CAMBRIDGE IGCSE (0478)

Module H: Software

Workbooklet · 7 parts · 141 marks

H8 is GCSE (OCR) only and not on 0478.

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	Total	**141**

MODULE H SOFTWARE · H1

System software vs application software

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 4.1.1

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. Do not give brand names of software. The total for this worksheet is **20 marks**.

1

Total: 5 marks

A small removals company has a laptop that it uses to run the business.

(a) Tick (✓) **one** box in each row to show whether each item of software on the laptop is system software or application software. **[5]**

Software	System software	Application software
Word processor		
Operating system		
Web browser		
Encryption software		
Photo-editing software		

2 **Total: 4 marks**

A technician writes these notes for the company's staff. Two of the statements are **incorrect**.

Number	Statement
1	System software provides the services that the computer requires.
2	Application software provides the services that the computer requires.
3	A spreadsheet is application software because it lets the user carry out a task.
4	The operating system is a type of utility software.

(a) Identify the **two** incorrect statements. For each one, give its number and rewrite the statement so that it is correct. **[4]**

Incorrect statement number .....

Incorrect statement number .....

3 **Total: 4 marks**

Two more programs on the company's laptop are described below.

(a) **Program A** lets staff work out the cost of a customer's move and print a quote for the customer. **[2]**
State whether Program A is system software or application software. Give a reason for your answer.

Type of software .....

Reason

(b) **Program B** reorganises the files on the laptop's hard disk so that the parts of each file are stored together. **[2]**
State whether Program B is system software or application software. Give a reason for your answer.

Type of software .....

Reason

4 Total: 3 marks

The office manager says: "Compression software is application software, because I choose when to use it to make files smaller before I email them."

(a) Explain why the office manager is **not** correct. **[2]**

(b) Give **one** example of utility software, other than compression software. **[1]**

5 Total: 4 marks

The company buys a new desktop computer for its office. Staff will use it to keep records of customers' bookings and to write letters to customers.

(a) Explain why the new computer needs **both** system software **and** application software. **[4]**

Total for this worksheet: 20 marks

MODULE H SOFTWARE · H2

What an operating system does

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 4.1.2

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. Do not give brand names of software. The total for this worksheet is **20 marks**.

1

Total: 2 marks

A car-hire company has a computer in its office. Staff use it to take bookings, print hire agreements and store customer records. The computer has an operating system.

(a) Describe the role of an operating system. **[2]**

2

Total: 3 marks

The company connects a new printer to the computer to print hire agreements.

(a) Explain why the operating system needs a driver for the new printer. **[2]**

(b) State **one** other task the operating system carries out when it manages the printer. **[1]**

3 **Total: 6 marks**

The table describes six things the operating system does on the office computer.

(a) Complete the table by writing the function of the operating system that is being carried out in each description. Choose from the list. Not every function in the list is used. **[6]**

handling interrupts	managing files	managing memory
managing multitasking	managing peripherals and drivers	managing user accounts
providing a platform for running applications	providing an interface	providing system security

Description	Function of the operating system
A manager creates an account for a new member of staff and removes the account of a member of staff who has left.	
A new barcode scanner is plugged in. The operating system installs the software it needs to communicate with the scanner.	
When the booking application is closed, the operating system frees the space in RAM that it was using so another application can use it.	
A clerk renames a customer's folder and moves it into a folder called "Finished hires".	
A signal is sent to the processor to show that a key has been pressed. The current task is paused briefly while the key press is dealt with.	
The processor's time is shared between the booking application and a web browser, so both appear to run at the same time.	

4 **Total: 4 marks**

The computer stores a file of customers' driving licence details. Only the company's managers should be able to open this file.

(a) Explain how the operating system can make sure that only the managers can open this file. **[3]**

(b) Apart from user accounts and passwords, state **one** other way the operating system can provide system security. **[1]**

5 **Total: 5 marks**

A clerk has three applications open at the same time: the booking application, a spreadsheet and a web browser.

(a) Describe how the operating system manages memory and manages multitasking so that the clerk can use all three applications. **[5]**

Total for this worksheet: 20 marks

MODULE H SOFTWARE · H3

Memory management and multitasking

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 4.1.2, 3.3.4

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**.

