Year 6 Autumn 2 Computing – Big Data 1

Big Question

How are books borrowed from a library?

Key Vocabulary for the unit:

Barcode: A machine-readable code of lines and numbers, printed on an item and scanned to identify the item and information about it.

Boolean: A form of data, which consists of (true) Is and (false) Os values.

Brand: The mark or logo that identifies the object as belonging to a particular establishment or person.

Contactless: Devices or codes that can be read wirelessly or without the need to touch surface-to-surface, object-to-object.

Data Privacy: The right to keep information private and away from those you do not wish to have access.

Encrypt: To secure information by converting it into a code made up of letters, numbers and symbols which cannot be understood by those that do not have access.

Infrared waves: The red section of the electromagnetic spectrum, which is invisible to the eye but can transmit small amounts of data.

NFC: Near Field Communication. Enables data transmission between 2 devices up to 4cm away. NFC is often used for contactless payments from devices such as smart watches.

Radio waves: Invisible electromagnetic waves that can transmit information via an antenna, which converts the electrical signal it receives into another format, for example, a sound wave.

RFID: Radio Frequency Identification is a device that uses radio signals to check where something or someone is.

Signal: A voltage, current or electromagnetic wave that is either sent or obtained..

Systems ar data analyst: A person who manages, sorts, analyses and models data to identify key trends and solve problems within a system.

Transmission: When something is passed or sent to another place..

Powerful knowledge/skills for this unit:

♦ To know that data contained within barcodes and QR codes can be used by computers.

♦ To know that infrared waves are a way of transmitting data.

♦ To know that Radio Frequency Identification (RFID) is a more private way of transmitting data.

♦ To know that data is often encrypted so that even if it is stolen it is not useful to the thief.

What I should already know from Year 5:

♦ To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.

♦ To know what numbers using binary code look like and be able to identify how messages can be sent in this format.

♦ To understand that RAM is Random Access Memory and acts as the computer's working memory.

♦ To know what simple operations can be used to calculate bit patterns.

Useful diagrams for the unit:

Infrared light can be used to:
> Transmit small amounts of data, such as a remote control beaming the instruction to turn the TV on and off or change channel.
> Provide warmth from electrical heaters.
> Heat up and cook food.
> Detect heat through thermal imaging cameras.

How do barcodes help libraries track book borrowing?

1. Choose a book to borrow from the library and find the barcode.

2. Take it to the self-scan to check the book out of the library.

3. The system will warn the librarian that your book is almost due back.

4. Return and scan the book to check it back in to the library.