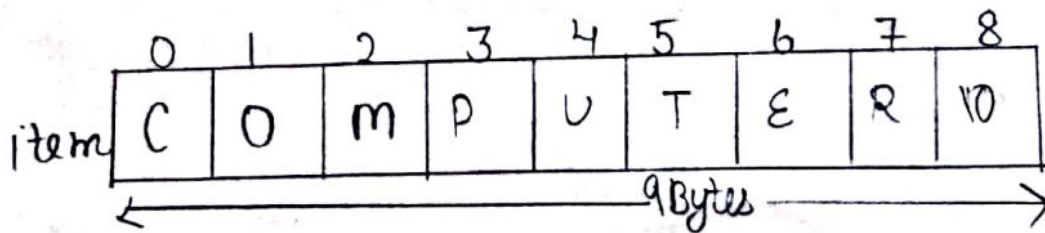


String

- A String is a sequence of character. Any Sequence or set of character defined within double quotation marks is a string or literal. For Example, "Hello" is a literal.
- String in C are represented by array of characters. The Strings can be stored and manipulated as array of characters in C.
- The last character in a string is always null character that is represented by "\0" with the value 0.

Defination:- String is a sequence of characters terminate with a null character \0.

For Example:- The String "COMPUTER" can be stored in an array.



This String requires total 9 locations of array item: eight for the alphabats in the String COMPUTER and one for the null character.

⇒ The last character is the null character having ASCII value zero.

⑧ Declaration of String

String must be declared before their use.

The general form of declaration of a string variable is:-

```
char stringname[size]; // declaration
```

Example

↓
datatype

```
char book[5];
```

⇒ The size determines the number of characters in the string name.

⇒ The last character is the '\0' character, so a place must be allocated for that '\0' i.e. if the size is 5 then it can store maximum 4 characters and one '\0'.

Initializing Strings.

Strings can be initialized at the same place where they are declared.

Example

```
char item[5] = {'B', 'O', 'O', 'K', '\0'};
```

OR

```
char item[5] = "BOOK";
```

← Offers another way to initialize strings.

If we initialize `char item[4] = "BOOK";`

then the result may be unpredictable because the array size is less than subscript.

* String Functions (Input/Output)

The Strings can be input and displayed by using two main categories of functions.

1. String Input/Output by Character Functions.
2. String Input/Output by String Functions.

String Input/Output by Character Functions:-

Using Character I/O functions: e.g. getch(), getche() and getchar(), scanf("%c"), printf("%c").

(a) getchar() function

This function returns a character that has been typed. This function reads only single character at a time.

General form of getchar function is:- After typing, the programmer is required to press enter key.

→ variable_name = getchar();

Type of variable - name must be char

Example

```
char c;
c = getchar();
```

(b) getche() function

This function is a non standard function and declared in "conio.h" header file. This function also returns a character that has been recently typed without even waiting for enter key.

Syntax variable_name = getche();

Example char c;
c = getche();

(c) getch() function

The function `getch()` is a non-standard function. It is declared in "`conio.h`" header file. Mostly It is used by Turbo C. It is not a part of C Standard Library.

→ It immediately returns the entered character without even waiting for the enter key.

Syntax: `variable_name = getch();`

String Input/output by String functions. Using I/O functions

e.g. `gets()`, `puts()`, `printf()`, `scanf()`.

String Input/output functions

1. `scanf()`: This is used to accept strings from the keyboard. Here "`%.s`" is used as the format specifier.

The disadvantage of this function is that it cannot read blank spaces.

Syntax: `scanf("%.s", string_name);`

2. `printf()`: - this is used to print strings. The function does not support printing of blank spaces or white spaces.

"`%.s`" is used as the format specifier.

Syntax: `printf("Message is %.s", string_name);`

Example

// reading and writing using `printf()` and `scanf()` functions.

```

#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    char name[20];
    printf("enter the name : ");
    scanf("%s", name);
    printf("your name is : %s", name);
    getch();
}

```

3 gets() → This is used to input strings from the keyboard.

