

## \* sys Module PREDICATION

A sys module is a set of the library module of the standard included in the system. When calling, it describes after ::sys.

---

::sys <append VAR LIST1 LIST2>

LIST1 is connected with LIST2, and it sets it to the variable.

It is a high-speed version of the predicate of the same name of the list module library.

::sys <reverse #out #in>

List #in is converted in reverse the order and it sets it to #out.

It is a high-speed version of the predicate of the same name of the list module library.

::sys <member #mem #list>

Whether #mem is included in #list is judged.

It is a high-speed version of the predicate of the same name of the list module library.

::sys <arg VAR COMPLEX>

angle of a complex number is set as a variable.

::sys <args VAR>

ARG when starting the Descartes language is assigned to VAR.

::sys <avg VAR LIST>

::sys <avgf VAR LIST>

The average value of LIST element is set as a VAR variable.  
LIST element is calculated after being evaluated.

avg is calculated integrally.

avgf is calculated by a floating point number.

::sys <basename VAR PATH>

A file name is extracted from a path and it is set as a variable.

::sys <checkObj NAME>

Whether the name is an object is judged.

::sys <chomp VAR STRINGS>

When CR has adhered after the character STRINGS, it deletes it

::sys <chop VAR STRINGS>

The last character of the character STRINGS is deleted.

::sys <clear>

A screen is cleared.

::sys <conj VAR COMPLEX>

The mark of the imaginary number part of a complex number is reversed, and a conjugate complex number is set as a variable.

::sys <dirname VAR PATH>

A directory name is extracted from a path and it is set as a variable.

::sys <DLIBPATH VAR>

The path DLIBPATH which the Descartes language uses is displayed on VAR.

::sys <EqOR COMPARISON\_VAL VAL1 VAL2 ...>

When agreeing even by one (other value 1 and value 2) compared with the comparison value, true is returned. If any doesn't agree, unknown is returned.

::sys <findlist VAR KEY LIST>

The LIST is a form like ((key1 value ...) (key2 value ...) ...).

The data that agrees with the specified KEY is extracted from among this LIST.

The result is set to the variable VAR.

::sys <gsub PATTERN STRINGS CORRESPDED-STRINGS AFTER-STRINGS>

The result of having transposed the portion which corresponded to STRINGS with the application of the regular expression pattern to Substitution STRINGS is set as Output STRINGS. Replacement is performed into all the applicable portions of STRINGS. (It does not operate on Windows.)

::sys <image VAR COMPLEX>

The imaginary part of a complex number is set as a variable.

::sys <insertstr VAR STR1 POS STR2>

The character string 2 is inserted in the position of the character string 1.

::sys <isNil ARG>  
::sys <isAtom ARG>  
::sys <isList ARG>  
::sys <isPred ARG>  
::sys <isVar ARG>  
::sys <isUndefVar ARG>  
::sys <isFloat ARG>  
::sys <isInteger ARG>  
::sys <isInf ARG>  
::sys <isNan ARG>

true will be returned, if ARG is judged and it corresponds. unknown is returned if it does not correspond.

::sys <isObj ARG>

If the ARG argument is an object, true is returned. Otherwise, unknown is returned.

::sys <isTrue PRED>  
::sys <isFalse PRED>  
::sys <isUnknown PRED>

The result of PRED of ARG is judged, and true will be returned if it corresponds. unknown is returned if it does not correspond.

::sys <isRegistered VAL LIST>

If VAL is an element of LIST, true is returned.

Otherwise, unknown is returned.

::sys <isUnregistered VAL LIST>

If VAL is not an element of LIST, true is returned.  
Otherwise, unknown is returned.

::sys <leftstr VAR STR LENGTH>

The character string of length is cut out from the left of  
a character string, and it is set as a variable.

::sys <lefttrim VAR STRINGS>

The blank before the character string is removed and  
it sets it to the variable.

::sys <max VAR LIST>

The greatest integer value of the element of a list  
is set as a variable.

::sys <maxf VAR LIST>

The greatest floating point number value of the element of  
a list is set as a variable.

::sys <min VAR LIST>

The minimum integer value of the element of a list  
is set as a variable.

