Cambridge Assessment International Education

Cambridge International AS & A Level

COMPUTER SCIENCE **9618/21**

Paper 2 Fundamental Problem-solving and Programming Skills **October/November 2022**

INSERT **2 hours**

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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.

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Functions

Note: 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

`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`
`LCASE(ThisChar : CHAR) RETURNS CHAR` returns the character representing the lower-case equivalent of `ThisChar` Non upper-case alphabetic characters are returned unchanged. Example: `LCASE('W')` returns `'w'`
`UCASE(ThisChar : CHAR) RETURNS CHAR` returns the character representing the upper-case equivalent of `ThisChar` Non lower-case alphabetic characters are returned unchanged. Example: `UCASE('a')` returns `'A'`
`TO_UPPER(ThisString : STRING) RETURNS STRING` returns a string formed by converting all characters of `ThisString` to upper case. Example: `TO_UPPER("Error 803")` returns `"ERROR 803"`
`TO_LOWER(ThisString : STRING) RETURNS STRING` returns a string formed by converting all characters of `ThisString` to lower case. Example: `TO_LOWER("JIM 803")` returns `"jim 803"`
`NUM_TO_STR(x : <datatype1>) RETURNS <datatype2>` returns a string representation of a numeric value. Note: `<datatype1>` may be `REAL` or `INTEGER`, `<datatype2>` may be `CHAR` or `STRING` Example: `NUM_TO_STR(87.5)` returns `"87.5"`
`STR_TO_NUM(x : <datatype1>) RETURNS <datatype2>` returns a numeric representation of a string. Note: `<datatype1>` may be `CHAR` or `STRING`, `<datatype2>` may be `REAL` or `INTEGER` Example: `STR_TO_NUM("23.45")` returns `23.45`

`IS_NUM(ThisString : <datatype>) RETURNS BOOLEAN`
returns the value `TRUE` if `ThisString` represents a valid numeric value.
Note: `<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` etc.

`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'` etc.

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 `35.43`

Date Functions

Note: date format is assumed to be DD/MM/YYYY unless otherwise stated.

`DAY(ThisDate : DATE) RETURNS INTEGER`
returns the current day number from `ThisDate`
Example: `DAY(04/10/2003)` returns `4`

`MONTH(ThisDate : DATE) RETURNS INTEGER`
returns the current month number from `ThisDate`
Example: `MONTH(04/10/2003)` returns `10`

`YEAR(ThisDate : DATE) RETURNS INTEGER`
returns the current year number from `ThisDate`
Example: `YEAR(04/10/2003)` returns `2003`

`DAYINDEX(ThisDate : DATE) RETURNS INTEGER`
returns the current day index number from `ThisDate` where Sunday = 1, Monday = 2 etc.
Example: `DAYINDEX(12/05/2020)` returns `3`

`SETDATE(Day, Month, Year : INTEGER) RETURNS DATE`
returns a variable of type `DATE` with the value of `<Day>/<Month>/<Year>`
Example: `SETDATE(26, 10, 2003)` returns a date corresponding to 26 October 2003

`TODAY() RETURNS DATE`
returns a variable 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` Note: the function will generate an error if the file is not already open in `READ` mode.

Operators

Note: 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"` Note: 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
	returns `TRUE` if the condition is true, otherwise returns `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` or `STRING`
	• cannot be used to compare two records
	
	Examples:
	• `"Program" = "program"` evaluates to `FALSE`
	• `Count = 4` evaluates to `TRUE` when variable `Count` contains the value `4`

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