



AutoCAD® Self-paced Learning Modules

# AutoLISP

## Module 20

### Strings

Why is it **Important** for you to learn this task?

#### RATIONALE:

To manipulate and work with strings, there are three functions that you must be able to utilize. This module teaches you how to change the case of the strings, join strings together, and count the number of characters in existing strings. As you will see as you continue to learn AutoLISP, it is important that you are able to manipulate and utilize strings.

Here is what you will be able to do when you complete each **Step** of this learning activity package:

#### OBJECTIVE(S):

1. Describe and apply the STRCASE function.  
Describe and apply the STRCAT function.  
Describe and apply the STRLEN function.  
Describe and apply the SUBSTR function.

To show that you have **Mastered** this task, here is what you will be asked to do:

#### PERFORMANCE EVALUATION:

1. Complete Self-Test No. 1 with 100% accuracy.
2. Complete Lab Exercise L1260-01 with 100% accuracy.

## OBJECTIVE NO. 1

When you complete this objective, you will be able to:

- Describe and apply the STRCASE function.
- Describe and apply the STRCAT function.
- Describe and apply the STRLEN function.
- Describe and apply the SUBSTR function.

Complete each of the learning activities listed below.

### LEARNING ACTIVITIES

**DO** the following things:

**USE** the following resources:

1. Read Information Sheet No. 1.
2. Complete Self-Test No. 1.
3. Check your answers to Self-Test No. 1 and correct any errors.
4. Complete Lab Exercise L1260-01.

# INFORMATION SHEET NO. 1

## AutoLISP Function - STRCASE

AutoCAD Release: All

### DESCRIPTION

The STRCASE function is used to convert upper-case characters to lowercase characters and lowercase characters to upper-case characters.

The *string* option specifies the alphabetical characters that are to be converted. If some or all of the characters are already in the case they are being changed too, they will not be affected by this function.

The *which* modifier is optional and if present, and is not nil, the alphabetical characters in the *string* will be converted to lowercase characters. If the *which* option is omitted or evaluates to nil, then all the alphabetical characters in the *string* will be converted to upper-case characters.

### RETURNS

A string.

### FORMAT

(strcase *string* [*which*])

### EXAMPLES

#### Example No. 1

```
Command: (setq str1 (strcase "Hello"))
"HELLO"
Command:
```

{In this example, the *which* is omitted, the characters are converted to upper-case.}

#### Example No. 2

```
Command: (setq str2 (strcase "autolisp" nil))
"AUTOLISP"
Command:
```

{In this example, the *which* evaluates to nil, the characters are converted to upper-case.}

#### Example No. 3

```
Command: (setq str3 (strcase "Hello" T))
"hello"
```

{In this example, the *which* evaluates to True. The characters are converted to lowercase.}

# AutoLISP Function - STRCAT

AutoCAD Release: All

## DESCRIPTION

The STRCAT function is used to join strings together to create a single string.

There is no limit to the number of strings that you can join together. A null string will be ignored by the STRCAT function.

## RETURNS

A string.

## FORMAT

(strcat [*string1*][*string2*] ...)

## EXAMPLES

### Example No. 1

Command: (setq str1 (strcat "3 inch" " " "Valve"))  
"3 inch Valve"  
Command:

{This example joins the strings "3 inch", " " (space), and "Valve" together to create the string "3 inch Valve". Notice how the space had to be added.}

### Example No. 2

Command: (setq str2 (strcat "P" "i" "p" "e"))  
"Pipe"

{In this example, four single character strings were added together to create the word "Pipe".}

### Example No. 3

Command: (setq date1 (strcase (strcat "April" " " "5" " " "1994")))  
"APRIL 5, 1994"  
Command:

{This example combines several strings as well as converting all the characters to upper-case.}

# AutoLISP Function - STRLEN

AutoCAD Release: All

## DESCRIPTION

The STRLEN function is used to count the number of characters contained in one or more strings.

## RETURNS

An integer.

## FORMAT

(strlen [*string1*] ...)

## EXAMPLES

### Example No. 1

Command: (setq slen1(strlen "HELLO"))

5

Command:

{In this example, the STRLEN function returns the integer 5.}

### Example No. 2

Command: (setq slen2 (strlen "3 inch Valves"))

13

Command:

{This example shows a string with spaces. Note how the spaces are counted also.}

### Example No. 3

Command: (setq slen3 (strlen "valves" "PUMPS" " Electric Motors"))

27

Command:

{In this example the sum of the number of characters in three strings is returned.}

### Example No. 4

Command: (setq slen4 (strlen))

0

Command:

{In this example the string was omitted. Note how STRLEN returns zero.}

### Example No. 5

```
Command: (setq slen5 (strlen ""))  
0  
Command:
```

{Note how STRLEN returns zero to a null string. A null string is a pair of double quotes with nothing between them.}

