

KK04 — Characteristics of data types

Programming · Comprehensive exam study guide

STUDY DESIGN — YOU MUST KNOW

- text (character, string)
- numeric (integer, floating point, date/time)
- Boolean

Choosing the right data type makes a solution efficient and reduces errors (e.g. type mismatch). Know each type's **purpose**, what values it holds and a sensible example. Selecting the most appropriate type for a given field is a common exam task.

Data types you must know

Category	Type	Stores	Example
Text	Character	A single symbol	'A', '7', '\$'
Text	String	A sequence of characters	"Hello", "Box12", a name
Numeric	Integer	Whole numbers (no decimal)	42, -7, 1000 (e.g. a quantity)
Numeric	Floating point	Numbers with a decimal/fraction	3.14, 19.95 (e.g. a price)
Numeric	Date/time	A calendar date and/or time	25/12/2026, 14:30
Boolean	Boolean	One of two values	True / False (e.g. isPaid)

Choosing the right type

- Use **integer** for counts/quantities where decimals make no sense (number of students).
- Use **floating point** for money or measurements needing decimals (price, temperature).
- Use **string** for IDs that include letters or leading zeros (a phone number, postcode).
- Use **Boolean** for yes/no states (isLoggedIn, hasPaid).
- Use **date/time** for dates so they can be compared and formatted.

WATCH OUT

Store a phone number or postcode as a **string**, not an integer — leading zeros are lost and you never do arithmetic on them.

Key definitions to memorise

Integer	A numeric data type holding whole numbers with no fractional part.
Floating point	A numeric data type holding numbers with a decimal/fractional component.
String	A text data type holding a sequence of characters.
Boolean	A data type holding one of two values: True or False.

Exam technique

EXAM TIP

- To justify a type, link it to the data's nature: 'price needs decimals → floating point'.
- Money is usually floating point at this level; mention decimals are needed.

COMMON MISTAKES

- Choosing integer for a price (loses cents) or for a phone number (loses leading zeros).
- Calling a single 'A' a string — a single symbol is a character.

Quick revision checklist

- I can name and exemplify text, numeric and Boolean types.
- I can choose and justify the best type for a given field.

Exam practice — questions & model answers

Q1. State the most appropriate data type for each: (a) a student's age in years; (b) a product price; (c) whether an order is paid.

State · 3 marks

Model answer

- (a) Integer (1).
- (b) Floating point (1).
- (c) Boolean (1).

Q2. Justify why a postcode should be stored as a string rather than an integer.

Justify · 2 marks

Model answer

- A postcode may start with 0, which an integer would drop (1),
- and no arithmetic is performed on it, so a string is appropriate (1).

Q3. Distinguish between a character and a string.

Distinguish · 2 marks

Model answer

- A character holds a single symbol (1);
- a string holds a sequence of characters (1).