::sys <minf VAR LIST>

The minimum floating point number value of the element of  
a list is set as a variable.

::sys <mkpred ARG>

ARG is changed into PRED.

::sys <nth VAR LIST INDEX>

The VAL of the INDEX of the LIST is set to the VAR.

::sys <setnth VAR LIST INDEX VAL>

The LIST that puts the VAL in the INDEX of the LIST is  
set to the VAR.

::sys <norm VAR COMPLEX>

The square of a real part and an imaginary number part sum total is set as a variable.

```
::sys <polar VAR ABSOLUTE-VALUE ANGLE>
```

The complex number by a polar coordinate system is set as a variable.

```
::sys <real VAR COMPLEX>
```

The real part of a complex number is set as a variable.

```
::sys <regex PATTERN STRINGS BEFORE-STRINGS MATCH-STRINGS  
AFTER-STRINGS>
```

The result of having applied the regular expression pattern to STRINGS is set as Match STRINGS, and STRINGS of order is set as front STRINGS and back STRINGS. (It does not operate on Windows.)

```
::sys <rightstr VAR STR LENGTH>
```

The character string of length is cut out from the right of a character string, and it is set as a variable.

```
::sys <righttrim VAR STRINGS>
```

The blank behind the character string is removed and it sets it to the variable.

```
::sys <seq VAR INIT LAST>
```

The list of the number from an initial value(INIT) to the end value(LAST) is set to the variable.  
If the INIT is smaller than the LAST, the list of the ascending order is generated.  
If the INIT is larger than the LAST, the list of the descending order is generated.

```
::sys <sort VAR LIST>
```

```
::sys <sortascend VAR LIST>
```

The LIST is sorted in ascending order, and it sets it to the VAR.

```
::sys <sortdescend VAR LIST>
```

The LIST is sorted in descending order, and it sets it to the

VAR.

```
::sys <split VAR STRINGS [DELIMITER]>
```

What divided STRINGS by the DELIMITER and was set to LIST is set as VAR. When the delimiter is not specified, it is divided with a blank and a tab.

```
::sys <strbyte VAR STRINGS>
```

The number of byte of character strings is set to the variable.

```
::sys <strdelcntl VAR STRINGS>
```

The control character in the character string is deleted, and it sets it to the variable.

```
::sys <strfry VAR STRINGS>
```

The order of the character of the character string is changed at random, and it sets it to the variable.

```
::sys <strlen VAR STRINGS>
```

The length of the character string is set to the variable.

```
::sys <strrepeat VAR STRINGS NUM>
```

The value in which the character string is repeated is set to the variable.

```
::sys <strrotateleft VAR STRINGS [SHIFT-NUMBER]>
```

```
::sys <strrotateright VAR STRINGS [SHIFT-NUMBER]>
```

The value in which the character string shifts several and moved is set to the variable.

The overflowing character is moved to the other side.

When the number of shifts is omitted, it shifts only by one character.

```
::sys <strshiftright VAR STRINGS [NUM]>
```

```
::sys <strshiftright VAR STRINGS [NUM]>
```

The value in which the character string shifts several and moved is set to the variable.

When the number of shifts is omitted, it shifts only by one

character.

```
::sys <strsort VAR STRINGS>  
::sys <strsortreverse VAR STRINGS>
```

The character in the character string is sorted and it sets it to the variable.

```
::sys <sum VAR LIST>  
::sys <sumf VAR LIST>
```

The element of a list is totaled and it is set as a variable.

A function predicate can also be described to the element of a list.

sum is totaled as an integer.

sumf is totaled as a floating point number.

```
::sys <sub PATTERN STRINGS CORRESPDED-STRINGS AFTER-STRINGS>
```

The result of having transposed the portion which corresponded to STRINGS with the application of the regular expression pattern to Substitution STRINGS is set as Output STRINGS. Replacement is performed only once.  
(It does not operate on Windows.)

```
::sys <suffix VAR PATH SUFFIX>
```

The suffix of a path is changed into the SUFFIX of an argument.

```
::sys <substr VAR STR POS LENGTH>
```

The character string of length is cut out from the position of a character string, and it is set as a variable.

```
::sys <switch comparison-val VAL1 PRED1 VAL2 PRED2 ...>
```

The predicate that pairs when agreeing to the value compared with the comparison value is executed.

