

## Chapter 2 : Indexed variables

### Part III : Strings in C

#### Definition:

A string in C is an array of characters terminated by a null character “\0”. Simply, a string contents are the array characters plus an extra character that is called null character.

#### Declaration of a string:

A string it can be declared in the same way as an array of characters:

```
char string_name[size];
```

#### Example:

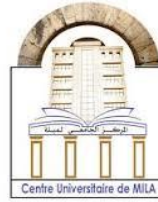
```
char S[4]= "abc";
```



a	b	c	\0
S[0]	S[1]	S[2]	S[3]

#### Initialization of a string:

There are two ways to initialize a string:



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### 1- Direct initialization:

#### Example:

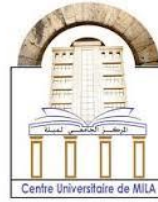
Program	Output
<pre>#include &lt;stdio.h&gt;  int main() { char letter[]="Good to see you"; int length=sizeof(letter)/sizeof(letter[0]); printf("String length=%d\n",length); printf("String=%s\n", letter); printf("String elements:\n"); for (i = 0; i &lt; length; ++i) { printf("%c\n", letter[i]); } return 0; }</pre>	<pre>String length=16 String=Good to see you String elements: G o o d t o s e e y o u .</pre>

It is worth note that the “space” is counted and the null character is printed as a point (“.”).

### 2- Initialiaization during declaration as an aarray:

#### Example:

Program	Output
<pre>#include &lt;stdio.h&gt;  int main() { char letter[]={ 'G','o','o','d',' ','t','o',' ','s','e','e',' ','y','o','u','\0'}; printf("String=%s\n", letter);  return 0; }</pre>	<pre>String=Good to see you</pre>



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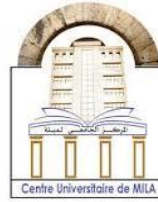
## String functions:

The most functions used to deal with strings are:

String Library Functions	
#include <string.h>	
Name	Description
<i>strlen</i>	return the length of string not counting \0
<i>strcpy</i>	copies string from source to dest
<i>strncpy</i>	copies n chars from source to dest
<i>strcat</i>	appends string from source to end of dest
<i>strncat</i>	appends n chars from source to end of dest
<i>strcmp</i>	compares two strings alphabetically
<i>strncmp</i>	compares the first n chars of two strings
<i>strstr</i>	finds a string inside another
<i>strtok</i>	breaks string into tokens using delimiters

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**Figure1: C String functions**  
Image source: <https://onlinestores.best2024.ru/category?name=c%20%20%20string%20library%20functions>



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### Some operations on strings:

#### 1- Modify strings:

Program	Output
<pre>#include &lt;stdio.h&gt;  int main() { char message[11]="My friend"; message[0]='H'; message[1]='i'; message[9]='!'; printf("%s", message);  return 0; }</pre>	Hi friend!

#### 2- Program to find number of words in a string

Program	Output
<pre>#include &lt;stdio.h&gt; #include &lt;string.h&gt;  void main() { char s[200]; int count = 0, i;  printf("Enter the string:\n"); scanf("%[^\n]s", s); for (i = 0; s[i] != '\0'; i++) { if (s[i] == ' ' &amp;&amp; s[i+1] != ' ') count++; } printf("Number of words in given string are: %d\n", count + 1); }</pre>	Enter the string:  Don't apologize for not understanding. If you stop asking questions then you effectively kill your desire to know the unknown  Number of words in given string are: 20