

5 A computer system has a mouse.

An interrupt is sent to the CPU every time a button on the mouse is clicked.

(a) Identify the name of this type of interrupt.

..... [1]

(b) The interrupt is placed in a queue.

Explain how the interrupt is serviced after it is placed in the queue.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [4]

(c) The mouse is connected using a universal serial bus (USB) connection.

(i) Explain how data is sent using the USB connection.

.....  
.....  
.....  
..... [2]

(ii) Give **two** benefits of using a USB connection for this purpose.

- 1 .....
- .....
- 2 .....
- .....
- [2]

(iii) Give **one** drawback of using a USB connection for this purpose.

.....  
..... [1]

4 A computer has an operating system.

One function of the operating system is handling interrupts.

(a) Describe the role of the operating system in handling interrupts.

[2]

(b) Give two other functions of an operating system.

1

2

[2]

(c) Hardware and software interrupts are two types of interrupt.

(i) Give one example of a hardware interrupt.

[1]

(ii) Give one example of a software interrupt.

[1]

7 A computer has an operating system.

(a) The operating system provides several functions.

(i) Tick (✓) one box to show which of these is not a function of the operating system.

A

managing files

B

providing an interface

C

handling interrupts

D

loading the bootstrap

[1]

(ii) Identify **one** other function of an operating system.

Describe the purpose of this function.

[2]

(b) Give the name of the set of instructions that are provided to the operating system to allow it to run.

[1]

1 Different types of software can be run on a computer.

(a) State what is meant by software.

[1]

(b) Utility software is one type of software that can be run on a computer.

Tick (✓) **one** box to show which software is an example of utility software.

- A

spreadsheet

☐
- B

anti-virus

☐
- C

web browser

☐
- D

database

☐

[1]

(c) Identify the type of software that manages inputs and outputs for the computer.

[1]

6 A computer needs firmware and system software to operate.

(a) State the purpose of firmware.

.....

..... [1]

(b) Give **one** example of firmware.

..... [1]

(c) Give **two** examples of system software.

1 .....

2 ..... [2]

4 A student uses both system software and application software on their computer.

(a) Give **one** example of system software.

..... [1]

(b) Give **two** examples of application software.

1 .....

2 ..... [2]

(c) Describe the difference between system software and application software.

.....

.....

.....

.....

..... [2]

9 A printer runs out of ink and needs a new ink cartridge. An interrupt is sent and a message is generated to notify the user that the ink cartridge is empty.

(a) Complete the paragraph about the use of an interrupt in this process.

Use the terms from the list.

Some of the terms in the list will **not** be used. You should only use a term once.

- binary
- clock
- computer
- data
- error
- fetch–decode–execute cycle
- hexadecimal
- higher
- interrupt queue
- interrupt service routine (ISR)
- lower
- printer
- priority level
- secondary storage
- sorting
- transmission

The ..... sends an interrupt to the  
..... . The interrupt is given a  
..... . The processor completes its current  
..... and checks the  
..... to see if there is an interrupt with  
..... priority than the current task. If there is, it stores  
the current task and fetches the interrupt. It then calls the  
..... , which is a sequence of instructions that  
handles the interrupt. The interrupt is handled, which generates a message to the user to  
notify them that the ink cartridge is empty.

[7]

(b) Handling interrupts is one function of an operating system.

Give **two** functions of an operating system that relate to memory.

- 1 .....
- 2 .....

[2]

3 A computer has an operating system (OS).

(a) Complete the table by writing each missing OS function name and description.

| Function name                     | Description                                             |
|-----------------------------------|---------------------------------------------------------|
| managing memory                   | <div><div></div><div></div><div></div><div></div></div> |
| <div><div></div><div></div></div> | allows application software to run on the computer      |
| managing peripherals              | <div><div></div><div></div><div></div><div></div></div> |

[3]

(b) The OS handles interrupts.

(i) State the purpose of an interrupt.

[1]

(ii) Identify **one** input device and **one** example of an interrupt that it can generate.

Input device

Interrupt

[1]

- (iii) A processor is currently executing a program. The processor receives an interrupt.

Explain how the processor manages the current program and the interrupt.

[5]

9 An interrupt is a type of signal that is used in a computer.

(a) State the name of the type of software that manages interrupts.

..... [1]

(b) Describe how interrupts are used when a key is pressed on a keyboard.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [5]

(c) Interrupts can be hardware based or software based.

A key press is one example of a hardware interrupt.

(i) Give **two** other examples of a hardware interrupt.

1 .....  
.....  
2 .....  
..... [2]

(ii) Give **two** examples of a software interrupt.

1 .....  
.....  
2 .....  
..... [2]



4 Complete the statements about different types of software.

Use the terms from the list.

Some of the terms in the list will **not** be used. You should only use a term once.

- application      assembly language      bootloader      central processing unit (CPU)
- firmware      hardware      operating      output      system      user

..... software provides the services that the computer requires; an example is utility software.

..... software is run on the operating system.

The ..... system is run on the firmware, which is run on the .....

[4]