The execution corpse situation bundles two or more predicates by parentheses ().

```
::sys <toupper VAR STRINGS>
```

A character string is made into a capital letter.

```
::sys <tolower VAR STRINGS>
```

A character string is made into a small letter.

```
::sys <trim VAR STRINGS>
```

The blank before and behind the character string is removed  
and it sets it to the variable.

```
::sys <writeln LIST>
```

After outputting LIST, a new line is started.

```
::sys <write LIST>
```

```
::sys <w LIST>
```

Outputting LIST.

```
::sys <length VAR LIST>
```

The length of LIST is set as VAR.

```
::sys <random VAR>
```

A random number is assigned to VAR.

```
::sys <PI VAR>
```

The value of a circular constant PI is set as a variable.

```
::sys <sin VAR RADIANT>
```

```
::sys <cos VAR RADIANT>
```

```
::sys <tan VAR RADIANT>
```

Trigonometric functions

```
::sys <asin VAR VAL>
```

```
::sys <acos VAR VAL>
```

```
::sys <atan VAR VAL>
```

```
::sys <atan2 VAR VAL1 VAL2>
```

Inverse trigonometric function

```
::sys <sinh VAR RADIANT>
```

```
::sys <cosh VAR RADIANT>
```

```
::sys <tanh VAR RADIANT>
```



## Hyperbolic trigonometric functions

```
::sys <asinh VAR VAL>  
::sys <acosh VAR VAL>  
::sys <atanh VAR VAL>
```

## Hyperbolic inverse trigonometric function

```
::sys <e VAR>
```

The bottom e of a natural logarithm e is set as a variable.

```
::sys <log VAR VAL>  
::sys <log10 VAR VAL>  
::sys <exp VAR VAL>  
::sys <exp2 VAR VAL>  
::sys <exp10 VAR VAL>  
::sys <pow VAR VAL1 VAL2>
```

## Logarithmic function

```
::sys <sqrt VAR VAL>
```

Square root

```
::sys <abs VAR VAL>
```

Absolute value

```
::sys <int VAR VAL>
```

Integral value

```
::sys <ceil VAR VAL>
```

smallest integral value not less than argument

```
::sys <floor VAR VAL>
```

largest integral value not greater than argument

```
::sys <trunc VAR VAL>
```

round to interger, towards zero

```
::sys <car VAR LIST>  
::sys <cdr VAR LIST>
```

car, cdr of LIST

::sys <caar VAR LIST>

car (car (LIST))

::sys <cadr VAR LIST>

car (cdr (LIST))

::sys <cdar VAR LIST>

cdr (car (LIST))

::sys <cddr VAR LIST>

cdr (cdr (LIST))

::sys <caaar VAR LIST>

car (car (car (LIST)))

::sys <caadr VAR LIST>

car (car (cdr (LIST)))

::sys <cadar VAR LIST>

car (cdr (car (LIST)))

::sys <caddr VAR LIST>

car (cdr (cdr (LIST)))

::sys <cdaar VAR LIST>

cdr (car (car (LIST)))

::sys <cdadr VAR LIST>

cdr (car (cdr (LIST)))

::sys <cddar VAR LIST>

cdr (cdr (car (LIST)))

::sys <cdddr VAR LIST>

cdr (cdr (cdr (LIST)))

```
::sys <caaaar VAR LIST>
      car (car (car (car (LIST))))
::sys <caaadr VAR LIST>
      car (car (car (cdr (LIST))))
::sys <caadar VAR LIST>
      car (car (cdr (car (LIST))))
::sys <caaddr VAR LIST>
      car (car (cdr (cdr (LIST))))
::sys <cadaar VAR LIST>
      car (cdr (car (car (LIST))))
::sys <cadadr VAR LIST>
      car (cdr (car (cdr (LIST))))
::sys <caddar VAR LIST>
      car (cdr (cdr (car (LIST))))
::sys <cadddr VAR LIST>
      car (cdr (cdr (cdr (LIST))))
::sys <cdaaar VAR LIST>
      cdr (car (car (car (LIST))))
::sys <cdaadr VAR LIST>
      cdr (car (car (cdr (LIST))))
::sys <cdadar VAR LIST>
      cdr (car (cdr (car (LIST))))
::sys <cdaddr VAR LIST>
      cdr (car (cdr (cdr (LIST))))
::sys <cddaar VAR LIST>
```

