The user is limited to the icons shown on the screen		
The user needs to learn a number of commands to carry out any operation		
Commands need to be typed in using the correct format and spelling		
There is no need for the user to learn any commands to use the interface		
The interface needs a complex operating system, such as <i>Windows</i> , to operate, which uses considerable amounts of memory		

5 Explain the function of each of the following in an operating system.

a Multitasking management

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b Management of user accounts

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c Security management

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6 a i Explain what is meant by an interrupt.

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ii Give **three** examples of what can cause an interrupt.

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b i Explain what is meant by a buffer.

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ii Explain why buffers are needed.

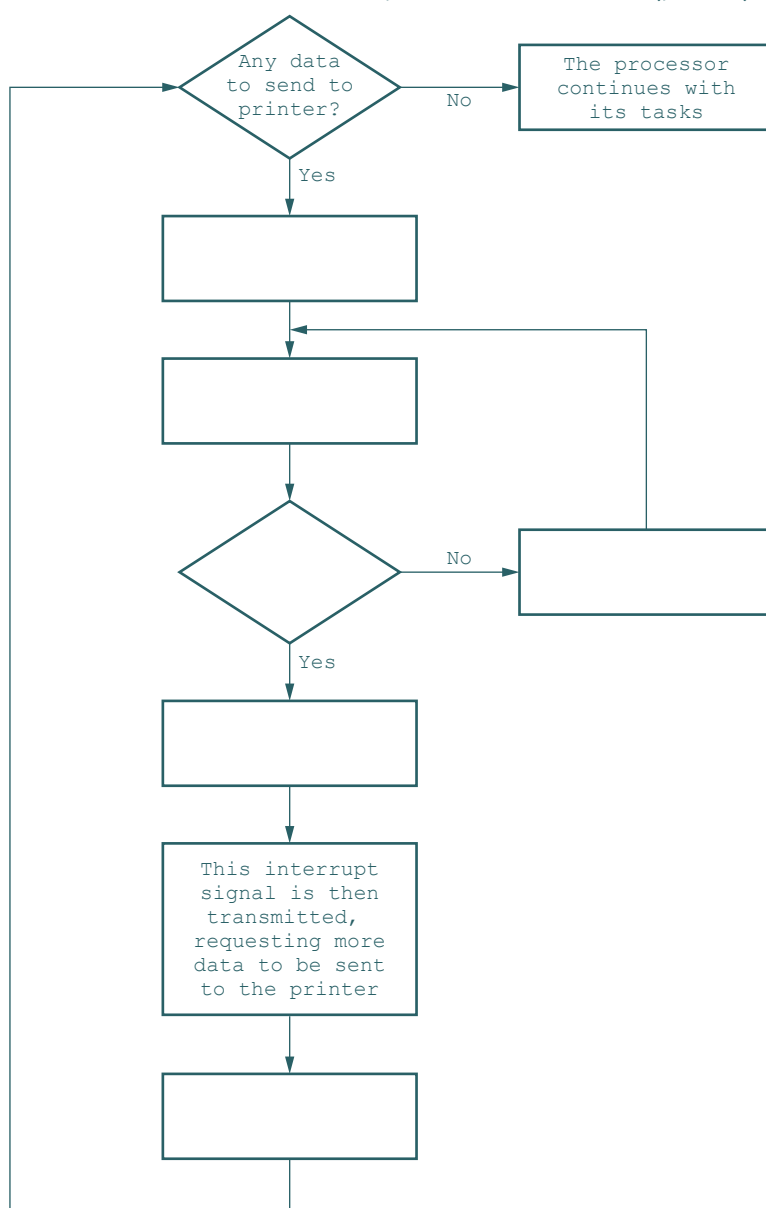
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- c The flowchart shows the use of interrupts and buffers when printing out a document. Some of the boxes in the flowchart are blank. Use each of the following statements to complete the flowchart. In each case, only write the number of the correct statement in the appropriate box.
- 1 Meanwhile, the processor is able to carry out other tasks while the (printer) buffer is being emptied.
 - 2 Has all the data been sent to the printer?
 - 3 The current task is suspended while the interrupt is serviced.
 - 4 The contents of the (printer) buffer are emptied to the printer and the data from the document is printed.
 - 5 When all the data has been printed, the (printer) buffer becomes empty; an interrupt signal is then sent to the processor requesting its attention.
 - 6 Data from the document to be printed is sent to the (printer) buffer from the computer memory.



- 7 Memory management, security management and hardware management are three functions of an operating system. The following table shows eight statements. By ticking (✓) the appropriate box, indicate which statements refer to memory, security or hardware management.

Statement	Management type		
	Memory (✓)	Security (✓)	Hardware (✓)
Keeps a track of all memory locations			
Ensures that anti-virus software is regularly updated			
Prevents competing applications using the same memory locations at the same time			
Ensures that the appropriate device driver takes data from memory/file and translates it into a format the device can understand			
Management of devices to control the use of queues and buffers holding data temporarily			
Receives and handles error messages and interrupts from devices connected to the computer			
Manages RAM and allows data to be moved between RAM and devices, such as HDD or SSD			
Maintains access rights for all users of a computer system			

- 8 a Explain the function of a device driver.

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- b Explain the use of descriptors in a device driver.

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- c** Explain the role of a descriptor when a new device is plugged into a USB port of a computer for the first time.

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- 9 a** State what is meant by firmware.

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- b** Give two examples of firmware used in computer devices.

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- 10 a** State **three** benefits of writing a program in a high-level programming language.

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- b** Explain why a programmer would choose to write a program in a low-level programming language.

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- c** Steve is writing a program to use his laptop to control the lighting system in his house. State, with reasons, which type of programming language would be most suitable for him to use.

Type of language:

Reasons:

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- 11** Use the following list of words and phrases to complete the paragraph below.

Each word or phrase can be used once, more than once or not at all.

assembler	machine code
compilers	programmer
high-level	programs
interpreters	translates
language	translators

Programs written in a low-level are translated into by an
 before they can be run on a computer. Programs written in a
 are also translated into before they can be run on a computer.
 There are two types of for languages and

- 12 a** Describe the purpose of a compiler.

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- b** Describe the purpose of an interpreter.

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- c** Describe the purpose of an assembler.

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13 A program is being developed in a high-level language. Both a compiler and an interpreter are being used for translation.

- a i** State when it is appropriate to use the compiler.

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- ii** State when it is appropriate to use the interpreter.

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- b** State **two** advantages of using an interpreter.

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- c** State **two** advantages of using a compiler.

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14 a Describe the purpose of an IDE.

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b Error diagnostics is a feature of an IDE. Identify **three** other features of an IDE.

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c State the purpose of error diagnostics in an IDE. Give an example of its use.

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