

# Cambridge International AS & A Level

COMPUTER SCIENCE 9618/22

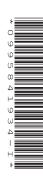
Paper 2 Fundamental Problem-solving and Programming Skills

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.



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
<b>O</b> R	performs a logical OR on two Boolean values.  Example: TRUE OR FALSE evaluates to TRUE
ТОИ	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:
<	<ul> <li>may be used to compare types REAL and INTEGER</li> <li>may be used to compare types CHAR and STRING</li> </ul>
>=	<ul> <li>case sensitive when used to compare types CHAR and/or STRING</li> <li>cannot be used to compare two records</li> </ul>
<=	Examples:
<>	<ul> <li>"Program" = "program" evaluates to FALSE</li> <li>Count = 4 evaluates to TRUE when Count contains the value 4</li> </ul>

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