

System Variables and System Functions

This chapter describes the purpose of Natural system variables and Natural system functions and how they are used in Natural programs.

The following topics are covered:

- System Variables
 - System Functions
 - Example of System Variables and System Functions
 - Further Examples of System Variables
 - Further Examples of System Functions
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System Variables

The following topics are covered below:

- Purpose
- Characteristics of System Variables
- System Variables Grouped by Function

Purpose

System variables are used to display system information. They may be referenced at any point within a Natural program.

Natural system variables provide variable information, for example, about the current Natural session:

- the current library;
- the user and terminal identification;
- the current status of a loop processing;
- the current report processing status;
- the current date and time.

The typical use of system variables is illustrated in the *Example of System Variables and System Functions* below and in the examples contained in library SYSEXPB.

The information contained in a system variable may be used in Natural programs by specifying the appropriate system variables. For example, date and time system variables may be specified in a DISPLAY, WRITE, PRINT, MOVE or COMPUTE statement.

Characteristics of System Variables

The names of all system variables begin with an asterisk (*).

Format/Length

Information on format and length is given in the detailed descriptions in the *System Variables* documentation. The following abbreviations are used:

Format	
A	Alphanumeric
B	Binary
D	Date
I	Integer
L	Logical
N	Numeric (unpacked)
P	Packed numeric
T	Time

Content Modifiable

In the individual descriptions, this indicates whether in a Natural program you can assign another value to the system variable, that is, overwrite its content as generated by Natural.

System Variables Grouped by Function

The Natural system variables are grouped as follows:

- Application Related System Variables
- Date and Time System Variables
- Input/Output Related System Variables
- Natural Environment Related System Variables
- System Environment Related System Variables
- XML Related System Variables

For detailed descriptions of all system variables, see the *System Variables* documentation.

System Functions

Natural system functions comprise a set of statistical and mathematical functions that can be applied to the data after a record has been processed, but before break processing occurs.

System functions may be specified in a DISPLAY, WRITE, PRINT, MOVE or COMPUTE statement that is used in conjunction with an AT END OF PAGE, AT END OF DATA or AT BREAK statement.

In the case of an AT END OF PAGE statement, the corresponding DISPLAY statement must include the GIVE SYSTEM FUNCTIONS clause (as shown in the example below).

The following functional groups of system functions exist:

- System Functions for Use in Processing Loops
- Mathematical Functions
- Miscellaneous Functions

For detailed information on all system functions available, see the *System Functions* documentation.

See also *Using System Functions in Processing Loops* (in the *System Functions* documentation).

The typical use of system functions is explained in the example programs given below and in the examples contained in library SYSEXPG.

Example of System Variables and System Functions

The following example program illustrates the use of system variables and system functions:

```

** Example 'SYSVAX01': System variables and system functions
*****
DEFINE DATA LOCAL
1 MYVIEW VIEW OF EMPLOYEES
  2 CITY
  2 NAME
  2 JOB-TITLE
  2 INCOME      (1:1)
  3 CURR-CODE
  3 SALARY
  3 BONUS      (1:1)
END-DEFINE
*
WRITE TITLE LEFT JUSTIFIED 'EMPLOYEE SALARY REPORT AS OF' *DAT4E /
*
READ (3) MYVIEW BY CITY STARTING FROM 'E'
  DISPLAY GIVE SYSTEM FUNCTIONS
    NAME (AL=15) JOB-TITLE (AL=15) INCOME (1:1)
  AT START OF DATA
    WRITE 'REPORT CREATED AT:' *TIME 'HOURS' /
  END-START
  AT END OF DATA
    WRITE / 'LAST PERSON SELECTED:' OLD (NAME) /
  END-ENDDATA
END-READ
*
AT END OF PAGE
  WRITE 'AVERAGE SALARY:' AVER (SALARY(1))
END-ENDPAGE
END

```

Explanation:

- The system variable *DATE is output with the WRITE TITLE statement.
- The system variable *TIME is output with the AT START OF DATA statement.
- The system function OLD is used in the AT END OF DATA statement.
- The system function AVER is used in the AT END OF PAGE statement.

Output of Program SYSVAX01:

Note how the system variables and system function are displayed.

EMPLOYEE SALARY REPORT AS OF 11/11/2004

NAME	CURRENT POSITION	INCOME		
		CURRENCY CODE	ANNUAL SALARY	BONUS

REPORT CREATED AT: 14:15:55.0 HOURS				
DUYVERMAN	PROGRAMMER	USD	34000	0
PRATT	SALES PERSON	USD	38000	9000
MARKUSH	TRAINEE	USD	22000	0

LAST PERSON SELECTED: MARKUSH

AVERAGE SALARY: 31333

Further Examples of System Variables

See the following example programs:

- *EDITMX05 - Edit mask (EM for date and time system variables)*
- *READX04 - READ (in combination with FIND and the system variables *NUMBER and *COUNTER)*
- *WTITLX01 - WRITE TITLE (with *PAGE-NUMBER)*

Further Examples of System Functions

See the following example programs:

- *ATBREX06 - AT BREAK OF (comparing NMIN, NAVER, NCOUNT with MIN, AVER, COUNT)*
- *ATENPX01 - AT END OF PAGE (with system function available via GIVE SYSTEM FUNCTIONS in DISPLAY)*