

KK10 — Validation techniques for data

Programming · Comprehensive exam study guide

STUDY DESIGN — YOU MUST KNOW

- existence checking
- type checking
- range checking

Validation checks that input is **reasonable before it is processed**, improving reliability and preventing errors/insecure data. Know the three techniques, what each catches, and a concrete example — you may be asked to choose the right check for a field.

The three checks

Technique	Checks that...	Example
Existence checking	A required value is actually present (not blank/empty).	A login form rejects a blank password.
Type checking	The value is of the expected data type.	An age field rejects "twelve" and requires a number.
Range checking	A value falls within an allowed minimum/maximum.	A mark must be between 0 and 100.

Validation vs verification

Validation checks data is reasonable/within rules (existence, type, range). It does **not** prove the data is correct — a mark of 87 entered as 78 passes range checking but is still wrong. That requires verification (e.g. double-entry or a person checking).

WATCH OUT

Validation ≠ correct data. Range/type checks confirm input is plausible, not that it is the right value.

Key definitions to memorise

Validation	Checking that input data is reasonable and conforms to defined rules before processing.
Existence check	A validation check that a required value has been entered (is not empty).
Type check	A validation check that a value is of the expected data type.
Range check	A validation check that a value lies within an allowed minimum and maximum.

Exam technique

EXAM TIP

- Match the check to the field: blank not allowed → existence; must be a number → type; must be 0–100 → range.
- If asked the limitation of validation, say it doesn't guarantee the data is correct, only reasonable.

COMMON MISTAKES

- Claiming validation guarantees correct data.
- Confusing type checking with range checking.

Quick revision checklist

- I can define existence, type and range checks with examples.
- I can select the right check for a given field and state validation's limitation.

Exam practice — questions & model answers

Q1. Name the validation technique for each: (a) a mark must be 0–100; (b) a name must not be blank; (c) a quantity must be a whole number.

Name · 3 marks

Model answer

- (a) Range check (1).
- (b) Existence check (1).
- (c) Type check (1).

Q2. Explain why validation cannot guarantee that entered data is correct.

Explain · 2 marks

Model answer

- Validation only checks the data is reasonable/within rules (1),
- so a wrong but plausible value (e.g. 78 instead of 87) still passes — correctness needs verification (1).

Q3. Describe an appropriate validation check for a 'date of birth' field and justify it.

Describe/Justify · 2 marks

Model answer

- A range/type (date) check ensuring the date is valid and not in the future (1),
- because a future birth date is impossible, so it should be rejected (1).