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