The background of the entire page is a vibrant green color with a complex, glowing circuit board pattern. The lines and nodes of the circuit are in various shades of green, creating a sense of depth and technology.

# Introduction to Computers

## Revision Booklet

### What have we learnt?

L1: The role of the main components within a computer

L2: Input, output and storage devices

L3: The Colossus and software

L4: The purpose of the CPU and the difference between memory & storage

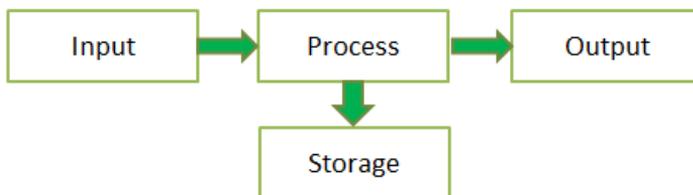
L5: Binary and denary

# Lesson 1

Objective: To understand the role of the main components within a computer.

What did we learn?

That a computer is a machine whose job it is to store, process and present data. All computers do the same tasks:



We also looked at the main components inside a computer. Can you describe what they each do?

Power Supply 	Hard Disk Drive 	Computer Case 	RAM 
CPU 	Fan 	Motherboard 	Optical Drive 

## Lesson 2

Objective: To be able to identify and describe input, output and storage devices.

What did we learn?

An input device is any piece of hardware which is used to enter data or content into a computer system. Examples include: keyboard, mouse, microphone, webcam, graphics tablet, touch screen, scanner, biometric devices and digital camera.

An output device is a piece of hardware that outputs something from the computer to you. Examples include: monitor, printer, projector, speakers and headphones.

A storage device is a piece of hardware that allows you to save content. Examples include: hard disk drive, network storage (like student common), USB memory stick, optical discs (CDs, DVDs and Blu-Ray) and SD cards.

## Lesson 3

Objective: To learn about the Colossus, to understand that software provides instructions to the computer and to know the differences between system and application software

What did we learn?

### The Colossus: Key Points

- The first electronic digital computer created in 1944 at Bletchley Park
- The main role of the Colossus was to help break codes during World War 2
- One Colossus machine would have 1500 valves, the role of the valves were to process the codes
- The main problems with valves were their size (they were big) and how many were needed
- Modern day computer use transistors instead of valves
- The Colossus needed to be rewired every time they wanted it to do a different task, which could take weeks
- The Colossus didn't use software, the secret messages to be decoded were given on punched paper tape using binary—a hole meant 0 and no hole meant 1

## Lesson 3

There are two types of software

- Application software
- System software

Application software is software that you use to complete tasks on your computer, such as access the internet and creating and editing documents.

Examples include Internet Explorer, Microsoft Word and Scratch.

System software is a set of programs that work together to allow the computer and applications software to work.

Examples include the operating system e.g. windows, utility programs e.g. anti-virus software and hardware drivers.

# Lesson 4

Objective: Be able to identify the purpose of the CPU and to explain the difference between memory and storage

What did we learn?

The CPU: Key Points

- CPU stands for Central Processing Unit
- It processes data and instructions
- It is covered by a heat sink and fan to control the temperature so it doesn't overheat
- It uses buses to fetch its next instruction from the RAM
- The CPU speed is measured in Gigahertz
- A 4 GHz CPU will process 4 billion instructions per second



# Lesson 4

## Memory & Storage: Key Points

- RAM: Memory (short term)— Instructions are loaded here from the hard disk so the CPU can process quickly, volatile memory—when PC is turned off the RAM is cleared.
- Hard Disk Drive (HDD): Storage: good for long term storage e.g. software, your documents. Uses magnetic storage.
- Solid State Drive (SSD): Storage—smaller than magnetic hard discs and can't store as much, used in laptops and tablets.
- USB Memory: Storage—also known as flash memory, portable.
- Optical Storage: Storage—CDs, DVDs, easily damaged.

So what is the difference between memory and storage?

Memory is volatile—temporary, once the PC is turned off the memory is cleared.

Storage is non-volatile—long term, stays there until you delete it.

The CPU loads the instructions (e.g. software or work) from the hard disc and runs it in the RAM, this is much quicker than loading it from the storage. If you don't press save then what you have done will be lost.

# Lesson 5

Objective: To understand how the binary number system works and be able to convert denary numbers into binary and binary numbers into denary.

What did we learn?

Computers store lots of different types of information:

- Numbers = stored in binary code; Text = stored in ASCII code; mages/video/animation = stored as pixels; Sound = stored as binary, denary or hex

ALL types of information stored inside a computer are stored in the same simple format: a sequence of 0's and 1's

We use denary numbers every day, also known as decimal numbers or base 10.

8 bit binary numbers, also known as 1 byte, are base 2 numbers, they have two values, either 1 or 0.

The lowest number you can make is 0 and the highest is 256

Binary Code							
128	64	32	16	8	4	2	1

Example: The number 36 written in binary is: 00100100

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