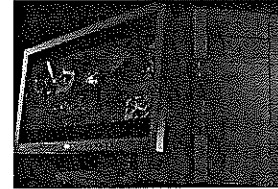


The Project Brief

Building a Tower PC to Edit Video

Your task is to build a PC that will be used to edit HD video and burn the completed files to blank blu-ray disks. Video editing requires a fairly powerful computer system so you will have to find components with a good specification. A large, high resolution monitor is recommended for video editing.



You have been given a budget of £1200 to purchase the following.

- a tower case
- all the necessary components to fit inside the case
- a Blu-ray writer
- a firewire component card to allow video files to be transferred from a digital video camera.
- a 23" LED, wide-screen monitor
- a keyboard and mouse
- surround sound speaker system and sound card
- an operating system
- video editing software



The Report

Your task is to search for all the required hardware and software and then write up a report on your choices.

Your report should include the following pages:

1. A cover page which includes a title, your name and your class.
2. An index page listing all the hardware and software you are going to purchase.
3. A page for each of your purchases.

Each page should include

- a heading
 - a picture,
 - the price,
 - a brief description and specification,
 - evidence that the purchase is compatible with other components
4. A page listing the price of each device and a total for your purchases.
 5. A bibliography listing the websites you used during the project.

Some Advice

To ensure that all your components are compatible it is important that you search for them in the correct order.

Start with the motherboard and case. Each component you then find should be checked to see if it can be fitted to the motherboard or if there is enough space for it in the case.

You may also have to accept that you will have to return to some components and change them. An example of this would be searching for a good sound card but then having to change your mind later because it is not compatible with the operating system you have chosen.

Watch your price. You are looking to purchase decent components, but you will very quickly go over the £1200 budget if you are not careful.

Ensure your report is complete. Missing components or information will lose you mark.

- | | | | | |
|---|---|-----------------|---|--------------------|
| 1 | A | CD-RW drive | I | Plotter |
| | B | Flash memory | J | RAM |
| | C | Hard disk drive | K | Smart mobile phone |
| | D | LAN | L | Software |
| | E | Laser printer | M | Speaker |
| | F | Modem | N | Touch screen |
| | G | Mouse | O | Tracker ball |
| | H | Netbook | P | WAN |

Choose your answers from the **list given above**.

Write the letter for your answer in the box or boxes given.

- 1 (a) Give **three** of the above that are input devices.

Answers

(3 marks)

- 1 (b) Give **two** of the above that are output devices.

Answers

(2 marks)

- 1 (c) Give **two** of the above that are backing storage devices.

Answers

(2 marks)

- 1 (d) Give **two** of the above that are mobile digital devices.

Answers

(2 marks)

- 1 (e) Give **one** of the above that is a volatile type of memory.

Answer

(1 mark)

- 1 (f) Give **one** of the above that describes a communications network such as the Internet.

Answer

(1 mark)

1 (c) Which **one** of the following is **not** a storage medium?

- A CD-ROM
- B DVD-RAM
- C Graphics tablet
- D USB memory stick

Answer

(1 mark)

1 (d) Which **one** of the following would **not** be a common use of microprocessor technology in a car?

- A Booking the car in for a service
- B CD player
- C Radio
- D Sat Nav

Answer

(1 mark)

3 A photographer uses a program on his computer to access an image file stored on a magnetic hard disk drive.

a) (i) Give **two** features of a magnetic hard drive that make it suitable for this purpose.

1:
.....

2:
.....

(2 marks)

The **operating system** assigns memory to the image file.

(ii) Describe the function of memory.

.....
.....
.....
.....
.....
.....
.....

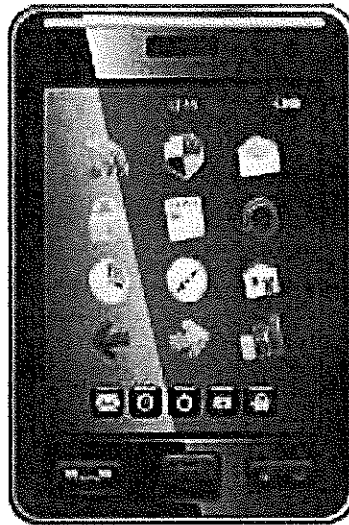
(2 marks)

b) The photographer downloads images from a website. The images are compressed. Give **one** reason why images are compressed.

.....

 (1 mark)

2 This is an example of a popular smart phone.



2 (a) For each feature of this phone listed in the table below, show whether it is an input method, an output method or both. Tick one box in each row.

	Feature	Input	Output	Both
2 (a) (i)	Vibration alert			
2 (a) (ii)	Touch screen			
2 (a) (iii)	Microphone			
2 (a) (iv)	Speaker			

(4 marks)

2 (b) Give three developments in hardware that have made smart phones like the one above possible in the last 10 years.

