High Tunstall College of Science Curriculum Intent

Topic:	Principles of Computer Science Topic 2: Data ***Data representation***	Year:	10	Half Term:	2

	Progress		
Key Ideas	**R**	**A**	**G**
I can convert between signed denary numbers and two's complement binary numbers			
I can determine the range of values that can be represented in two's complement by a binary number of a given length			
I can apply logical left and right shifts to binary integers			
I can use logical binary shifts to multiply and divide unsigned binary integers by powers of 2			
I can explain why a number may be less precise after a binary shift right has been applied			
I can apply arithmetic left and right shifts to signed binary numbers			
I can describe how an arithmetic right shift differs from a logical right shift			
I can define what is meant by the term 'hexadecimal'			
I can explain why hexadecimal notation is used			
I can convert between hexadecimal and binary			
I can define what is meant by the term 'character set'			
I can describe how characters are represented in 7-bit ASCII			
I can derive the ASCII code for one character when given the code for another			
I can outline the shortcomings of ASCII and understand how encoding systems that use more bits overcome them			

Lesson	Learning Focus	Assessment	Key words
1	convert between signed denary numbers and two's complement binary numbers determine the range of values that can be represented in two's complement by a binary number of a given length	Evidence in Teams End of topic assessment	Addition, Binary, Convert, Denary, Most Significant Bit (MSB), Two's complement, Value
2	apply logical left and right shifts to binary integers use logical binary shifts to multiply and divide unsigned binary integers by powers of 2 explain why a number may be less precise after a binary shift right has been applied	Evidence in Teams End of topic assessment	Arithmetic shift, Binary, Division, Integer, Least Significant Bit (LSB), Left & Right, Logical shift, Most Significant Bit (MSB), Multiplication, Power of 2, Shifting
3	apply arithmetic left and right shifts to signed binary numbers describe how an arithmetic right shift differs from a logical right shift	Evidence in Teams End of topic assessment	Bitwise operations, Division, Least Significant Bit (LSB), Most Overflow, Significant Bit (MSB), Multiplication, Shift,
4	define what is meant by the term 'hexadecimal' explain why hexadecimal notation is used convert between hexadecimal and binary	Evidence in Teams End of topic assessment	Base 16, Binary, Colours, Conversion, Hexadecimal
5	define what is meant by the term 'character set' describe how characters are represented in 7-bit ASCII derive the ASCII code for one character when given the code for another outline the shortcomings of ASCII and understand how encoding systems that use more bits overcome them	Evidence in Teams End of topic assessment	128 unique characters, ASCII, Binary, Characters, Lowercase, Patterns, Signed integers, Standard, Unsigned integers, Uppercase
6	Revision lesson All of the above	Evidence in Teams End of topic assessment	All of the above
7	End of topic Assessment	End of topic assessment	All of the above
8	Assessment feedback lesson	Evidence in Teams	All of the above