HALF TERM 2.2 Apr - May	Week 28 - 30	Week 31	Week 32
TOPIC (S)	1.13 Data Types	Dedicated programming skills	1.14 Data Structures
Knowledge & Skills development	What is meant by the term, 'data type'? How are numbers stored in memory? How does an arithmetic logic unit (ALU) perform arithmetic? How does a computer store fractions (real numbers)? How does a computer store a larger range of numbers in a fixed number of bits in memory? How does a computer store a larger range of numbers in a fixed number of bits in memory? How does a computer store a larger range of numbers in a fixed number of bits in memory? How does a computer store a larger range of numbers in a fixed number of bits in memory? How do you perform arithmetic with floating-point numbers? What other operations can an arithmetic logic unit (ALU) do? How does a computer store text in memory?	Gain experience in practical programming using TIME model	What are the differences between arrays, lists and tuples? How do the operations push and pop work with a stack stored as an array? How do the operations enqueue and dequeue work with a queue stored as an array? What are the uses of stacks and queues in computer science? How do linked lists work to maintain the alphabetical order of items as they are input? What are trees, directed or undirected graphs, and how can they be represented using other data structures? How does a depth-first traversal of a graph work? How does a breadth-first traversal of a graph work? How can binary trees be visualised using arrays or objects? How do you input and delete data from binary trees? How do hash tables, hashing functions and overflow work?
Assessment / Feedback Opportunities	Classroom activity - Class Discussion - Questioning pupils – verbal feedback – exam questions	Classroom activity - Class Discussion - Questioning pupils – verbal feedback	Classroom activity - Class Discussion - Questioning pupils – verbal feedback – exam questions
Cultural Capital	Problem solving Impact of technology on the world		
SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)	• Listening to others • Responding suitable in discussions • Taking part in group activates		

Reading opportunities	Key word Identification Decomposition and Abstraction Structure and Interpretation of Computer Programs Design Patterns: Elements of Reusable Object-Oriented Software	
Key Vocabulary	Primitive data types, Integer, Real, Floating point, Character, String, Boolean, Binary, Sign and magnitude, Two's complement, Hexadecimal, Denary, Floating-point arithmetic, Bitwise manipulation, Shifts, AND, OR, XOR, Character sets, ASCII, Unicode	Array, Records, Lists, Tuple, Linked list, Directed graph, Undirected graph, Stack, Queue, Tree, Binary search tree, Hash table
Digital Literacy	Use of technology Understanding of how technology works	
Careers	Software Engineer – Cyber Security – Multimedia programmer – Systems analyst – Games developer	