### Example No. 6

```
(defun C:E1260-01 (/ stp1 stp2 fln1 fln2 slen1)  
  (setq stp1 0)  
  (while (eq stp1 0)  
    (setq fln1 (getstring "\nEnter file name (do not include extension): "))  
    (setq slen1 (strlen fln1))  
    (setq stp2 0)  
    (while (eq stp2 0)  
      (if fln1  
        (progn  
          (if (> slen1 8)  
            (progn  
              (prompt "\nFile name must be a maximum of 8 characters.")  
              (setq fln1 (getstring "\nEnter file name (do not include extension): "))  
              (setq slen1 (strlen fln1))  
            )  
          (setq stp2 1)  
        )  
        (setq stp1 1)  
      )  
    )  
  )  
  (if (eq fln1 "")  
    (princ)  
    (progn  
      (setq fln2 (strcat (strcase fln1) "." "DWG"))  
      (princ "\nThe file you are selecting is ")(princ fln2)  
      (princ)  
    )  
  )  
)
```

{This example uses all three functions covered up to this point of the module. It prompts the user to enter a filename, without extension, it then checks to make sure the user entered a string. It then checks the number of characters in the filename. Notice the use of GETSTRING, used in this way it does not allow the user to enter a space in the file name. Try it.}

# AutoLISP Function - SUBSTR

AutoCAD Release: All

## DESCRIPTION

The SUBSTR function is used to obtain a portion of a string.

The *start* modifier must be an integer. It instructs the SUBSTR function which character in the given string to start counting characters for the new string. It counts the first character as the number 1. This integer must be positive.

The *length* option must be an integer. It instructs the SUBSTR function how many characters of the given string it should include in the new string. If this option is missing, SUBSTR will return all the characters from the *start* point to the end of the given string. This integer must be a positive number.

## RETURNS

A string.

## FORMAT

(substr *string start [length]*)

## EXAMPLES

### Example No. 1

```
Command: (setq str1 (substr "HELLO" 2 ))  
"ELLO"  
Command:
```

{In this example the length integer is missing. This causes the SUBSTR function to use all the characters from character 2 to the end of the string.}

### Example No. 2

```
Command: (setq str2 (substr "3 inch Valve" 8 5))  
"Valve"  
Command:
```

{In this example, SUBSTR starts at character 8 and takes 5 characters. Note how the spaces must be counted.}

### Example No. 3

```
Command: (setq str3 (strcase (substr "3 inch Valve" 3 4) nil))  
"INCH"  
Command:
```

{In this example, the third character to the sixth character will form the new returned string. This new string is also converted to upper-case characters.}

#### Example No. 4

```
; ***** AutoLISP Program *****
; A1260-01.LSP (v12)          Written by: J. Smith          040409
; *****
; This program allows you insert text in a circular pattern.
;
; ***** Function d2r *****
(defun d2r (angd)
  (* pi (/ angd 180.0))
)
;
; ***** Function - C:CTEXT *****
(defun C:CTEXT (/ svcm svts str1 slen pnt1 ang1 ang2 rad1 count ptx1 chr1)
  (setq svcm (getvar "cmdecho"))
  (setq svts (getvar "textsize"))
  (setvar "cmdecho" 0)
  (setq stp1 0)
  (while (eq stp1 0)
    (setq str1 (strcase (getstring T "\nEnter the text string: ")))
    (if (eq str1 "")
      (setq str1 1)
      (progn
        (setq slen (strlen str1))
        (setq pnt1 (getpoint "\nEnter center point for circle: "))
        (if pnt1
          (progn
            (setq ang1 (/ 360.0 slen))
            (setq ang2 90)
            (setq rad1 (getdist "\nEnter radius of circle: "))
            (setq dis1 (+ rad1 svts))
            (setq count 1)
            (while (>= slen count)
              (setq ptx1 (polar pnt1 (d2r ang2) dis1))
              (setq chr1 (substr str1 count 1))
              (command "TEXT" "m" ptx1 "" "" chr1)
              (setq count (1+ count))
              (setq ang2 (- ang2 ang1))
            )
          )
        )
      (setq st1 0)
    )
  )
  (setvar "cmdecho" svcm)
  (princ)
  (redraw)
)
; ***** The End *****
```

{Study this program and try it on your computer.}

# SELF-TEST NO. 1

## DIRECTIONS

1. Answer the following questions.
2. Compare your answers to the enclosed answer key.
3. If you disagree with any of the answers, review the learning material and/or check with your instructor.
4. If no problems arise, continue with the next step.

1. The \_\_\_\_\_ function is used to count the number of characters contained in one or more strings.
2. The \_\_\_\_\_ function is used to join strings together to create a single string.
3. The \_\_\_\_\_ function is used to convert upper-case characters to lowercase characters and lowercase characters to upper-case characters.
4. The \_\_\_\_\_ function is used to obtain a portion of a string.
5. In the space provided, enter what AutoLISP would return to each of the functions below:

a) Command: `(setq str1 (strcat "AutoLISP" " " "is" " " "EASY"))`

\_\_\_\_\_

b) Command: `(setq str2 (strlen "AutoLISP" " " "is" " " "EASY"))`

\_\_\_\_\_

c) Command: `(setq str3 (substr "AutoLISP" " " "is" " " "EASY" 5 12))`

\_\_\_\_\_

d) Command: `(setq str4 (strcase "AutoLISP" " " " is" " " "EASY" nil))`

\_\_\_\_\_

e) Command: `(setq str5 (strlen (strcase (substr "AutoLISP" " " "is" " " "EASY" 12))))`

\_\_\_\_\_

f) Command: `(setq str6 (strcase (strcat (substr "AutoLISP" 1 4) (substr "AutoLISP" 5))))`

\_\_\_\_\_

g) Command: `(strcase (setq str7 (strcat (substr "1200 SQ. FOOT HOUSE" 15 5) (substr "FOR SALE" 5 4))))T`

\_\_\_\_\_

# LAB EXERCISE NO. 1

## Lab Exercise L1260-01

Description

Program Name: L1260-01.LSP

1. Function 1 Name: DRAWSTAT

Purpose: To print information about the active drawing.

a) Find out the following information about the active drawing.