The advantage of this function is that, it can store blank spaces in between strings.

Syntax : gets(string name);

4 puts() → This is used to print strings on a display device.

The advantage of this function is that, it automatically puts a new line character in front of the string being displayed so, output always appears in new line.

→ It also supports white spaces

Syntax : puts(string name)

Example // reading and writing string using gets and puts function.

```

#include <stdio.h>
#include <conio.h>
void main()
{
    char name[30];
    clrscr();
    printf("enter your name");
    gets(name);
    printf("your name is : ");
    puts(name);
    getch();
}

```


* Functions for String Manipulation: (Standard Library Function)

Function	USE
strlen()	Finds the length of the String
strcat()	To Concatenate two Strings
strcpy()	To Copy a string to another.
strcmp()	To Compare two String.
strrev()	To reverse a string.
strlwr()	To Convert a string to all lowercase.
strupr()	To Convert a string to all uppercase.

(I) strlen():- strlen() is used to calculate the length of a string. The length does not include the null character '\0'.

Syntax:- strlen(name_of_string);

Example:-

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main()
```

```
{
    char str[30];
    int xx = 0;
    printf("Enter a String");
    gets(str);
    xx = strlen(str);
```

```
printf("The length of String = %d", xx);
    getch();
```

```
}
```

(II) Strcat() :-

- This function is used to concatenate two string.
- This function appends the contents of source string at the end of the target string.

Syntax : `strcat(target_string, sourcestring);`

Example :

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main()
{
    char source[20] = "Palvi", target[20] = "Arora";
    clrscr();
    strcat(target, source);
    printf("In The String becomes = %s", target);
    getch();
}
```

(III) Strcpy() :- This function is used to copy one string into another string.

Syntax :- `strcpy(string 1, string 2);`

Example :-

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main()
{
    char string1[20], string2[20];
    clrscr();
    printf("In Enter string 1");
    gets(string1);
    printf("In Enter string 2");
    gets(string2);
    strcpy(string 1, string 2);
    printf("string 1 becomes = %s", string 1);
}
```



```
getch();  
}
```

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(IV) Strcmp():- This function is used to compare two strings. Strcmp() compare two string to find out whether they are same or different.

Syntax:- strcmp (string 1, string2);

Example:-

```
#include <stdio.h>  
#include <conio.h>  
#include <string.h>  
void main()  
{  
    char s1[20], s2[20];  
    clrscr();  
    printf("Enter the first string");  
    gets(s1);  
    printf("\n Enter the second string");  
    gets(s2);  
    if(strcmp(s1,s2) == 0)  
        printf("\n The Strings are equal");  
    else  
        printf("\n The Strings are not equal");  
    getch();  
}
```

It returns ZERO, if 2 strings are equal, or a non-zero, if the strings are not the same.

(V) Strrev() :- This function reverses all characters in a string.

Syntax:- Strrev(string);

for example:- Strrev("program"); will give 'margoop'.

Example:-

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main()
{
    char str[20];
    clrscr();
    printf("Enter a string");
    gets(str);
    printf("In Entered String is :- ", str);
    printf("In Reversed String is :- ", strrev(str));
    getch();
}
```

(VI) Strlwr() :- This function converts a string ^{from uppercase} to all lowercase letters.

Syntax:- strlwr(string);

⇒ Strlwr() is convert the characters of a string into lowercase letters.

Example:-

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main()
{
    char str[20];
    clrscr();
    printf("Enter a String");
    gets(str);
    printf("In In lowercase letters string is :- ", strlwr(str));
    getch();
}
```

(VII) Strupr() :- This function converts all characters in a string from lower to upper case.

For example :- `strupr("palvi")`, will convert the string to PALVI.

Syntax:- `Strupr(String)`,

Example:-

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
void main()
{
    char str[20];
    clrscr();
    printf("Enter a string");
    gets(str);
    printf("\n In uppercase letters entered string is :/s",
           strupr(str));
    getch();
}
```

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