`cdr (cdr (car (car (LIST))))`

`::sys <cddadr VAR LIST>`

`cdr (cdr (car (cdr (LIST))))`

`::sys <cdddar VAR LIST>`

`cdr (cdr (cdr (car (LIST))))`

`::sys <cddddr VAR LIST>`

`cdr (cdr (cdr (cdr (LIST))))`

`::sys <cons VAR LIST1 LIST2>`

Connection of LIST

`::sys <code CODE-NAME>`

A setup of a character code.  
UTF8, EUCJP, and SJIS can be specified.

`::sys <char VAR STRINGS>`

STRINGS is decomposed for every be character, and it is made LIST, and is set as VAR. A multibyte character like a Japanese character is also right, and it is every character.

`::sys <byte VAR STRINGS>`

STRINGS is decomposed for every character code, and it is made LIST, and is set as VAR.

`::sys <asciichar VAR STRINGS>`

`::sys <utf8char VAR STRINGS>`

`::sys <eucchar VAR STRINGS>`

`::sys <sjischar VAR STRINGS>`

STRINGS is decomposed for every character code, and it is made LIST, and is set as VAR.

`::sys <concat VAR LIST>`

Strings LIST is made to unite, STRINGS is compounded and it is set as VAR.

```
::sys <concatcode VAR LIST>
```

Character code LIST is made to unite, STRINGS is compounded  
and it is set as VAR.

```
::sys <bitand VAR NUMBER1 NUMBER2>
```

```
::sys <bitor VAR NUMBER1 NUMBER2>
```

```
::sys <bitxor VAR NUMBER1 NUMBER2>
```

```
::sys <bitnot VAR NUMBER1>
```

bit operation

```
::sys <shiftr VAR NUMBER SHIFT>
```

```
::sys <shiftr VAR NUMBER SHIFT>
```

The bit shift of an integral value. shiftr is shifted  
to the left and shiftr is shifted to the right.

```
::sys <eq ARG1 ARG2>
```

```
::sys <noteq ARG1 ARG2>
```

```
::sys <is ARG1 ARG2>
```

Comparison of ARG1 and ARG2

```
::sys <getc VAR>
```

One character is inputted into VAR.

```
::sys <putc CHAR>
```

One character is outputted.

```
::sys <getline VAR [PRED...]>
```

One line is inputted and it is set as VAR. When  
PRED is set up, PRED is performed by considering  
a tmp file as an input.

```
::sys <syntax STRINGS PRED...>
```

A predicate is performed by making a character string  
into an input file.

```
::sys <tmpfile VAR>
```

Temporary FILE NAME is set as VAR

::sys <openr FILE-NAME PRED...>

The file of FILE-NAME is opened in postscript reading, and PRED is performed.

::sys <openw FILE-NAME PRED...>

The file of FILE-NAME is opened in postscript writing, and PRED is performed.

::sys <openwp FILE-NAME PRED...>

The file of FILE-NAME is opened in postscript writing, and PRED is performed.

::sys <gettime VAR>

The present time is set as a variable by a micro second bit.

::sys <time VAR>

List of (the user time, sys time, and elapsed time) of the predicate under execution is set as a variable.

::sys <date VAR>

Time is set as a variable.

::sys <sleep SEC>

Sleep is done during SEC second.

::sys <usleep SEC>

Sleep is done during micro SEC second.

::sys <pause>

It waits until Enter is pushed.

::sys <uname VAR>

The information on a system is set as VAR.

::sys <countnode VAR>

The number of nodes currently used is set as VAR.

```
::sys <PrintResultOff>
```

The result display is made disable.

```
::sys <PrintResultOn>
```

The result display is made enable.

```
::sys <gc>
```

A garbage collector is started.