



# Cambridge International AS & A Level

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**COMPUTER SCIENCE**

**9618/22**

Paper 2 Fundamental Problem-solving and Programming Skills

**October/November 2023**

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.



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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

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, 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 35.430729

### Date functions

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 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`  
The function 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(s) of an incorrect type.

<code>&amp;</code>	concatenates (joins) two strings. Example: <code>"Summer" &amp; " " &amp; "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>&gt;</code>	<p>Notes:</p> <ul style="list-style-type: none"> <li>may be used to compare types <code>REAL</code> and <code>INTEGER</code></li> <li>may be used to compare types <code>CHAR</code> and <code>STRING</code></li> <li>case sensitive when used to compare types <code>CHAR</code> and / or <code>STRING</code></li> <li>cannot be used to compare two records</li> </ul>
<code>&lt;</code>	
<code>&gt;=</code>	
<code>&lt;=</code>	
<code>&lt;&gt;</code>	<p>Examples:</p> <ul style="list-style-type: none"> <li><code>"Program" = "program"</code> evaluates to <code>FALSE</code></li> <li><code>Count = 4</code> evaluates to <code>TRUE</code> when <code>Count</code> contains the value <code>4</code></li> </ul>

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