

String and Characters

- A string in C is defined as an array of characters in a linear sequence.
- In programming, string constants can be declared within double quotes.

Example: “StringConstant”

- NULL character is used to represent end of the string.

String Declaration

- NULL character is denoted by the escape sequence '\0'.

SYNTAX:

datatype stringname[arraysize] = {val1,val2,...};

Example:

```
Char str1[ 5] = {'m','o','o','n','\0'};
```

```
Char str2[ ]="Learning";
```

Fixed length structure

There are 3 types of structures used to store strings as follows,

Fixed length structure

Variable length structure

Linked structure

Fixed length structure

- Strings are placed in consecutive character position.
- Fixed length are allocated to store.
- Sequential representation of string $S = x_1, x_2, \dots, x_n$.



Linked Structure

- The memory size is divided into number of fixed size nodes.
- A node has two fields. One is data and another is link.
- Data field indicates the size of the node.
- Link has the address of the next node to be linked.

Linked Structure

1	2	3	4	5	6	7	8	9	10	11	12	13	14
---	---	---	---	---	---	---	---	---	----	----	----	----	----

|--data--| ---link----| ----data----|----Link----|

|-----Node 1-----|-----Node 2 -----|

Memory divided into nodes of size 4

Note: Deletion of substring is carried out only by replacing all characters in this substring by 0.

Input : Read a String

- The function scanf(), gets(), fgets() used to get string as input.

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
char name[10];
```

```
int age;
```

```
printf("Enter your first name and age: \n");
```

```
scanf("%s %d", name, &age);
```

```
printf("You entered: %s %d",name,age);
```

```
}
```

Output:

You entered: vicky 28

Input : Read a String

- In scanf() statement, %s format specifier is used to get string input.
- The & symbol is not used along with input variable name.

Note:

- String is an array of characters. Array name itself denotes the base address of the array, where arr_name and &arr_name both are same. Hence, the string name not requires any ampersand before it in scanf. ... Because string already stores the address of its variable.

Gets() function

- This function is used to read a character entered at the keyboard and places its address pointed to by its character pointer argument.
- Characters are entered until the enter key is pressed.

Syntax:

```
gets(varname);
```

String Output: write a string

- Printf() function is used to print a string on output device.
- The format specifier “%s” is used to print.
- Puts() is also used. This function takes less space than printf() and also fast. Since format conversion no need.

Example:

```
puts(str1);
```