Over Hall Community School	Year: 6	Strand: Computing— Binary

What should I already know?

- Introducing block coding · Objects and actions · Events (Click event, sound output) · Executing a program · Design view: Planning .
- Algorithms · Logical decision making · Sequencing instructions · Following instructions
- Coding a 'turtle' · Creating programs using sequencing and repeat · Visual use of the Logo programming language. · Program logic and structure
- Algorithms · Collision detection · Timers · Object types · Buttons · Debugging
- Logical decision processing · Forward planning to achieve a solution
- Flowcharts · Timers · Repeat · Code, test, debug process
- Logical decision processing · Modelling selection on a binary model
- Code, test, debug process · IF statements · Repeat Until and IF/ ELSE Statements · Number Variables
- Text-based coding · Utilize understanding of coding structures
- Efficient Coding · Simulating a Physical System · Decomposition and Abstraction · Friction and Functions · Introducing Strings · Text Variables and Concatenation
- Complex programs · Using Functions · Flowcharts and Control Simulations · User Input .
- Use of 2Dos, saving, opening and editing work , sharing work, copying and pasting, mouse, keyboard and device skills..

What will I know by the end of the unit?

What is Binary?

- You will explain how all data in a computer is saved in the computer memory in a binary format. You will explain that binary uses only the integers 0 and 1. You will relate 0 to an 'off' switch and 1 to and 'on' switch.

How do I counting in Binary?

- You will count up from 0 in binary using visual aids if needed. You will relate bits to computer storage.

How do I converting from Decimal to Binary?

- You will convert numbers to binary using the division by two method. You will check their own answers using the converter tool

How do I examine how whole numbers are used as the basis for representing all types of data in digital systems?

- You will make use of a variable set to 0 or 1 to control game states.

Key Vocabulary

- **Base 2** A number system in which there are two separate integers that can be used to make all numbers. This is also called the binary system.
- **Words used to describe numbers of bits and the computer memory space used:** Nibble – 4 bits Byte – 8 bits. Kilobyte (KB) – 1024 bytes Megabyte (MB) – 1024 KB Gigabyte (GB) – 1024 MB Terabyte (TB) – 1024 GB
- **Bit** A single 0 or 1 is called a bit. This word comes from 'Binary Digit'.
- **Digit** A single integer used to show a number.
- **Integer** Any whole number. This includes negative and positive numbers but not fractions or decimals.
- **Switch** An act of changing to or adopting one thing in place of another
- **Base 10** A number system in which there are ten separate integers that can be used to make all numbers. This is also called the decimal and the denary system.
- **Transistor** A transistor is a tiny switch that is activated by the electronic signals it receives.
- **Machine code** The code that signals to a computer which transistors should be on or off. Machine code is written in binary.
- **Megabyte** (MB) 1024 KB.
- **Nibble** 4 bits.
- **Switch** A component that can be one of two states at any time: on or off.
- **Terabyte** (TB) 1024 GB
- **Transistor** A tiny switch that is activated by the electronic signals it receives.
- **Variable** A variable is used in programming to keep track of things that can change while a program is running. A variable must have a name. The value of the variable is the information to store.

Key Questions

- **How does binary relate to the programs that you use or create?**

In a computer, everything is translated into binary stored by on and off switches that pass electronic signals that the computer interprets. It can then pass the correct signals to the components of the computer such as the sound card to make the requested sound. Or graphics card to make images appear on the screen.

- **How does binary relate to computer memory?**

A single 0 or 1 is called a bit. The word comes from Binary Digit. The bigger the program, the more bits are used so more memory space is taken up. For example, 1 byte is 8 bits, 1 megabyte (Mb) or 8,388,608 bits, 1 gigabyte (GB) is 8,589,934,592 bits!

- **How would you write the numbers 0 to 10 in binary?**

0, 1, 10, 11, 100,101,110,111,1000, 1001, 1010

Purple Mash Resources

- 2Dos, 2Connect, 2Question, Free Code Gorilla