



Cambridge International AS & A Level

COMPUTER SCIENCE

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Paper 2 Fundamental Problem-solving and Programming Skills

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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.

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

Comparison operators

<code>=</code>	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>
<code>></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
<code><</code>	
<code>>=</code>	
<code><=</code>	
<code><></code>	
	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 <code>4</code>

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