ACTIVE DRAWING NAME  
ACTIVE DRAWING DIRECTORY  
AUTOCAD VERSION  
ACTIVE MENU  
CURRENT LAYER  
CURRENT TEXTSTYLE

b) Print onto the text screen the heading and information about the active drawing. See the Program Example below.

c) The drawing name should print as shown below and not include the directory structure.

d) All text should be printed in upper-case characters.

## Program Example

Command: **DRAWSTAT**  
ACTIVE DRAWING NAME: 3DVALVE  
ACTIVE DRAWING DIRECTORY: C:\PROGRAM FILES\AUTOCAD14\  
AUTOCAD VERSION: 14.01  
ACTIVE MENU: C:\PROGRAM FILES\AUTOCAD R14\SUPPORT\ACAD  
CURRENT LAYER: 0  
CURRENT TEXTSTYLE: STANDARD  
Command:

# ANSWER KEY

## SELF-TEST # 1

1. The **STRLEN** function is used to count the number of characters contained in one or more strings.
2. The **STRCAT** function is used to join strings together to create a single string.
3. The **STRCASE** function is used to convert upper-case characters to lowercase characters and lowercase characters to upper-case characters.
4. The **SUBSTR** function is used to obtain a portion of a string.
5. In the space provided give what AutoLISP would return to each of the functions below:
  - a) Command: (setq str1 (strcat "AutoLISP" " " "is" " " "EASY"))  
**"AutoLISP is EASY"**
  - b) Command: (setq str2 (strlen "AutoLISP" " " "is" " " "EASY"))  
**16**
  - c) Command: (setq str3 (substr "AutoLISP is EASY" 5 12))  
**"LISP is EASY"**
  - d) Command: (setq str4 (strcase "AutoLISP is EASY" nil))  
**"AUTOLISP IS EASY"**
  - e) Command: (setq str5 (strlen (strcase (substr "AutoLISP is EASY" 12))))  
**5**
  - f) Command: (setq str6 (strcase (strcat (substr "AutoLISP" 1 4) (substr "AutoLISP" 5))))  
**"AUTOLISP"**
  - g) Command: (strcase (setq str7 (strcat (substr "1200 SQ. FOOT HOUSE" 15 5) (substr "FOR SALE" 5 4))))  
**"housesale"**

## LAB EXERCISE No. 1 - L1260-01.LSP

```
; ***** AutoLISP Program *****
; L1260-01.LSP (v12)      Written by: J. Smith      040410
; *****
; This program will extract the drawing name, drawing directory,
; AutoCAD Version, Current Layer,
; Active Menu, Current Textstyle and list them for the user.

; ***** Function - C:DRAWSTAT *****
(defun C:DRAWSTAT (/ svdn svdp svav svam svcl svts
  lst1 lst2 lst3 lst4 lst5 lst6)
  (setq svdn (getvar "dwgname"))
  (setq svdp (getvar "dwgprefix"))
  (setq svav (getvar "acadver"))
  (setq svam (getvar "menuname"))
  (setq svcl (getvar "clayer"))
  (setq svts (getvar "textstyle"))
  (textpage)
  (setq count1 1)
  (setq count2 1)
  (setq slen (strlen svdn))
  (while (>= slen count1)
    (if (= (SUBSTR svdn count1 1) "\\")
      (setq count2 0)
      (setq count2 (1+ count2)))
    )
    (setq count1 (1+ count1))
  )
  (if (/= count1 count2)
    (setq svdn (SUBSTR svdn (- (+ 1 slen) count2) count2))
  )
  (setq lst1 (strcase (strcat "ACTIVE DRAWING NAME: " svdn)))
  (setq lst2 (strcase (strcat "ACTIVE DRAWING DIRECTORY: " svdp)))
  (setq lst3 (strcase (strcat "AUTOCAD VERSION: " svav)))
  (setq lst4 (strcase (strcat "ACTIVE MENU: " svam)))
  (setq lst5 (strcase (strcat "CURRENT LAYER: " svcl)))
  (setq lst6 (strcase (strcat "CURRENT TEXTSTYLE: " svts)))
  (princ "\n")(princ lst1)
  (princ "\n")(princ lst2)
  (princ "\n")(princ lst3)
  (princ "\n")(princ lst4)
  (princ "\n")(princ lst5)
  (princ "\n")(princ lst6)
  (princ)
)
; ***** The End *****
```