## What is String in Python?

**Strings are contiguous series of characters enclosed in single or double quotes. Python doesn’t have any separate data type for characters so they are represented as a single character string.**

For eg:

**>>> s\_name = “Amit” # s\_name is a variable storing a string.**

**>>>s = ‘a’  #String can also be enclosed in single  quotes**

## How to Create Strings in Python?

**Creating strings: To create string enclose the character or sequence of character in Single or Double Quotes** **like shown below**

**>>> s\_name = “Amit”  #String enclosed in double quotes**

**>>>s = ‘a’ # String enclosed in Single Quotes**

**We can also use str() function to create string:**

**N = str () #**This function will create an empty string

**name = str(1234) # This will create a variable name which store a string “1234”**

**If we execute the following code:**

**>>>print(name)**

**Output will come**

**1234**

## Traversing Strings in Python:

**Traversing a String:   It means accessing all the elements of the string one by one using index value.**

**St = “PYTHON”**

Diagram

Description automatically generatedStrings in Python

|  |  |  |  |
| --- | --- | --- | --- |
| **St[1] = Y** | **St[5] = N** | **St[-1] = N** | **St[-6] = P** |

## Accessing a string through loop

As we have discussed a string is a collection of letters, numbers, and symbols each entity has its own position in the string. This is called an index. So using by using these indices you can access the string trough a [loop](https://www.tutorialaicsip.com/computer-science-xi/iterative-statements-in-python/).

Accessing a string by its index letter by letter is also known as traversing.

### Accessing string through for loop

To access the string letter by letter for loop can be used. Take a look at the following code:

>>> text = "TutorialAICSIP"

>>> for ch in text:

print(ch,end="\*")

The output will be:

T\*u\*t\*o\*r\*i\*a\*l\*A\*I\*C\*S\*I\*P\*

### Accessing string through the loop using the range function

text = "TutorialAICSIP"

>>> for ch in range(0,len(text),1):

print(text[ch],end="\*")

The output will be:

T\*u\*t\*o\*r\*i\*a\*l\*A\*I\*C\*S\*I\*P\*

When you want to access the string using range function another built-in function len() will be used to identify the length of a string.

### Reverse a string

>>> text ="TutorialAICSIP"

>>> l =len(text)

>>> for ch in range(-1,(-l-1),-1):

print(text[ch],end="")

The output will be:

PISCIAlairotuT

## String Manipulation in Python using Basic Operators

As you have used basic arithmetic operators + and \* for **“addition”** and **“multiplication”** respectively.

These operators can be used for string manipulation in python as well. Here in string manipulation these operators are known as “**concatenation**” and “**replication**” operator.

### String concatenation operator “+”

It is used to join two words. Observe the below given code and output:

>>> text ="Tutorial" + "AI-CS-IP"

>>> print(text)

The output will be:

TutorialAI-CS-IP

**Valid combinations for + operator:**

1. n + n = 3 + 3 = 6
2. s + s = “3” + “3” = 33

**Invalid combinations:**

1. n + s = 3 + “3”
2. s + n = “3” + 3

**NOTE**: **Strings are immutable means that the content of the string cannot be changed**

Text

Description automatically generated

**We can not change the character in the String**

## Inbuilt Functions of Strings in Python:

|  |  |  |  |
| --- | --- | --- | --- |
| **Function Name** | **Description** | **Code** | **Output** |
| **split()** | **This function splits** **the string into a list of** **string on the basis of** **delimiter** | **str = ” I am Learning Python” print(str.split())** | **[‘I’ , ‘am’ , ‘Learning’ , ‘Python’ ]** |
| **upper()** | **This function converts** **the string into uppercase** | **str = ” I am Learning Python” print(str.upper())** | **I AM LEARNING PYTHON** |
| **lower()** | **This function converts the** **string into lowercase** | **str = ” I am Learning Python” print(str.lower()**) | **i am learning python** |
| **replace()** | **This function replaces a** **substring from the main** **string.** **As strings are immutable** **so this function creates** **a new string** | **str = ” I am Learning Python” newstr=str.replace (“Learning”,”Doing”) print(newstr)** | **I am Doing Python** |
| **find()** | **This function return the** **index of substring in a** **main string.** | **str = “I am Learning Python” print(str.find(‘am’))** | **2** |
| **len()** | **This function returns the length of the string**. | **str = “I am Learning Python” print(len(str))** | **20** |
| **strip()** | **This function is used to** **remove leading** **and trailing whitespace** **from the string.** | **str=” I am Learning Python” print(len(str)) strnew=str.strip() print(len(strnew))** | **25 20** |
| **count()** | **This function counts** **the number of** **occurrences of a substring** **in main string** | **str=”I am Learning Python” print(str.count(‘a’)) print(str.count(‘n’))** | **2 3** |
| **capitalize()** | **This function converts** **the first alphabet** **of the string to upper** **case and all other** **alphabets in small case** | **str=”I am Learning Python” print(str.capitalize())** | **I am learning python** |
| **index()** | **This function returns** **the lowest index** **of substring in a string.** | **str=”I am Learning Python” print(str.index(‘a’))** | **2** |
| **isalnum()** | **This function returns** **True if it’s made of** **alphanumeric characters** **only. If there is one** **space in a string,** **this function will** **return False.** | **str=”I am Learning Python” print(str.isalnum())**  **str=”IamLearningPython” print(str.isalnum())** | **False (#it contain spaces)**  **True** |
| **isdigit()** | **This function returns** **True if all the characters** **in the string are digits** **otherwise False.** | **str=”12345678″ print(str.isdigit())**   **str=”12345678A” print(str.isdigit())** | **True(#only digits)**    **False(#contain alphabet)** |
| **islower()** | **This function returns** **True if all the characters** **in the string are in lower case** | **str=”I am Learning Python” print(str.islower())**    **str=”i am learning python” print(str.islower())** | **False(#contain upper case alphabet)**      **True** |
| **isupper()** | **This function returns** **True if all the** **characters in the** **string are in upper case** | **str=”I am Learning Python” print(str.isupper())**  **str=”I AM LEARNING PYTHON” print(str.isupper())** | **False(#contain small case)**    **True** |
| **isspace()** | **This function returns** **True if all the** **characters in the** **string is whitespace.** | **str=”I am Learning Python” print(str.isspace())**  **str=” “ print(str.isspace())**  **str = “” print(str.isspace())** | **False**    **True (#contain only space)**   **False** |
| **istitle()** | **This function converts** **the given string in** **title case(first** **alphabet of each** **word is in upper case).** | **str=”i am learning python” print(str.title())** | **I Am Learning Python** |
| **swapcase()** | **This function converts** **the lowercase** **characters to upper** **case and vice-versa**. | **str=”I am Learning Python” print(str.swapcase())** | **i AM lEARNING pYTHON** |