T4

Software

CHAPTER ASSIGNMENT · 62 MARKS

Name _____ Class _____ No. _____ Date _____

Answer every question in the space given. Show your working. You may use the chapter page to help you.

Questions from *Cambridge IGCSE and O Level Computer Science*, 2nd edition, David Watson and Helen Williams (Hodder Education), for classroom use.

Activities from the chapter

4.1

(1) Tick ( ) the appropriate column in the following table to indicate whether the named software is system software or application software.

Software	System software	Application software
screensaver		
anti-virus software		
control and measurement software		
printer driver		
video editing software		
compiler		
QR code reader		
on-screen calculator		
operating system software		

(2) Mike is downloading a video from the internet to his laptop. The speed of data transfer from the internet is slower than the speed at which data is being sent to the media player.

(a) What could be used to stop the video constantly freezing while Mike is watching it on his laptop?

(b) While watching the video, Mike is meanwhile printing a 160-page document on his inkjet printer. Describe how interrupts could be used to allow him to watch his movie at the same time as the printing is being done. The printer memory can store up to 20 pages at a time.

(c) Describe what happens if the inkjet printer runs out of black ink during the printing process.

(3) Choose four features of an operating system and describe their function.

(4) What is meant by a **descriptor** in a device driver? What role does the descriptor play when a new memory stick, for example, is plugged into a USB port of a computer for the first time?

(5) **(a)** Describe what is meant by a **BIOS** and state its function. What is the task of a BIOS when a computer is first powered up?

(b) BIOS software and BIOS settings are different. Describe the different types of memory needs for both the software and its settings. In your explanation state why both types of memory are used.

(6) Seven descriptions are shown on the left and seven computer terms are shown on the right. Draw lines to connect each description to the correct computer term.

when a computer starts up, OS is loaded into RAM	firmware
software that communicates with the OS and translates data into a format that can be understood by an I/O device	printer driver
computer carrying out many different processes at the same time	bootstrap loader
program that provides low level control for devices including embedded systems	interrupt
program that supplies static or moving images on a monitor when a computer has been idle for a period of time	screensaver
signal from a device or software sent to a microprocessor to temporarily halt the process currently being carried out	buffer
memory area used to hold data temporarily	multitasking

4.2

(1) Tick ( ) the appropriate column in the following table to indicate whether the statement about the translator is True or False.

	True	False
An assembler translates a high-level language program.		
It is more difficult to write a program in a low-level language.		
Java is an assembly language.		
It is quicker to develop a program using a high-level language.		
You always need a compiler to run a compiled program.		
A program that is interpreted takes a longer time to run than a compiled program.		
Low-level languages are machine dependent.		

(2) **(a)** Suki is writing a program in a high-level language. Describe three features of an IDE that she would find helpful.

(b) Describe the difference between a compiler and an interpreter.

(c) Explain why a programmer would choose to write a program in assembly language.

Exam-style questions

1 There are five types of software on the left and four items of hardware on the right. Draw lines to connect each software item to the hardware item where the software will reside; each hardware item may be used once, more than once or not at all.

part of a program or OS currently in use	CMOS
the actual BIOS settings	flash memory
the actual BIOS software	hard disk drive (HDD)
operating system software	random access memory (RAM)
virus scanner software	

[5]

2 Which utility programs are being described below?

(a) Software that runs in the background and checks for malware; suspect programs are quarantined and deleted if necessary

(b) Software that rearranges data on a hard disk drive (HDD) to reduce the scattering of the data stored on the HDD

(c) Software that manages access control and user accounts and also protects network interfaces

(d) Program that supplies static or moving images on a monitor when the computer has been idle for a period of time

(e) Software that communicates with the operating system and translates data into a format understood by an input/output device [5]

3

(a) Describe the purpose of an **operating system**.

(b) What is meant by **virtual memory**?

(c) What is meant by **disk thrashing** and why does it occur?

(d) What is meant by **multitasking**?

(e) Describe what an **interrupt** is. [10]

4

(a) Explain the differences between a **Graphical User Interface (GUI)** and a **Command Line Interface (CLI)**. [3]

(b) Give **one** advantage and **one** disadvantage of using a GUI interface. [2]

(c) Give **one** advantage and **one** disadvantage of using a CLI interface. [2]

5 In this question you will be given a statement followed by four possible answers. Select which of the four answers you think is correct.

(a) What is meant by the term **buffer**?

A	part of the RAM which is used to store the operating system in use
B	unused areas on a hard disk drive
C	an area in memory that temporarily holds data
D	an example of firmware

(b) What is the function of a printer driver?

A	area of memory that holds data waiting to be printed out
B	software that communicates with the operating system and translates data into a format which can be printed out
C	an area in memory that temporarily holds data
D	an example of firmware used to interface with the printer

(c) Which of these options describes a task carried out by the operating system?

A	preventing unauthorised access to a computer system
B	handling the HTTPS requests from a website
C	allocating memory to competing applications running on a computer system
D	booting up the computer motherboard when the computer is powered up

(d) Which of these is the correct name for the operating system function that allows many programs to run simultaneously?

A	utility program
B	application package
C	embedded system
D	multitasking

(e) Which of these is the name of a type of interface that allows the user to type in commands on a keyboard which gives the computer instructions?

A	command line interface (CLI)
B	graphical user interface (GUI)
C	touchscreen interface
D	drop down menu interface

(f) Which of these descriptions is the main purpose of a GUI?

A	allows a user to directly carry out very complex tasks on a computer
B	the apps will run faster in a GUI environment
C	a GUI interface makes it much easier to use the computer
D	it is a type of app that allows a user to create drawings and images on the screen

(g) Which of the following will produce a signal which is sent to the CPU to suspend its current operation?

A	bootstrap
B	buffer
C	interrupt
D	quarantine

(h) On which one of the following memories are the BIOS **settings** stored?

A	ROM
B	RAM
C	EEPROM
D	CMOS

(i) Which one of the following statements is TRUE?

A	any device plugged into the USB port of a computer must have a unique serial number
B	the BIOS settings are stored in ROM so that they cannot be altered at any time by the user
C	interrupts from software always have a higher priority than an app currently being run on a computer
D	user accounts allow users to share resources, such as printers

(j) Which one of the following statements is FALSE? [10]

A	security management is part of a typical operating system
B	post-WIMP interfaces make use of the more modern optical mouse to select icons
C	logical errors include errors such as 'division by zero'
D	printers use interrupts when they need more data to continue a printing job

6

(a) Describe the differences between a **compiler** and an **interpreter**. [4]

(b) Give **one** advantage and **one** disadvantage of using a compiler. [2]

(c) Give **one** advantage and **one** disadvantage of using an interpreter. [2]

7 Describe the differences between a **compiler** and an **assembler**. [4]

8 An Integrated Development Environment contains these features: – **Auto-completion** – **Auto-correction** – **Prettyprinting**

(a) Explain what is meant by the term **IDE**. [2]

(b) Describe each of the features given. Include a suitable example with each description. [6]

(c) Identify **two** other features that should be included in an IDE. Give a reason why each feature is necessary. [4]

9 Pedro has written a program in a high-level language to do some calculations for a friend. His friend needs to use the program immediately on his laptop. Pedro does not know what software is available on the laptop. Also, his friend's internet connection is very slow. Explain which type of translator Pedro should use for his program. Give reasons why this is the best choice in this case. [6]

End of assignment · Check your answers against the chapter at gurujazzy.com/subjects/computer-science/o-level/software/