.....

(3 marks)

7 (a) The table below contains statements about the functions of the CPU.

Tick **one** box in each row to show whether the statement is true or false.

	TRUE	FALSE
It performs arithmetic operations on data.		
It fetches and executes instructions		
Input and output devices are plugged into it		
It moves data to and from memory locations.		

[4]

(b) Some CPUs have cache memory.

(i) Describe what is meant by cache memory.

.....

.....

.....

.....

(ii) Explain why cache memory is needed.

.....

.....

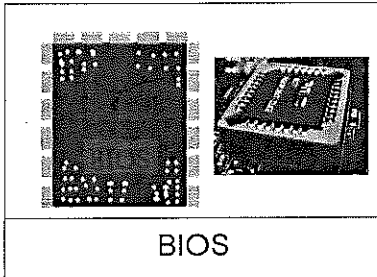
.....

.....

[4]

Inside your computer

Watch the video "Inside your computer" and fill in the information about the computer components.

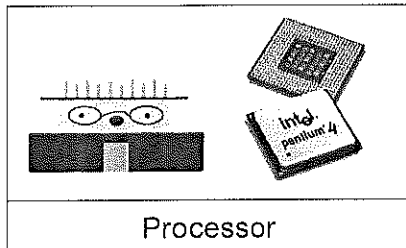


BIOS means

- a. Basic Input Output system
- b. Bring In Our Services
- c. Brilliant Integrated Operating Service

The BIOS

- a. Decides how important data coming into the computer is and sends it to where it needs to go.
- b. Stops data going into the computer.
- c. Sends data to the memory and does calculations.

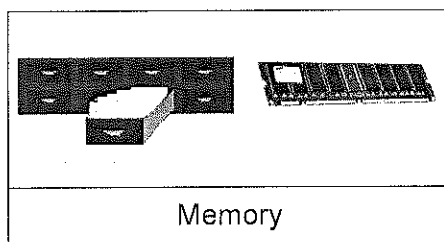


The central processing unit (CPU):

- a. Acts as the arms of the computer.
- b. Acts as the eyes of the computer.
- c. Acts as the brains of the computer.

The job of the CPU is to:

- a. Store instructions.
- b. Fetch (get) instructions and execute (do) them.
- c. Talk to the screen and speakers.



The memory:

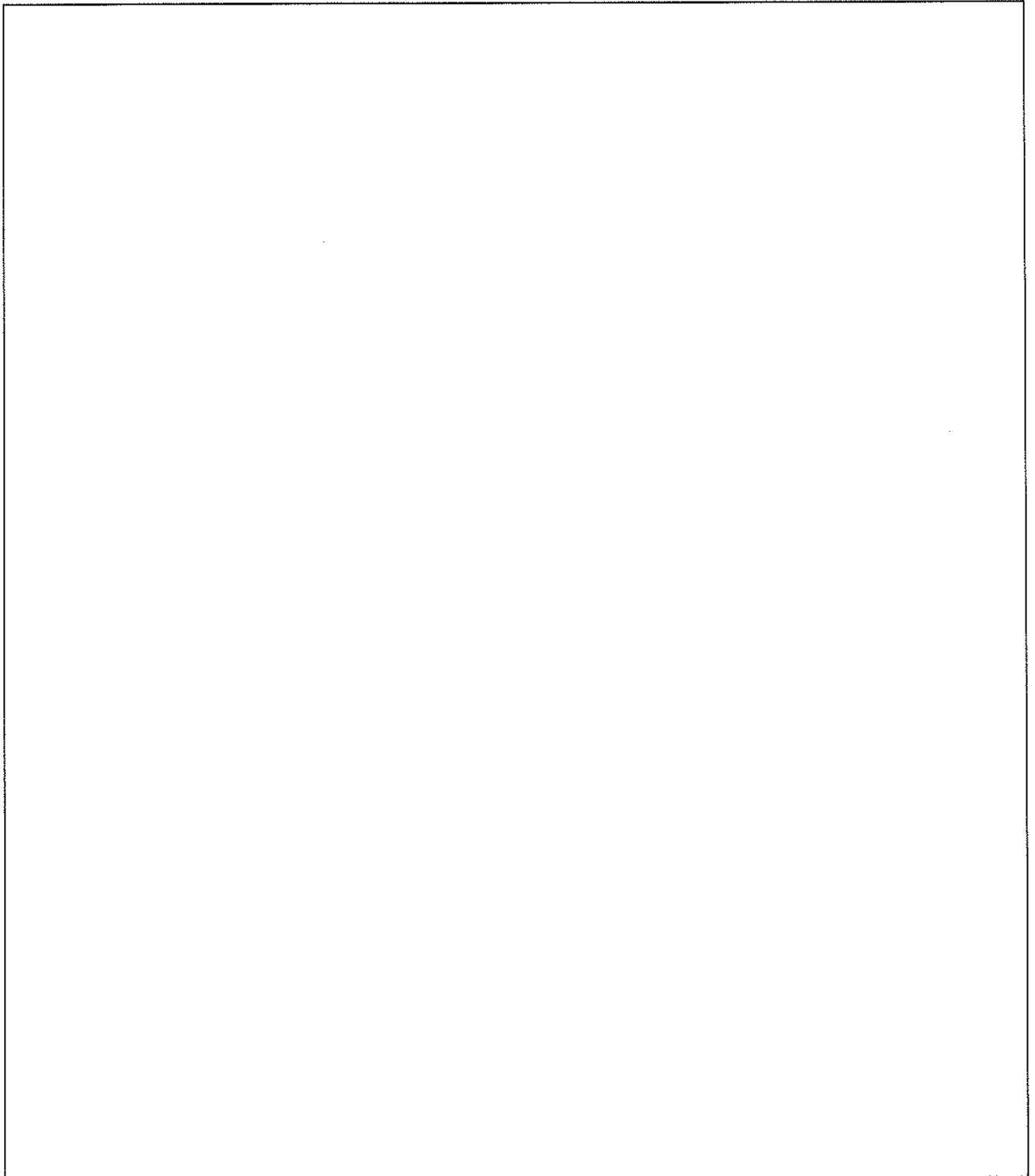
- a. Stores instructions and data for the CPU.
- b. Runs instructions.
- c. Shows information to users.