1

Total: 5 marks

(a) Tick (✓) **one** box in each row to show whether each statement about how an operating system manages memory and multitasking is true or false. **[5]**

Statement	True	False
The operating system allocates memory to an application when the application is opened		
Multitasking allows more than one application to be open and running at the same time		
The operating system lets two applications store their data in the same memory location at the same time		
When an application is closed, the memory it was using can be used by another application		
A computer with a single-core processor can only have one application open at a time		

2 **Total: 7 marks**

A hotel has a computer at its reception desk. The computer has a processor with **one** core. A receptionist opens a booking application, then an email application and a web browser.

(a) Describe how the operating system manages memory when the receptionist opens the booking application. **[3]**

(b) The receptionist reads an email while the booking application prints a guest's bill. Describe how the operating system manages multitasking so that both tasks appear to happen at the same time. **[4]**

3 **Total: 6 marks**

The computer has 8 GiB of RAM. The table shows how the RAM is being used.

Software	RAM in use
Operating system	2 GiB
Booking application	2.5 GiB
Email application	1 GiB
Web browser	1.5 GiB
Free (not allocated)	1 GiB

The receptionist now opens a video call application that needs 2 GiB of RAM. The operating system uses virtual memory.

(a) State where virtual memory is created. **[1]**

(b) Describe how virtual memory is used so that the video call application can run. **[3]**

(c) Explain why virtual memory is necessary in this computer. **[2]**

4 **Total: 2 marks**

At the end of the call, the receptionist closes the video call application.

(a) Describe what the operating system does with the memory that the video call application was using. **[2]**

Total for this worksheet: 20 marks

MODULE H SOFTWARE · H4

Peripheral management, drivers and the user interface

Original practice questions · 21 marks · ~25 minutes · Cambridge 0478 syllabus 4.1.2

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. Do not give brand names of software or hardware. The total for this worksheet is **21 marks**.

1

Total: 4 marks

A warehouse packs parcels for online orders. Each packing station has a computer with a touch screen, a barcode scanner and a label printer. Stock-control software runs on each computer.

(a) Tick (✓) **one** box in each row to show whether each statement is true or false. **[4]**

Statement	True	False
The barcode scanner is a peripheral.		
A device driver is part of the stock-control software.		
A new model of label printer can always use the device driver written for the old model.		
The operating system uses device drivers to communicate with the peripherals.		

2 **Total: 5 marks**

Managing peripherals and drivers is one function of the operating system.

(a) Describe what is meant by a device driver. **[2]**

(b) The warehouse replaces the label printer at one packing station with a different model of label printer. **[2]**
Explain why the computer at that packing station needs a new device driver.

(c) Give **one** reason why the warehouse should install an updated version of a device driver when one is released. **[1]**

3 **Total: 3 marks**

A packer scans the barcode on a parcel. The stock-control software records that the parcel has been packed.

(a) Describe how the operating system manages the barcode scanner when the barcode is scanned. **[3]**

4 Total: 4 marks

Providing an interface is another function of the operating system. Packers use the touch screen at each packing station.

(a) Describe the role of the operating system in providing an interface. **[2]**

(b) Give **two** examples of information the interface could display to a packer at a packing station. **[2]**

1 .....

2 .....

5 Total: 5 marks

A new label printer is connected to a packing station computer for the first time. A packer then chooses to print a label for a parcel.

(a) Describe how the operating system manages the new label printer, from when it is connected until the label is printed. **[5]**

Total for this worksheet: 21 marks

MODULE H SOFTWARE · H5

User management and file management

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 4.1.2

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. Do not give brand names of software. The total for this worksheet is **20 marks**.

1

Total: 4 marks

A hotel has one computer at its reception desk. It is used by the hotel manager and by several receptionists who work different shifts.

(a) Tick (✓) **one** box in each row to show whether each statement about the operating system on the computer is true or false. **[4]**

Statement	True	False
The operating system can allow more than one user account to be set up on the same computer.		
When a file is moved to a different folder, the file also stays in its original folder.		
Managing user accounts and providing system security are both functions of an operating system.		
Any user can change the access rights of another user's account.		

2

Total: 3 marks

One role of the operating system is managing user accounts.

(a) A new receptionist starts work at the hotel. Describe how the manager can use the operating system to set up the new receptionist's access to the computer. **[3]**

3 **Total: 4 marks**

The reception computer stores guest records, including each guest's name and contact details. Another role of the operating system is providing system security.

