

A-Level Computer Science

Name: _____ Score: _____

1. Which data type best stores a yes/no flag like "in stock"?
 - ☐ BOOLEAN
 - ☐ STRING
 - ☐ REAL
 - ☐ DATE
2. An array stores:
 - ☐ many items of the same type, reached by an index
 - ☐ several fields of different types
 - ☐ a single value
 - ☐ only text
3. Why does a program write data to a file rather than keeping it in a variable?
 - ☐ variables in RAM are lost when the program ends; a file persists
 - ☐ files are always faster than RAM
 - ☐ variables cannot hold numbers
 - ☐ files use no storage
4. An Abstract Data Type (ADT) is defined by:
 - ☐ what operations it offers, hiding how the data is stored
 - ☐ the exact memory addresses it uses
 - ☐ the programming language only
 - ☐ the size of the screen
5. Pushing an item onto a stack that is already full causes a stack _____.

6. A record is used to:
 - ☐ group several fields of different types under one name
 - ☐ store many values of the same type in a list
 - ☐ hold a single number
 - ☐ define a loop

7. An array holds many items of the SAME type reached by index, while a record groups fields of (possibly) DIFFERENT types reached by name.
- ☐ True ☐ False
8. A queue is first-in-first-out: items are removed from the _____ and added at the rear.
- _____
9. A circular queue uses MOD so the front/rear pointers wrap around and reuse the cells freed at the start of the array.
- ☐ True ☐ False
10. A real (floating-point) type should be used to store a measurement such as a temperature.
- ☐ True ☐ False

1. BOOLEAN

A flag has two states, so BOOLEAN (TRUE/FALSE) is the precise choice — not the strings "yes"/"no".

2. many items of the same type, reached by an index

An array is an ordered collection of same-type items accessed by index. (A record groups different types.)

3. variables in RAM are lost when the program ends; a file persists

RAM is volatile, so data is lost on exit. A file on secondary storage persists between runs.

4. what operations it offers, hiding how the data is stored

An ADT specifies the operations (the interface); the implementation is hidden and can change freely.

5. overflow

Overflow = push when $\text{Top} = \text{MaxSize}$; popping from an empty stack ($\text{Top} = 0$) is underflow.

6. group several fields of different types under one name

A record bundles fields of (possibly) different types that describe one thing. An array holds many values of the same type.

7. True

A 2-D array suits a grid (rows $\times$ columns); a record suits one thing described by several named fields.

8. front

FIFO: dequeue from the front, enqueue at the rear — like a line of people.

9. True

'(pointer MOD MaxSize) + 1' wraps the index back to the first cell, so a linear queue no longer wastes the cells Front has passed.

10. True

Whole counts use integers; measurements use reals.