



Cambridge International AS & A Level

COMPUTER SCIENCE

9618/21

Paper 2 Fundamental Problem-solving and Programming Skills

May/June 2024

INSERT

2 hours

INFORMATION

- This insert contains all the resources referred to in the questions.
- You may annotate this insert and use the blank spaces for planning. **Do not write your answers** on the insert.



This document has **4** pages.

An error will be generated if a function call is not properly formed or if the parameters are of an incorrect type or an incorrect value.

String and character functions

- A string of length 1 may be considered to be either of type CHAR or STRING
- A CHAR may be assigned to, or concatenated with, a STRING
- A STRING of length greater than 1 cannot be assigned to a CHAR

LEFT(ThisString : STRING, x : INTEGER) RETURNS STRING returns leftmost x characters from ThisString Example: LEFT("ABCDEFGH", 3) returns "ABC"
RIGHT(ThisString : STRING, x : INTEGER) RETURNS STRING returns rightmost x characters from ThisString Example: RIGHT("ABCDEFGH", 3) returns "FGH"
MID(ThisString : STRING, x : INTEGER, y : INTEGER) RETURNS STRING returns a string of length y starting at position x from ThisString Example: MID("ABCDEFGH", 2, 3) returns string "BCD"
LENGTH(ThisString : STRING) RETURNS INTEGER returns the integer value representing the length of ThisString Example: LENGTH("Happy Days") returns 10
TO_UPPER(x : <datatype>) RETURNS <datatype> <datatype> may be CHAR or STRING returns an object of type <datatype> formed by converting all characters of x to upper case. Examples: • TO_UPPER("Error 803") returns "ERROR 803" • TO_UPPER('a') returns 'A'
TO_LOWER(x : <datatype>) RETURNS <datatype> <datatype> may be CHAR or STRING returns an object of type <datatype> formed by converting all characters of x to lower case. Examples: • TO_LOWER("JIM 803") returns "jim 803" • TO_LOWER('W') returns 'w'
NUM_TO_STR(x : <datatype1>) RETURNS <datatype2> returns a string representation of a numeric value. <datatype1> may be REAL or INTEGER, <datatype2> may be CHAR or STRING Example: NUM_TO_STR(87.5) returns "87.5" If x is a negative value, the returned value will be a string beginning with the '-' character.
STR_TO_NUM(x : <datatype1>) RETURNS <datatype2> returns a numeric representation of a string. <datatype1> may be CHAR or STRING, <datatype2> may be REAL or INTEGER Example: STR_TO_NUM("23.45") returns 23.45 If the string begins with the '-' character, the returned value will be negative.

IS_NUM(ThisString : <datatype>) RETURNS BOOLEAN

returns TRUE if ThisString represents a valid numeric value.

<datatype> may be CHAR or STRING

Example: IS_NUM("-12.36") returns TRUE

ASC(ThisChar : CHAR) RETURNS INTEGER

returns an integer value (the ASCII value) of character ThisChar

Example: ASC('A') returns 65, ASC('B') returns 66

CHR(x : INTEGER) RETURNS CHAR

returns the character whose integer value (the ASCII value) is x

Example: CHR(65) returns 'A', CHR(66) returns 'B'

Numeric functions

INT(x : REAL) RETURNS INTEGER

returns the integer part of x

Example: INT(27.5415) returns 27

RAND(x : INTEGER) RETURNS REAL

returns a real number in the range 0 to x (**not** inclusive of x).

Example: RAND(87) could return 35.430729

Date functions

Date format is assumed to be DD/MM/YYYY unless otherwise stated.

DAY(ThisDate : DATE) RETURNS INTEGER

returns the day number from ThisDate

Example: DAY(04/10/2003) returns 4

MONTH(ThisDate : DATE) RETURNS INTEGER

returns the month number from ThisDate

Example: MONTH(04/10/2003) returns 10

YEAR(ThisDate : DATE) RETURNS INTEGER

returns the year number from ThisDate

Example: YEAR(04/10/2003) returns 2003

DAYINDEX(ThisDate : DATE) RETURNS INTEGER

returns the day index number from ThisDate where Sunday = 1, Monday = 2 etc.

Example: DAYINDEX(09/05/2023) returns 3

SETDATE(Day, Month, Year : INTEGER) RETURNS DATE

returns a value of type DATE with the value of <Day>/<Month>/<Year>

Example: SETDATE(26, 10, 2003) returns a date corresponding to 26/10/2003

TODAY() RETURNS DATE

returns a value of type DATE corresponding to the current date.

Text file functions

`EOF(FileName : STRING)` RETURNS BOOLEAN

returns `TRUE` if there are no more lines to be read from file `FileName`
will generate an error if the file is not already open in `READ` mode.

Operators

An error will be generated if an operator is used with a value or values of an incorrect type.

&	concatenates (joins) two strings. Example: "Summer" & " " & "Pudding" evaluates to "Summer Pudding" may also be used to concatenate a <code>CHAR</code> with a <code>STRING</code>
AND	performs a logical AND on two Boolean values. Example: <code>TRUE AND FALSE</code> evaluates to <code>FALSE</code>
OR	performs a logical OR on two Boolean values. Example: <code>TRUE OR FALSE</code> evaluates to <code>TRUE</code>
NOT	performs a logical NOT on a Boolean value. Example: <code>NOT TRUE</code> evaluates to <code>FALSE</code>
MOD	finds the remainder when one number is divided by another. Example: <code>10 MOD 3</code> evaluates to 1
DIV	finds the quotient when one number is divided by another. Example <code>10 DIV 3</code> evaluates to 3

Comparison operators

=	used to compare two items of the same type. evaluates to <code>TRUE</code> if the condition is true, otherwise evaluates to <code>FALSE</code>
>	Notes: - may be used to compare types <code>REAL</code> and <code>INTEGER</code> - may be used to compare types <code>CHAR</code> and <code>STRING</code> - case sensitive when used to compare types <code>CHAR</code> and/or <code>STRING</code> - cannot be used to compare two records
<	
>=	
<=	
<>	
	Examples: <code>"Program" = "program"</code> evaluates to <code>FALSE</code> <code>Count = 4</code> evaluates to <code>TRUE</code> when <code>Count</code> contains the value 4

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