Task

Play a computer game for 30 minutes. Your task is to think about the code that may have been used to create a part of that game. Can you explain the box below where the following programming techniques may have been used?

Words: Variable, Selection, Sequence, Iteration

Bonus Word: Sub routine

A large, empty rectangular box with a thin black border, intended for the student to write their explanation of programming techniques used in a game.

Binary to Denary Conversion

To convert binary into decimal is very simple and can be done as shown below:

Say we want to convert the 8 bit value **1001101** into a denary value; we can use a formula like that below:

128	64	32	16	8	4	2	1
1	0	0	1	1	1	0	1

As you can see, we have placed the numbers 1, 2, 4, 8, 16, 32, 64, 128 (powers of two) in reverse numerical order, and then written the binary value below.

To convert, you simply take a value from the top row wherever there is a 1 below, and then add the values together.

For instance, in our example we would have **128 + 16 + 8 + 4 + 1 = 157**.

Now convert the following binary numbers to denary.

10101001 =	
00110010 =	
00111000 =	
11101110 =	
11100001 =	
00101101 =	
00011000 =	
11010110 =	
01110010 =	
10000011 =	
00010111 =	
11110100 =	
01000010 =	
11100110 =	
01011001 =	
01111101 =	

Denary to Binary Conversion

To convert decimal to binary is also very simple, you simply divide the decimal value by 2 and then write down the remainder, repeat this process until you cannot divide by 2 anymore, for example let's take the decimal value 157:

- 157 ÷ 2 = 78 with a remainder of 1
- 78 ÷ 2 = 39 with a remainder of 0
- 39 ÷ 2 = 19 with a remainder of 1
- 19 ÷ 2 = 9 with a remainder of 1
- 9 ÷ 2 = 4 with a remainder of 1
- 4 ÷ 2 = 2 with a remainder of 0
- 2 ÷ 2 = 1 with a remainder of 0
- 1 ÷ 2 = 0 with a remainder of 1 <--- to convert write this remainder first.

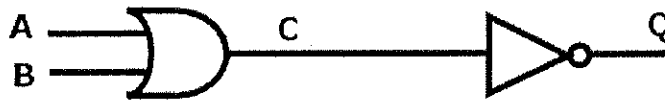
Next write down the value of the remainders from bottom to top (in other words write down the bottom remainder first and work your way up the list) which gives:

10011101 = 157

Now convert the following denary numbers to binary:

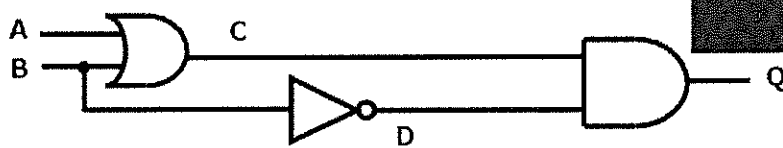
250	
125	
64	
17	
9	
134	
88	
32	
12	
180	
3	
77	
19	
222	

Try these circuits:
Circuit 1



Input A	Input B	$C = A + B$	$Q = \overline{A+B}$
0	0		
0	1		
1	0		
1	1		

Circuit 3



Input A	Input B	$C = A + B$	$D = \overline{B}$	$Q = (A+B) \cdot \overline{B}$
0	0			
0	1			
1	0			
1	1			