(a) Describe **two** ways the operating system can provide system security to protect the guest records. **[4]**

1

2

4 **Total: 5 marks**

Part of the folder structure on the reception computer is shown below.

```
Hotel
├── Bookings
│   ├── 2026
│   │   └── group-booking
│   └── 2027
├── Menus
└── Staff
    └── Rotas
```

(a) A group has changed its stay to next year. A receptionist needs the file **group-booking** to be in the **2027** folder and no longer in the **2026** folder. Identify the file management task the receptionist should use. **[1]**

(b) The manager makes the files in the **Menus** folder read-only for receptionists. State **one** thing a receptionist can do with these files and **one** thing a receptionist cannot do. **[2]**

Can

Cannot

(c) A receptionist saves a new file in the **2027** folder. Describe what the operating system does when the file is saved. **[2]**

5 **Total: 4 marks**

At the moment, all the receptionists log in to the reception computer with one shared account and one shared password.

(a) Explain why the manager should give each receptionist their own user account instead. **[4]**

Total for this worksheet: 20 marks

MODULE H SOFTWARE · H6

Interrupts and the interrupt service routine

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 4.1.4

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**.

1

Total: 5 marks

(a) Define the term **interrupt**. **[1]**

(b) Tick (✓) **one** box in each row to show whether each event generates a hardware interrupt or a software interrupt. **[4]**

Event	Hardware interrupt	Software interrupt
A program tries to divide a number by zero		
The mouse is moved		
Two processes try to access the same memory location		
A key is pressed on the keyboard		

2 **Total: 3 marks**

A receptionist at a hotel uses a computer to type guest details into a booking program. A second program on the same computer is calculating the average price paid for a room.

(a) The receptionist presses the key for the letter M. An interrupt is generated. State what the receptionist would see once this interrupt has been handled. **[1]**

(b) The second program tries to divide a total by zero. An interrupt is generated. State **one** likely result of this interrupt. **[1]**

(c) State the name of the code that is run to handle an interrupt. **[1]**

3 **Total: 4 marks**

(a) Tick (✓) **one** box in each row to show whether each statement about handling interrupts is true or false. **[4]**

Statement	True	False
The processor checks for interrupts after each fetch-decode-execute (FDE) cycle		
Every interrupt is handled straight away, whatever its priority		
When a task is paused to handle an interrupt, the values in its registers are saved before the interrupt is handled		
When the interrupt has been handled, the paused task starts again from its first instruction		

4 **Total: 2 marks**

A processor is running a task. An interrupt is generated that has a **lower** priority than the task.

(a) Describe what happens to the task **and** to the interrupt. **[2]**

5 **Total: 6 marks**

An architect's computer is creating a detailed 3D image of a new building. This will take several hours. While it is running, the architect moves the mouse. The interrupt this generates has a **higher** priority than the 3D image task.

(a) Describe how the interrupt is generated and handled, and how the 3D image task then carries on. **[6]**

Total for this worksheet: 20 marks

MODULE H SOFTWARE · H7

Firmware, the bootloader and how software layers run

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 4.1.3 (with 3.3.1)

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. Do not give brand names of software or hardware. The total for this worksheet is **20 marks**.

1

Total: 4 marks

A firm of architects uses desktop computers in its office. Staff use a drawing application on each computer to produce plans of buildings.
The diagram shows the layers that are needed to run the drawing application. Each layer is run on the layer directly below it.

(a) Complete the diagram by writing the name of the missing layer in each empty box. **[3]**

	top layer
Hardware	bottom layer

(b) State the name of the firmware that is run on the hardware when a computer is switched on and that loads the operating system. **[1]**

2

Total: 5 marks

The firm's IT technician writes some statements about the software on the office computers.

(a) Tick (✓) **one** box in each row to show whether each statement is true or false. **[5]**

Statement	True (✓)	False (✓)
The bootloader is a type of firmware.		
The drawing application is run on the operating system.		
The bootloader is run on the operating system.		
Firmware is lost when the computer is switched off.		
The operating system is run on the firmware.		

3 **Total: 3 marks**

On each office computer, the bootloader is stored in read only memory (ROM).

(a) Explain why the bootloader is stored in ROM and **not** in random access memory (RAM). **[3]**

4 **Total: 3 marks**

The technician finds that the bootloader on one computer has been corrupted. All the hardware in that computer is working correctly.

(a) Explain why staff cannot use the drawing application on this computer. **[3]**

5 **Total: 5 marks**

An architect switches on a working office computer and then opens the drawing application.

(a) Describe how the hardware, the firmware and the operating system are all needed for the drawing application to run on this computer. **[5]**

Total for this worksheet: 20 marks