

Topic 13: Data Representation

EAL keyword sheet - Cambridge International AS & A Level Computer Science 9618. Write the word in your own language in the last column.

Keyword	Meaning	Example sentence	In my language
user-defined data type	A data type that a programmer creates.	<i>An enumerated type is a user-defined data type.</i>	
non-composite type	A type that does not refer to other types.	<i>An enumerated type is non-composite.</i>	
composite type	A type made from other data types.	<i>A record is a composite type.</i>	
enumerated type	A type with a fixed list of named values.	<i>TYPE Day = (Mon, Tue, Wed)</i>	
pointer type	A type that stores the memory address of another value.	<i>A pointer type refers to a variable.</i>	
set type	A type that holds a collection of unique values.	<i>A set cannot contain duplicates.</i>	
record type	A composite type with fields of different data types.	<i>A record stores a person's details.</i>	
class	A template that defines the data and methods of an object.	<i>Student is a class.</i>	
object	An instance of a class.	<i>Ali is an object of the Student class.</i>	
serial file	A file where records are stored in the order they were added.	<i>A serial file has no order by key.</i>	
sequential file	A file where records are stored in key order.	<i>A sequential file is sorted by ID.</i>	
random (direct) access file	A file where a record can be found directly using a hash of its key.	<i>Random access is fast for single records.</i>	
hashing algorithm	A calculation that turns a key into a storage address.	<i>A hash function gives the record's address.</i>	
collision	When two keys give the same address.	<i>A collision needs to be resolved.</i>	
file access	The method used to read or write records.	<i>Sequential file access reads records in order.</i>	
floating-point	A way to store real numbers using a mantissa and an exponent.	<i>Floating-point can store very large numbers.</i>	
mantissa	The digits of the number in floating-point form.	<i>The mantissa is a fraction.</i>	

Keyword	Meaning	Example sentence	In my language
exponent	The power of 2 by which the mantissa is multiplied.	<i>The exponent moves the binary point.</i>	
normalisation	Adjusting a floating-point number so that the first two bits of the mantissa are different.	<i>Normalisation gives the best precision.</i>	
precision	How many digits can be stored accurately.	<i>More mantissa bits give more precision.</i>	
range	The difference between the biggest and smallest numbers that can be stored.	<i>More exponent bits give a bigger range.</i>	
overflow	A result is too large to store.	<i>Overflow gives an error.</i>	
underflow	A result is too close to zero to store.	<i>Underflow can be rounded to zero.</i>	
rounding error	A small error because a number cannot be stored exactly.	<i>0.1 may have a rounding error in binary.</i>	
absolute error / relative error	The size of the difference / the difference compared with the true value.	<i>Relative error is the error divided by the value.</i>	