MODULE M PROGRAMMING · M3

Data types: mark scheme

20 marks · Cambridge 0478 syllabus (exams 2026-2028) 8.1.2 (understand and use basic data types: integer, real, char, string, Boolean; literals as in syllabus section 4), with 8.1.1 (declare and use variables) and 8.1.4(e)(f) (string handling, relational operators) for Q5

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. Ignore the case of keywords and minor spacing. The 0478 syllabus has no casting / type-conversion functions: they are not needed for any answer.

QUESTION	ANSWER	MARKS	GUIDANCE
1 0478 8.1.2	One mark for each correct row: `'Q'`: CHAR `"Q12"`: STRING `-12`: INTEGER `12.0`: REAL FALSE: BOOLEAN	**5**	A row with more than one tick scores 0. Single quotes show a CHAR literal; double quotes show a STRING literal. 12.0 has a digit on each side of the decimal point, so it is a REAL literal, not an INTEGER.

2
0478 8.1.1
0478 8.1.2
	One mark for each correct statement:
	`DECLARE AdultTickets : INTEGER`
	`DECLARE TotalPrice : REAL`
	`DECLARE IsMember : BOOLEAN`
	`DECLARE PriceBand : CHAR`
	`DECLARE VisitorName : STRING`
		5	Each mark needs DECLARE, the identifier as given and a suitable data type. Ignore a missing colon if it is missing every time (penalise once).
			PriceBand: also accept STRING (a single letter can be stored as a string).
			Do not accept TEXT, NUMBER, FLOAT, DECIMAL or CURRENCY as pseudocode data types. Do not accept INTEGER for TotalPrice.
			Do not credit a changed identifier (e.g. `AdultTickets`).

QUESTION	ANSWER	MARKS	GUIDANCE
3 0478 8.1.2	One mark for each line identified **and** corrected: Line 07: `IsOpen ← TRUE` Line 09: `Fee ← 12.0` Line 10: `Band ← 'C'`	**3**	Line 07: TRUE must have no quotation marks; "TRUE" is a STRING. Line 09: accept `12.00` // any REAL literal with a digit on each side of the point. Line 10: the CHAR must be in single quotes. Accept = or <- for the arrow. A line number without a correct correction scores 0. Lines 06 and 08 are correct: do not credit them.
4(a) 0478 8.1.2	REAL ... (because) the charge can have a fractional / decimal part // it is not (always) a whole number	**2**	Reason mark only if REAL is given. Do not accept INTEGER (87.5 is not a whole number). Do not accept FLOAT / DECIMAL for the data type. Do not accept "it is a percentage" alone or "it is a number" alone as the reason.
4(b) 0478 8.1.2	STRING ... (because) the leading zero would be lost if it were stored as an integer // no calculations / arithmetic are done on the code	**2**	Reason mark only if STRING is given. Do not accept INTEGER or CHAR (four characters are more than one CHAR). Do not accept "it is not a number" alone. Credit any other valid reason linked to the door entry code.
5 0478 8.1.2 0478 8.1.4(e) (f)	One mark for each correct row: `Parcels > 20`: BOOLEAN `LENGTH(Street)`: INTEGER `SUBSTRING(Street, 1, 4)`: STRING	**3**	The result of a relational operator is always BOOLEAN; LENGTH returns an integer; SUBSTRING returns a string (syllabus section 4). Do not accept a value (e.g. TRUE, 4) instead of a data type. Do not accept CHAR for row 3.

Total: 20 marks