

Cambridge International AS & A Level

COMPUTER SCIENCE

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Paper 2 Fundamental Problem-solving and Programming Skills

October/November 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 "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 minus 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 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(07/11/2023) 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 CHAR with a STRING
AND	performs a logical AND on two Boolean values. Example: TRUE AND FALSE evaluates to FALSE
OR	performs a logical OR on two Boolean values. Example: TRUE OR FALSE evaluates to TRUE
NOT	performs a logical NOT on a Boolean value. Example: NOT TRUE evaluates to FALSE
MOD	finds the remainder when one number is divided by another. Example: 10 MOD 3 evaluates to 1
DIV	finds the quotient when one number is divided by another. Example 10 DIV 3 evaluates to 3

Comparison operators

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

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