

Topic 13: Data Representation

Keyword sheet - Cambridge AS & A Level Computer Science 9618. Tick each term once you can define it from memory.

Keyword	Definition	Know it?
User-defined data type	Type created by a programmer, e.g. enumerated, pointer, set, record, class.	
Non-composite / composite type	Type not referencing other types / type constructed from other data types.	
Enumerated type	Type defined as a fixed list of named values.	
Pointer type	Type whose value is a memory address of another variable.	
Set type	Unordered collection of unique values of the same type.	
Record type	Composite type of named fields that may have different types.	
Class / object	Template defining attributes and methods / an instance of a class.	
Serial file	Records stored in the order they were added; accessed sequentially.	
Sequential file	Records stored in key order; accessed sequentially.	
Random (direct) file	Records stored at addresses calculated by hashing the key; direct access.	
Hashing algorithm / collision	Function mapping a key to an address / two keys mapping to the same address.	
Floating-point representation	Real number stored as a mantissa and an exponent, value = mantissa $\times 2^{\text{exponent}}$.	
Normalisation (floating-point)	Adjusting so the first two mantissa bits differ, maximising precision.	
Precision / range	Determined by the number of mantissa bits / by the number of exponent bits.	
Overflow / underflow	Number too large / too small in magnitude to represent.	
Rounding error	Difference between the true value and the stored approximation.	