

A-Level Computer Science

Name: _____ Score: _____

1. An enumerated type holds:

- ☐ a value from a fixed list of named constants
- ☐ any string at all
- ☐ a memory address
- ☐ a group of different fields

2. A serial file stores records:

- ☐ in the order they were added, with no sorting
- ☐ sorted by a key field
- ☐ at positions computed from a key
- ☐ in random memory addresses

3. A hash function:

- ☐ turns a record's key into a storage address
- ☐ sorts the file by key
- ☐ encrypts the record
- ☐ compresses the data

4. A floating-point number is stored as:

- ☐ a mantissa multiplied by 2 raised to an exponent
- ☐ a single integer
- ☐ a string of digits
- ☐ a denary fraction

5. A class combines:

- ☐ data fields (attributes) with operations on them (methods)
- ☐ only data, no behaviour
- ☐ only functions, no data
- ☐ two unrelated programs

6. Using the modulo hash 'address $\leftarrow$ key MOD N' with key = 27 and N = 10, what address is produced?

7. A pointer stores the memory address of another variable, and dereferencing it (e.g. $\hat{p}$) reaches the variable it points to.
- ☐ True ☐ False
8. 0.1 cannot be stored exactly in binary (it is a repeating fraction), so $0.1 + 0.2$ does not give exactly 0.3 on a computer.
- ☐ True ☐ False
9. Sequential file organisation is well suited to processing every record in turn.
- ☐ True ☐ False
10. A random (direct-access) file places each record:
- ☐ at a position computed from its key, giving very fast direct lookup
 - ☐ in arrival order
 - ☐ in alphabetical order only
 - ☐ always at the end

1. a value from a fixed list of named constants

An enumerated type restricts a variable to one of a fixed set of named values (e.g. days of the week).

2. in the order they were added, with no sorting

Serial files keep records in arrival order — fast to append, slow to search. Sequential files are sorted by key.

3. turns a record's key into a storage address

A hash function maps a key to an address, enabling near-instant direct lookup.

4. a mantissa multiplied by 2 raised to an exponent

$\text{value} = \text{mantissa} \times 2^{\text{exponent}}$ — binary scientific notation, with both parts stored in two's complement.

5. data fields (attributes) with operations on them (methods)

A class bundles attributes and methods; an object is an instance of a class.

6. 7

$27 \text{ MOD } 10 = 7$ (the remainder when 27 is divided by 10).

7. True

Pointers (with NULL marking "points to nothing") are how dynamic structures like linked lists and trees are built.

8. True

The tiny approximation errors add up — which is why money is handled with fixed-point or BCD, not floating-point.

9. True

Direct access suits looking up a single record.

10. at a position computed from its key, giving very fast direct lookup

A key is converted (often by a hash) to a position, so a single-key lookup is very fast.