MODULE N DATABASES AND SQL · N2

Database data types and validation: mark scheme

22 marks · Cambridge 0478 syllabus (exams 2026-2028) 9.1 (define a single-table database from given data storage requirements: fields, records, validation), 9.2 (suggest suitable basic data types: text/alphanumeric, character, Boolean, integer, real, date/time), with 7.5(a) (the need for validation checks; range, length, type, presence, format, check digit)

How to use. One mark per bullet point up to the maximum shown. **/** separates alternative words; **//** separates alternative answers. Words in (brackets) are not needed for the mark. Credit any other valid answer that shows the same understanding. Use the database data type names from syllabus 9.2: **text** or **alphanumeric** are both accepted for text/alphanumeric; **char** is accepted for character; **date** is accepted for date/time. Do not accept STRING, NUMBER, FLOAT, DECIMAL or CURRENCY as database data types (Cambridge examiners do not credit programming or software-specific type names for database fields).

QUESTION	ANSWER	MARKS	GUIDANCE
1 0478 9.2	One mark for each correct row: PotSize: Character Price: Real Stock: Integer Evergreen: Boolean DateArrived: Date/time	**5**	A row with more than one tick scores 0. PotSize: also accept Text/alphanumeric (one letter can be stored as text). Price: do not accept Integer (12.50 and 4.99 have a decimal part). Stock: do not accept Real (it is a count of pots, always a whole number). Evergreen: also accept Text/alphanumeric (Yes/No can be stored as text), as Cambridge mark schemes do for two-value fields; Boolean is the expected answer. DateArrived: Date/time only.

QUESTION	ANSWER	MARKS	GUIDANCE
2 0478 9.2	Text/alphanumeric ... (because) the leading zero would be lost if it were stored as an integer // it contains a space // no calculations are done on a phone number	**2**	Reason mark only if Text/alphanumeric (or text / alphanumeric) is given. Do not accept Integer, Real or Character for the data type. Do not accept STRING. Do not accept "it is not a number" or "it has numbers and letters" alone (the phone number has no letters). Credit any other valid reason linked to the phone number.
3(a) 0478 7.5(a) 0478 9.1	Any one from: to check that the data entered is reasonable / sensible / acceptable to check that the data entered meets a set of rules / criteria (before it is accepted / stored) to reject data that is unreasonable / does not meet the rules (as it is entered)	**1**	Do not accept "to check the data is correct / accurate" (data can pass validation and still be wrong). Do not accept "to check that the data has been copied / typed correctly from the original" (that is verification). Do not accept "to stop errors" alone (too vague).
3(b) 0478 7.5(a) 0478 9.1	One mark for each correct row: Stock: range check DateArrived: presence check PlantID: format check CommonName: length check Price: type check Barcode: check digit	**6**	Mark each row on its own. If a check is used more than once, credit it only in the row where it is correct. Price: also accept "character check" (seen in Cambridge mark schemes for the same idea). Barcode: accept "check digit check".
4 0478 7.5(a)	Any two from: the check digit is calculated / recalculated from the other digits (of the barcode number) when it is entered ... using the same algorithm / calculation that was used to create the check digit the calculated digit is compared with the check digit entered / the last digit if they do not match, the barcode number is rejected / an error is reported / it must be entered again if they match, the barcode number is accepted	**2**	Both marks can come from any two points. Accept a named method, e.g. modulo 11, for the algorithm point. Do not accept "the check digit checks the number is correct" alone (too vague). Do not credit a description of a parity bit or checksum sent with a transmission.

QUESTION	ANSWER	MARKS	GUIDANCE
5 0478 9.1 0478 9.2 0478 7.5(a)	One mark for each correct data type: BookingRef: Text/alphanumeric Seats: Integer WorkshopDate: Date/time One mark for each suitable validation check **and** what it would test for that field: BookingRef: format check: the first character is B and the next three are digits // length check: exactly four characters // presence check: a reference must be entered / must not be empty Seats: range check: from 1 to 12 (inclusive) // type check: only a whole number / integer is accepted // presence check: a number of seats must be entered WorkshopDate: type check: must be a (valid) date // format check: e.g. DD/MM/YYYY // range check: e.g. not before today's date / within the dates the workshops run // presence check: a date must be entered	**6**	Data type and check are marked separately: a wrong data type does not stop the check mark. The check mark needs the check named **and** a test that fits that field. A check name alone, or a test alone with no check named, scores 0. Seats range: the limits must be 1 and 12; do not accept 0 to 12, "less than 12" or a range with no limits. BookingRef format: must describe the pattern (B then three digits); "must be in the right format" alone is too vague. BookingRef: do not accept Character or Integer for the data type. Seats: do not accept Real. Credit any other valid check with a rule that fits the requirement.

Total: 22 marks