

State the minimum number of bits needed to represent the range of positive whole numbers from 0 to 16777215.  
(1)

The image shown was created using a bitmapped graphics package.



Describe how bitmapped graphics are stored. (2)

In the case of both a local variable and a global variable, explain what is meant by the term scope. (2)

Describe two characteristics of a 1-D array. (2)

Formula One cars make use of computing technology during races. Every Formula One car is equipped with an on-board computer which records information during a race.

(a) The on-board computer makes use of solid state storage. Other than robustness and cost, state two reasons why solid state storage is used. (2)

(e) The writer of a new Formula One book discovers Wiktorija's website. He copies the pictures and puts them into his new book, which he then sells. Name the law which this writer has broken. (1)

Colin recently started to work at a university. He was given funds to select a suite of computers for his lab. The IT department gave him two options to choose from.

	MegaPCII	PeartronIII
Clock Speed	3.4 GHz	3.6 GHz
Installed RAM	4 Gigabytes	8 Gigabytes
Maximum addressable RAM	32 Gigabytes	32 Gigabytes
Hard Disk	2 Terabytes	2 Terabytes
Cache Memory	8 Megabytes	8 Megabytes
Data bus	8 bit	64 bit

Both systems have cache memory. Explain how cache memory improves system performance. (2)

DeskCom create mathematics software for schools. A systems analyst from DeskCom has been sent to visit an interested school.

(e) DeskCom programmers will consider many factors when deciding which programming language to use to code the new software. Describe one factor they should consider when choosing a programming language. (1)

A horse race produced the set of results shown below. The names and times are held as two lists.

Name	Mister McGee	Kelly's Hero	Fred's Folly	The Tool Inns	Fizzy Lizzie
Time: Minutes	8.15	7.12	8.65	9.15	7.08

(i) Use pseudocode to design an algorithm that would store the time of the winning horse in the variable Fastest. (4)

(ii) The time for the Slowest horse is also to be identified. Other than the change of variable name, state one change that would have to be made to your algorithm for part (i) to achieve this. (1)

(iii) The number of horses who have a race time greater than 8 minutes is also to be identified. State the name of a standard algorithm that could achieve this. (1)

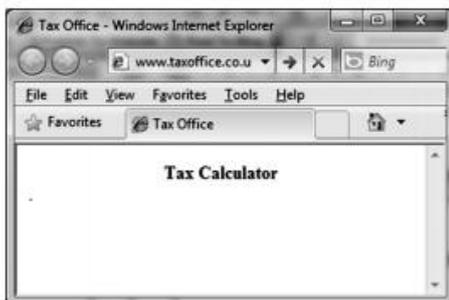
A local tax office has 300 computers connected together in a Local Area Network with access to the Internet.

A former employee attempts a Denial of Service (DOS) attack on the tax office.

(c) Name and describe one type of DOS attack that the former employee could have attempted. (2)

(d) Due to the DOS attack, the police are now investigating the network usage of the tax office. Explain how The Regulation of Investigatory Powers Act would help the police carry out this investigation. (2)

(e) The tax office has a website which offers advice and support to clients. One webpage contains the text "Tax Calculator". This text is centred and is in bold.



Write the HTML code required for this line of text. (3)